

An ontology of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*

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Abstract *Pharmaceutical Services (PS) is a growing field which has established itself over the last 25 years in Brazil through scientific publications. This work investigates the evolution of the field in the Brazilian periodical Journal Ciência & Saúde Coletiva. We conducted a scoping review of relevant literature produced in four separate periods (1996-2003, 2004-2010, 2011-2015, and 2016-2019). A search for articles that contained one or more of the pre-established key words in the title was performed by separate pairs of reviewers. The search resulted in 307 articles, 260 of which were included. The findings show that the number of publications increased steadily over the study period. The papers were predominantly open-topic and original articles and written in Portuguese. Most of the lead authors were from the South and Southeastern regions of Brazil and from public universities and Fiocruz. The predominant primary theme was medicine utilization (161 articles), followed by management (56), and tangential aspects of the PM cycle (43). An ontology of PS was created based on the classification of the articles. The findings show that the field of PS encompasses public policy and management and frontline activities involved in the delivery of health care to the population. It is hoped that the diverse range of interrelations in the field of PS will be increasingly addressed in future publications.*

Key words *Pharmaceutical Services, Publications, Review*

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Introduction

Pharmaceutical Services (PS) is a relatively recent field within the pharmaceutical sciences, which has traditionally been shaped by the so-called basic sciences, such as physics, chemistry, biochemistry, and physiology. In turn, the basic sciences characterized the way in which pharmacy was taught and, consequently, the profile of professionals working in academia and care services. Over recent decades, social issues linked to medication have gained greater importance, given that the natural sciences on their own are not capable of explaining or delving deep into aspects that involve relationships between medication and individuals, families, communities, or indeed professional practice^{1,2}.

Brazil's Organic Health Law, which regulates public health services and actions, provides that one of the fields of action of the country's public health care system, *o Sistema Único de Saúde* (SUS) or Unified Health System, is the formulation of the national medicines policy, and states that the health sector shall be responsible for executing comprehensive therapeutic care actions, including pharmaceutical services³. However, PS in Brazil only came to gain a clearer delineation with the introduction of the National Medicines Policy (NMP) in 1998⁴. With regard to the public management of medicines, in 1999 the government embarked on a process to decentralize PS⁵, defining the responsibilities of each level of management as follows: federal – policy formulation and implementation; state – policy coordination, implementation, monitoring, and evaluation; and local – service provision³.

Another milestone was the creation of the National Pharmaceutical Services Policy (PNPS, acronym in Portuguese) in 2004, which states that the professional activities of pharmacy professionals in the field of PS include health promotion, protection, and recuperation. It also provides guidelines for the development of PS in terms of innovation and the production of medicines and supplies, promoting the inclusion of PS in the 2004 National Agenda of Priorities for Health Research⁶.

With the incorporation of PS into the framework of the NMP, an organizational model called the pharmaceutical management cycle (PM cycle) was adopted. Developed in the middle of the 1990s by Management Sciences for Health⁷, this milestone has been revisited over time to reflect changes in the field that have an impact on the organization of PS activities⁸. Three core activi-

ties are particularly relevant to the PM cycle: tangential activities that precede the cycle, involving actors outside the field of PS; management; and activities related to medicine utilization⁹.

It is to be expected that scientific output reflects political, normative, and technical frameworks, not only in key moments in the development of the field, but also in relation to the technical maturation of the area and involvement of professionals. An integral part of public health, PS is in its essence the articulation of knowledge tied to practices in health services. Although it encompasses various disciplines from the pharmaceutical sciences, the field is strongly influenced by the social sciences¹⁰. The literature has highlighted important changes in PS over time, reflecting on core themes and the role of PS in the SUS¹¹.

Assuming that major public health issues are present in the discussion of this field and its evolution in Brazil, this article analyzes the literature on PS published in the pages of the *Journal Ciência & Saúde Coletiva* (C&SC) and proposes a first-of-its-kind ontology of PS in Brazil.

Methods

We conducted a scoping review of PS in the C&SC^{12,13}. The review period (1996 to 2019) was divided into four time blocks circumscribed by important policies in the area of PS^{4-6,14-20} and volume of publications, as follows: 1996-2003, 2004-2010, 2011-2015, and 2016-2019.

A pair of researchers were responsible for conducting the search for relevant articles in each time block. The identification of articles was initially carried out independently by each pair member and then in consensus between the pairs and review team to clear up any doubts and detect inconsistencies.

A search was conducted of each issue of the Journal on the C&SC's website, selecting articles that contained one or more of the following keywords in the title: *assistência farmacêutica* (pharmaceutical services), *medicamentos* (medicines), *política de medicamentos* (medicines policy), *farmacêuticos* (pharmaceuticals), *setor farmacêutico* (pharmaceuticals sector), *indústria farmacêutica* (pharmaceuticals industry), and *farmácia hospitalar* (hospital pharmacy). The full-text versions of the identified articles were then downloaded using the SciELO link on C&SC's website and the abstracts were read to check for the keywords mentioned above.

The selected articles were then assessed for eligibility by reading the full-text version. Articles that addressed themes not directly related to PS or medication therapy were excluded, resulting in the final sample of articles for review.

The following information was extracted from the articles: year of publication, author(s), lead author's affiliation and place of origin, Digital Object Identifier (DOI), section of the publication, type of article, abstract, and keywords. The articles were organized sequentially in a database.

For the analysis, the articles were described in chronological order, presenting the article number, author(s), lead author's affiliation and place of origin, language in which the paper was published, and type of article. For the purposes of thematic analysis, the articles were grouped according to primary themes, secondary themes, and specific topics based the conceptual framework for pharmaceutical services described in the literature^{8,9,21}: primary theme (tangential aspects of the PM cycle, management, and medicine utilization), secondary theme (an aspect of the primary theme constituting an activity, normative guideline, or conceptual discussion), and specific topics (an underlying topic that reflects the object or locus of the investigation). The dependency relations between the primary themes, secondary themes, and specific topics were also highlighted, thus creating an ontology of PS in the pages of the *C&SC*.

Results

The search by title yielded 307 articles (Figure 1). The reading of the abstracts resulted in the exclusion of 47 papers addressing topics not directly related to PS: health policy, health spending, health resource allocation, health funding, health care, diagnostics, toxicology, medical practices, medicalization (not related to medication therapy), smoking, illicit drug use, non-medical contraceptive practices, medical and hospital supplies, non-drug therapies, quality of life, and nutrient supplementation. This stage resulted in a final sample of 260 articles (Chart 1).

The time horizon covered by the review extended from the first volume of the Journal (published in 1996) to the last volume of 2019. In 1996, none of the articles published in the Journal met the eligibility criteria. The number of publications in the field of PS has grown considerably over the last 24 years, particularly from 2008, as shown in Figure 2.

In April 2008, the Journal launched its first thematic issue on medicines, leading to an increase of 29 articles in comparison to the previous year. Since then, the annual number of publications has stood between 11 and 38.

Although the number of articles grew consistently, article characteristics varied considerably over the period (Figure 3).

With regard to article type (A), most of the articles were open-topic, followed by original articles (which according to the Journal comprise empirical works). The latter were prominent mainly between 2004-2010 (37) and 2016-2019 (25). The total numbers of thematic articles do not coincide exactly with the publication of thematic issues on the field (2008 and 2017). The number of reviews was small and the number of articles in the other categories was relatively insignificant. The debate articles were published in the years in which the thematic issues were published.

The large majority of works were published in Portuguese (B). The number of articles written in English or both Portuguese and English was greater in the period 2016-2019. The type of institution of origin (C) that contributed most to the theme was public universities (141), across all years, followed by the Oswaldo Cruz Foundation (48) or Fiocruz (acronym in Portuguese). The annual number of articles produced by these types of institutions grew steadily throughout the period, while the number produced by private universities (35) and foreign institutions (10) fell. Brazil's National Health Surveillance Agency, ANVISA, published articles in the periods 2004-2010 (6) and 2011-2015 (1).

The majority of the lead authors were from the Southeast Region, followed by the South, Northeast, Center-West, North regions, and outside Brazil. The annual number of articles from authors from the Southeast Region grew throughout the period, while the number produced by authors from the other regions remained stable. Authors from the North Region and outside Brazil made only a modest contribution to the theme over the study period, showing a decrease in publications in the last period (2016-2019), and promoting an increase in publications by these authors remains a challenge.

An initial analysis of the themes addressed by the articles was conducted based on the keywords. The 260 selected articles contained 909 key words. Duplicate words were eliminated, resulting in 550 words, 406 of which (74%) appeared only once. The 10 most frequent key

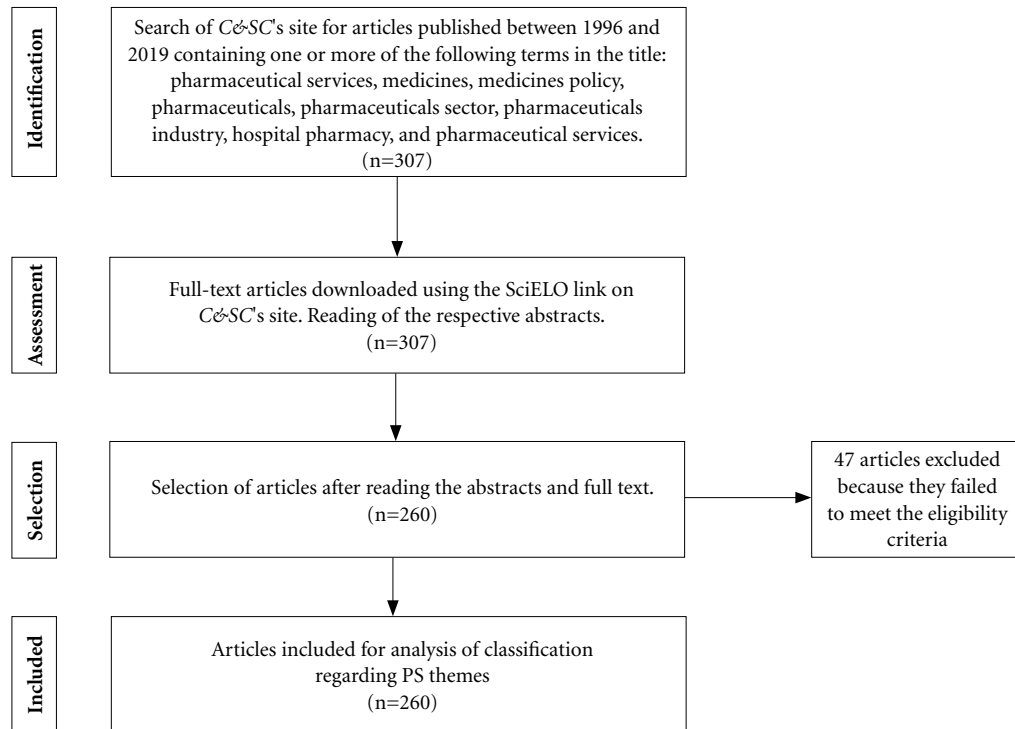


Figure 1. Flow diagram of the selection of articles addressing themes in the field of Pharmaceutical Services (PS) published in the *Journal Ciência & Saúde Coletiva* between 1996 and 2019. C&SC, 2020.

Source: Authors, 2020.

words were descriptors: *assistência farmacêutica* or pharmaceutical services (38), *medicamento* or medication (a synonym of the descriptor '*preparações farmacêuticas*' or pharmaceutical preparations) (35), *uso de medicamentos* or medicine use (23), *sistema único de saúde* or unified health system (20), *atenção primária em saúde* or primary health care (18), *farmacoepidemiologia* or pharmacoepidemiology (17), *vigilância sanitária* or health surveillance (13), and *idoso* or the elderly (12).

Figure 4 shows the trends in the primary themes based on the conceptual framework for PS in Brazil described in the literature⁷⁻⁹.

Figure 5 shows the percentage distribution of the primary themes in the four time-blocks covered by this study. Medicine utilization was consistently the most frequent core theme throughout the period, with 161 articles, followed by

management, with 56 articles, and tangential aspects of the PM cycle, addressed by 43 articles.

The range of secondary themes increased steadily over the period, as demonstrated by Figure 5, which shows the secondary themes under each primary theme.

Figure 5 shows that the scope of the publications became increasingly complex over the study period, with the introduction of multiple secondary themes. The primary theme that showed the widest range of secondary themes was medicine utilization (A), starting with a relatively lower number in the period 1996-2003, but increasing thereafter.

In the primary theme management (B), articles initially concentrated mainly on the secondary theme medicines policy, with the emergence of several new themes thereafter, such as public provision, public procurement, technology as-

Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. C&SC, 2020.

| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|----------|---|-----------------------|---|-------------------|
| 1 | 1999 | POR | SP | Noto, AR | Use and prevention of psychotropic drugs in Brazil | Review |
| 2 | 1999 | POR | MS | Castro, LLC | Pharmacoepidemiology in Brazil: evolution and prospects | Opinion |
| 3 | 2002 | POR | PE | Barros, JAC | Drug advertisements in medical journals: promoting good prescription? | Original Research |
| 4 | 2003 | POR | SC | Leite, SN | Adherence to prescribed therapy: points for concepts and presuppositions discussion | Review |
| 5 | 2003 | POR | RJ | Silva, LK | Technology assessment and cost-effectiveness analysis in health care: the adoption of technologies and the development of clinical guidelines for the Brazilian national system | Original Research |
| 6 | 2004 | POR | SP | Pereira, LRL | Evaluation of using medicines in elderly subjects through the concepts of pharmacovigilance and pharmacoepidemiology | Free Theme |
| 7 | 2004 | POR | RJ | Osorio-de-Castro, CGS | The use of drugs in pregnancy | Free Theme |
| 8 | 2005 | POR | RJ | Nascimento, MC | Drugs, communication, and culture | Original Research |
| 9 | 2005 | POR | SP | Secoli, SR | Pharmacoeconomics: resultant perspective of decisions process | Original Research |
| 10 | 2007 | POR | DF | Fagundes, MJD | Bioethical analysis of drugs advertisement and publicity | Free Theme |
| 11 | 2007 | POR | PR | Melo, EB | Description of attempts to obtain approval for selling medications at ordinary Brazilian establishments after the introduction of the Real Economic Stabilization Plan | Opinion |
| 12 | 2007 | POR | RJ | Neves, BG | Perceptions and attitudes among parents and guardians on the use of pediatric medicines and their cariogenic and erosive potential | Original Research |
| 13 | 2008 | POR | DF | Bortolon, PC | Analysis of the self-medication pattern among Brazilian elderly women | Original Research |
| 14 | 2008 | POR | RJ | Costa-Couto, MH | Asymmetry in international relations, industrial property rights and anti-HIV medications | Original Research |
| 15 | 2008 | POR | MG | Abrantes, PM | The quality of antibiotics prescription in public health services of Belo Horizonte, MG | Original Research |
| 16 | 2008 | POR | RJ | Alves, NDC | Assessment of the technical adequacy of phytotherapeutics and officinal medicine manufacturers in the State of Rio de Janeiro | Original Research |
| 17 | 2008 | POR | MG | Angonesi, D | Pharmaceutical dispensing: an analysis of different concepts and models | Original Research |
| 18 | 2008 | POR | PE | Aquino, DS | Why rational drug use must be a priority? | Original Research |
| 19 | 2008 | POR | MG | Araújo, ALA | Pharmacist care in the Brazilian Primary Health Care System | Original Research |
| 20 | 2008 | SPN | MG | Barros, JAC | New tendencies in medicalization | Original Research |
| 21 | 2008 | POR | RJ | Rozenfeld, S | The pharmacist: health professional and citizen | Debate |
| 22 | 2008 | POR | MG | Barros, JAC | Comments on the text "The pharmacist: health professional and citizen" | Debate |

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| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|----------|---|-----------------------|---|-------------------|
| 23 | 2008 | POR | SP | Bergsten-Mendes, G | Rational use of medicines: the pivotal role of the pharmacist | Debate |
| 24 | 2008 | POR | RJ | Osorio-de-Castro, CGS | Accountability makes pharmacists responsible health professionals and citizens | Debate |
| 25 | 2008 | POR | RJ | Elda Falqueto, E | Management of residues deriving from the manufacture and distribution of Diazepam in the city of São Mateus, ES | Original Research |
| 26 | 2008 | POR | SP | Fleith, VD | Pattern of medicine consumption among users of the primary health care services in Lorena, SP | Original Research |
| 27 | 2008 | POR | SP | Huertas, MKZ | Rational and emotional appeals in prescription drug advertising: study of a weight loss drug | Original Research |
| 28 | 2008 | POR | SC | Kulkamp, IC | The perception of health professionals about pain management and opioid use: a qualitative study | Original Research |
| 29 | 2008 | POR | DF | Mota, DM | Rational drug use: an economic approach to decision making | Original Research |
| 30 | 2008 | POR | SP | Nicolini, P | Factors related to prescriptions of antibiotics in a public pharmacy in the Western region of the city of São Paulo | Original Research |
| 31 | 2008 | POR | RJ | Cristiane Quental, C | Generic drugs in Brazil: impacts of public policies upon the national industry | Original Research |
| 32 | 2008 | POR | DF | Reis, AMM | Drug shortage: determinants, consequences and management | Original Research |
| 33 | 2008 | POR | DF | Carvalho, PB | Labeling of vitamin and mineral supplements: a revision of the federal normative regulations | Review |
| 34 | 2008 | POR | SC | Leite, SN | Drug utilization studies: a synthesis of articles published in Brazil and Latin America | Review |
| 35 | 2008 | POR | RJ | Loyola, MA | Drugs, health policy and AIDS: changes in a dependent policy | Review |
| 36 | 2008 | POR | RS | Rocha, CH | Medication adherence of elderly in Porto Alegre, RS | Original Research |
| 37 | 2008 | POR | PE | Silva, RA | Factors associated with self-medication for toothache: analysis using pharmacy personnel in the city of Recife, PE | Original Research |
| 38 | 2008 | POR | RJ | Soares, JCRS | "When the ad is good, the product is sold." The MonitorAÇÃO Project and drug advertising in Brazil | Original Research |
| 39 | 2008 | POR | RS | Vitor, RS | Pattern of drug consumption without medical prescription in the city of Porto Alegre, RS | Original Research |
| 40 | 2008 | ENG/POR | RJ | Rozenfeld, S | Medicines, professionals and health care services | Editorial |
| 41 | 2008 | POR | MT | Reiners, AAO | Bibliographic production about adherence/non-adherence to therapy | Review |
| 42 | 2009 | ENG/POR | RJ | Nascimento, AC | Medication advertising in Brazil. Can it be regulated? | Original Research |
| 43 | 2009 | ENG | RJ | Emmerick, ICM | Pharmaceutical services evaluation in Brazil: broadening the results of a WHO methodology | Free Theme |
| 44 | 2010 | POR | DF | Polejack, L | Monitoring and evaluation of adherence to ARV treatment for HIV/aids: challenges and possibilities | Original Research |
| 45 | 2010 | POR | RS | Rodrigues, FA | The profile of antimicrobial utilization in a private hospital | Original Research |
| 46 | 2010 | POR | CE | Torres, DVM | Enfuvirtide in the treatment of AIDS patient: the turning point | Free Theme |

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| Num-ber | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|---------|------|----------|---|----------------|--|-------------------|
| 47 | 2010 | POR | RJ | Falqueto, E | How to do the correct discard of medicine residues? | Free Theme |
| 48 | 2010 | POR | MG | Angonesi, D | Pharmaceutical Care: conceptual and critical basis to a Brazilian model | Free Theme |
| 49 | 2010 | POR | RJ | Bastos, CRG | The pharmacist's perceptions about their job at communitarian pharmacies of the state of Rio de Janeiro | Free Theme |
| 50 | 2010 | POR | SP | Cintra, FA | Medicine adeshion in elderly people in an ambulatorial attendance | Free Theme |
| 51 | 2010 | POR | DF | Gava, CM | New medicines registered in Brazil: can they be considered as a therapeutic advance? | Original Research |
| 52 | 2010 | POR | PR | Knappmann, AL | Quality of over-the-counter medicines: a study with dipyrone brands commercialized in a drugstore in Cascavel city (Paraná, Brazil) | Free Theme |
| 53 | 2010 | POR | RJ | Lago, RF | Policy dilemmas in providing antiretroviral treatment in Brazil | Free Theme |
| 54 | 2010 | POR | PI | Lima, GB | The use of medicines stored in the household in a population assisted by Family Health Program | Free Theme |
| 55 | 2010 | POR | SE | Lyra, DPJ | The influence of the advertising in the medication use in a group of elderly attended in a primary health care unit in Aracaju (Sergipe, Brasil) | Free Theme |
| 56 | 2010 | POR | RJ | Nascimento, AC | Drug advertising to the general public: conceptual parameters of a risk producer practice | Original Research |
| 57 | 2010 | POR | BA | Oliveira, LCF | Pharmaceutical Assistance in the Basic Units of Health: from the National Drug Policy to the Basic Attention to Health | Free Theme |
| 58 | 2010 | POR | SC | Pereira, JR | Situation of lawsuits concerning the access to medical products by the Health Department of Santa Catarina State, Brazil, during the years 2003 and 2004 | Free Theme |
| 59 | 2010 | POR | PB | Portela, AS | Medical prescriptions: adequate orientation to medicine use? | Free Theme |
| 60 | 2010 | POR | PA | Sebastião, PCA | The different point of view about the sanitary control of importation of psychotropic substances in Brazil | Original Research |
| 61 | 2010 | POR | RJ | Silva, ACP | Challenges to the national network of sanitary surveillance laboratories: the case of manipulated drugs | Original Research |
| 62 | 2010 | POR | RS | Souza, MV | High cost drugs for rare diseases in Brazil: the case of lysosomal storage disorders | Review |
| 63 | 2010 | POR | SC | Trevisol, DJ | Drug advertisement in a medicine school in the Southern of Brazil | Free Theme |
| 64 | 2010 | POR | DF | Mota, DM | Use abusive of benzydamine in Brazil: an overview in pharmacovigilan | Original Research |
| 65 | 2010 | POR | PE | Aquino, DS | Self-medication and health academic staff | Free Theme |
| 66 | 2010 | POR | RJ | Pepe, VLE | Health litigation and new challenges in the management of pharmaceutical services | Original Research |
| 67 | 2010 | POR | SC | Galato, D | Study of the use of medicine in elderly living in a city in the South of Santa Catarina (Brazil): a look at the polymedication | Free Theme |

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|--------|------|----------|---|-------------------|---|---------------------|
| 68 | 2010 | POR | SE | Lyra, DPJ | Medication leaflets used by elderly with hypertension: adequacy of information for sanitary regulation and possible implications for health | Original Research |
| 69 | 2010 | POR | SP | Carvalho, VAP | Knowledge level for prescription of nonsteroidal anti-inflammatory by dentists in São José dos Campos, São Paulo State, Brazil | Original Research |
| 70 | 2010 | POR | DF | Naves, JOS | Self-medication: a qualitative approach of its motivations | Original Research |
| 71 | 2010 | POR | DF | Leite, SN | What right? Trajectories and perceptions of users in relation to the process of access to medication by legal writ in Santa Catarina State | Original Research |
| 72 | 2011 | POR | RS | Rosa, C | Representations and use intention of phytoterapy in primary health care | Free Theme |
| 73 | 2011 | ENG | RJ | Esher, A | Logic models from an evaluability assessment of pharmaceutical services for people living with HIV/AIDS | Free Theme |
| 74 | 2011 | POR | RS | Frohlich, SE | Are the drug prescription quality indicators of the World Health Organization still valid? | Free Theme |
| 75 | 2011 | POR | MG | Saturnino, LTM | Rural Internship in the professional training of pharmacists to serve in the Brazilian Unified Health System | Free Theme |
| 76 | 2011 | POR | RS | Brum, LFS | Prescribed and unprescribed drug use among pregnant patients attended by the Unified Health System in Santa Rosa (State of Rio Grande do Sul, Brazil) | Thematic Supplement |
| 77 | 2011 | POR | MG | Gomes, PD | Hormonal contraception: a comparison between patients of the private and public health network | Thematic Supplement |
| 78 | 2011 | POR | MG | Melo, CM | The use of appetite inhibitors by women: an insight based on the gender perspective | Thematic Supplement |
| 79 | 2011 | POR | RJ | Paula, PAB | The use of medication in the perception of users Hiperdia Program | Free Theme |
| 80 | 2011 | SPN | ESP | Iñesta, A | The pharmaceutical industry and the sustainability of healthcare systems in developed countries and in Latin America | Thematic Supplement |
| 81 | 2011 | POR | RJ | Santos-Pinto, CDB | The "Farmácia Popular do Brasil" Program and aspects of public provision of medicines in Brazil | Free Theme |
| 82 | 2011 | POR | DF | Medeiros, EFF | An interdisciplinary intervention as a strategy for Rational Use of Drugs by the elderly | Thematic Supplement |
| 83 | 2011 | POR | SC | Oenning, D | Patient awareness about drugs prescribed after medical appointment and prescription | Free Theme |
| 84 | 2011 | POR | RJ | Rocha, DR | Trangenics - Plant-Based Drugs (PBD) | Free Theme |
| 85 | 2011 | POR | BA | Bastos, AA | Facilitating factors and difficulties in the the implementation of sanitary surveillance of drugstores in Salvador, state of Bahia, Brazil | Free Theme |
| 86 | 2011 | POR | MG | Daniela, A | Dispensation of pharmaceuticals: proposal of a model for dispensation | Free Theme |

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| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|----------|---|-----------------------|--|---------------------|
| 87 | 2011 | POR | PB | Sá, LD | Implementation of the DOTS strategy in the control of TB in Paraíba: between the political commitment and the involvement of the teams of the family health program (1999-2004) | Free Theme |
| 88 | 2011 | POR | BA | Alencar, TOS | Pharmaceutical Assistance in the Family Healthcare Program: points of affinity and discord in the organization process | Free Theme |
| 89 | 2011 | POR | RN | Araújo, PTB | Evaluation of quality medication prescription of a teaching hospital | Free Theme |
| 90 | 2011 | POR | RJ | Santana, RAL | National poison information system: the challenge of the data standardization | Free Theme |
| 91 | 2011 | POR | RS | Costa, SM | Knowledge of clients who suffer of pulmonary tuberculosis and their family members concerning the adherence of the treatment and associated factors in Rio Grande, Rio Grande do Sul State | Free Theme |
| 92 | 2011 | POR | RJ | Osorio-de-Castro, CGS | Uncomplicated malaria treatment in the Brazilian Amazon: knowledge, practices and perceptions of health workers in high-incidence municipalities. | Free Theme |
| 93 | 2011 | POR | PR | Vosgerau, MZS | Consumption of medicines by adults within an area covered by a family health unit | Free Theme |
| 94 | 2011 | POR | CE | Silva, IM | Self-medication in adolescence: a challenge to health education | Free Theme |
| 95 | 2012 | POR | DF | Mota, DM | Profile of mortality by intoxication with medication in Brazil, 1996-2005: portrait of a decade | Thematic Supplement |
| 96 | 2012 | POR | SC | Blatt, CR | General awareness and use of generic medication among citizens of Tubarão, state of Santa Catarina, Brazil | Thematic Supplement |
| 97 | 2012 | POR | MG | Firmino, KF | Use of benzodiazepines in local public health services in Coronel Fabriciano in the State of Minas Gerais | Thematic Supplement |
| 98 | 2012 | POR | RJ | Esher, A | Building Evaluation Criteria: experts and user satisfaction with pharmaceutical delivery services for HIV/Aids | Thematic Supplement |
| 99 | 2012 | ENG/POR | RS | Rohden, F | Accessed through sex: the medicalization of male sexuality at two different moments | Thematic Supplement |
| 100 | 2012 | POR | PR | Bruning, MCR | The use of phytotherapy and medicinal plants in primary healthcare units in the cities of Cascavel and Foz do Iguaçu – Paraná: the viewpoint of health professionals | Opinion |
| 101 | 2012 | POR | RS | Junior, DS | Court-ordered access to treatment of rare genetic diseases: Fabry Disease in the state of Rio Grande do Sul, Brazil | Free Theme |
| 102 | 2012 | POR | RS | Guerin, GD | Therapeutic itineraries of users of medication in a unit of the Family Health Strategy | Free Theme |
| 103 | 2012 | POR | SC | Galato, D | Self-medication among university students: the influence of the field of study | Free Theme |
| 104 | 2012 | POR | MG | Martins, ELM | Prescriptions for anorectic psychotropic drugs in the municipality of Juiz de Fora, Minas Gerais, Brazil | Free Theme |

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Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. C&SC, 2020.

| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|----------|---|--------------------|---|---------------------|
| 105 | 2012 | POR | RS | Bianchin, MD | Evaluation of the quality of propranolol and enalapril tablets supplied in the public health system in a southern Brazilian city | Free Theme |
| 106 | 2012 | POR | MG | Luz, TCB | Use of medication among hospital workers | Free Theme |
| 107 | 2012 | POR | SC | Alano, GM | Indicators of the pharmaceutical care service at the University of Southern Santa Catarina | Free Theme |
| 108 | 2012 | SPN | ARG | Colautti, MA | People living with HIV/AIDS and their link with the antiretrovirals provided by the National Programme in Argentina | Thematic Supplement |
| 109 | 2012 | POR | SC | Dandolini, BW | Rational use of antibiotics: an experiment for the health education of schoolchildren | Free Theme |
| 110 | 2012 | POR | RJ | Corrêa, MCDV | Abortion and misoprostol: health practices and scientific controversy | Thematic Supplement |
| 111 | 2012 | POR | DF | Diniz, D | Cytotec and abortion: the police, the vendors and women | Thematic Supplement |
| 112 | 2012 | POR | PI | Carvalho, ALM | Adherence to Drug Treatment among registered users in the "HIPERDIA" Program in Teresina in the State of Piauí | Free Theme |
| 113 | 2012 | POR | RJ | Lima-Dellamora, EC | Dispensing specialized component medicines in areas of the State of Rio de Janeiro | Free Theme |
| 114 | 2012 | POR | SC | Alano, GM | Awareness, consumption and access to emergency contraception among female university students in the south of the State of Santa Catarina | Free Theme |
| 115 | 2012 | POR | RJ | Brito, MA | Medicalization of Life: Ethics, Public Health and Pharmaceutical Industry | Review |
| 116 | 2013 | POR | SP | Campos, RTO | Autonomous Medication Management: an analytical intervention in mental health care services | Thematic Supplement |
| 117 | 2013 | POR | GO | Braoios, A | The use of antimicrobial drugs by the population in the city of Jataí, State of Goiás, Brazil | Free Theme |
| 118 | 2013 | ENG | PR | Guidoni, CM | Analysis of treatment of comorbidities and the profile of medical consultations for diabetes mellitus | Free Theme |
| 119 | 2013 | POR | RJ | Corrêa, AD | An approach regarding the use of medication in biology textbooks as a strategy for health promotion | Free Theme |
| 120 | 2013 | POR | MG | Sousa, CV | Analysis of the decision to buy medicine in light of the existence of generic products: a study in the city of Belo Horizonte, Brazil | Free Theme |
| 121 | 2013 | ENG | RJ | Paumgarten, FJR | Clinical use and control on thalidomide dispensing in Brasilia-DF, Brazil, from 2001 to 2012 | Free Theme |
| 122 | 2013 | POR | RS | Rocha BS | Psychotropic drugs in the Family Health Strategy: profile of use, access and strategies to promote rational use | Free Theme |
| 123 | 2013 | POR | RJ | Silva, MJS | An evaluation of the services of state hospital pharmacies in Rio de Janeiro, Brazil | Free Theme |
| 124 | 2013 | POR | RS | Moraes, CG | Drug use among children between zero and six years old: a population baseline study in the south of Brazil | Free Theme |
| 125 | 2013 | POR | SP | Ferreira, TR | Analgesics, antipyretics and non-steroidal anti-inflammatory drugs in pediatric prescriptions | Free Theme |

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Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. C&SC, 2020.

| Num-ber | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|---------|------|----------|---|-----------------|---|---------------------|
| 126 | 2013 | ENG | MG | Luz, TCB | Social capital and under-utilization of medication for financial reasons among elderly women: evidence from two Brazilian health surveys | Free Theme |
| 127 | 2013 | POR | ESP and BRA | Rubio, JS | Cross-cultural adaptation to the European Portuguese of the questionnaire "Patient Knowledge about their Medications" (CPM-ES-ES) | Free Theme |
| 128 | 2013 | POR | SC | Cruzeta, APS | Factors associated with the understanding of medical prescriptions in the Unified Health System in a city in southern Brazil | Free Theme |
| 129 | 2013 | POR | RN | Batista, AM | Evaluation of medication advertising broadcast on radio stations | Free Theme |
| 130 | 2013 | POR | RJ | Itaborahy, C | Methylphenidate in Brazil: a decade of publications | Free Theme |
| 131 | 2013 | POR | RJ | Nobre, PFS | Off-label prescriptions in Brazil and in the US: legal aspects and paradoxes | Free Theme |
| 132 | 2013 | POR | SP | Marchi, KC | Adherence to medication among patients with Parkinson's disease treated at a specialized outpatient unit | Free Theme |
| 133 | 2013 | POR | RJ | Falqueto, E | Guidelines for an Expired Medication Collection Program in Brazil | Free Theme |
| 134 | 2013 | POR | DF | Oliveira, MPF | The socio-economic, epidemiological and pharmacotherapeutic profile of institutionalized elderly individuals in Brasilia, Brazil | Free Theme |
| 135 | 2013 | POR | DF | Medeiros, M | The thesis of judicialization of health care by the elites: medication for mucopolysaccharidosis | Free Theme |
| 136 | 2013 | POR | SP | Souza, ARL | Contexts and patterns of undue use benzodiazepine among women | Free Theme |
| 137 | 2013 | POR | SP | Takitane, J | Amphetamine use by truck drivers on highways of Sao Paulo State: a risk for the occurrence of traffic accidents? | Thematic Supplement |
| 138 | 2013 | POR | PR | Giroto, E | Adherence to pharmacological and non pharmacological treatment for arterial hypertension and associated factors in primary care | Free Theme |
| 139 | 2013 | POR | RS | Motter, FR | Knowledge about pharmacotherapy among hypertensive patients | Free Theme |
| 140 | 2013 | POR | PI | Fontenele, RP | Phytotherapy in Primary Health Care: perspectives of managers and professionals in the Family Health Program of Teresina, Piauí, Brazil | Free Theme |
| 141 | 2013 | SPN | ARG | Alonso, JP | Palliative care: between humanization and medicalization at the end of life | Free Theme |
| 142 | 2014 | POR | BA | Leão, DFL | Evaluation of potential drug interactions in primary health care prescriptions in Vitória da Conquista, Bahia (Brazil) | Free Theme |
| 143 | 2014 | ENG | SP | Francisco, PMSB | The use of medication and associated factors among adults living in Campinas, São Paulo, Brazil: differences between men and women | Free Theme |
| 144 | 2014 | POR | RJ | Lima, MAFD | Contradictions of public health policies geared to rare disorders: the example of the Osteogenesis Imperfecta Treatment Program in the Brazilian Unified Health System (SUS). | Opinion |

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Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. *C&SC*, 2020.

| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|-------------|---|---------------------|---|---------------------|
| 145 | 2014 | POR | RJ | Pádula, M | Pharmaceutical care and suspended attention: compromise-formations between pharmacy and psychoanalysis | Free Theme |
| 146 | 2014 | SPN | ESP and BRA | Rubio, JS | Validation of the Portuguese version of an instrument to measure the degree of patient knowledge about their medication. | Free Theme |
| 147 | 2014 | POR | PR | Takahama, CH | Profile of exposure to medication among women of reproductive age attended in a Toxicological Information Center. | Free Theme |
| 148 | 2014 | POR | RS | Mota, DM | Are there irrationalities in the consumption of anti-obesity drugs in Brazil? A pharmaco-econometric analysis of panel datasets | Free Theme |
| 149 | 2014 | POR | RJ | Mendes, LVP | Rational use of medicines by individuals with diabetes mellitus and arterial hypertension in the municipality of Rio de Janeiro, Brazil | Free Theme |
| 150 | 2014 | POR | SP | Ribeiro, AG | Antidepressants: use, adherence and awareness among medical students | Free Theme |
| 151 | 2014 | POR | PE | Procopio, EVP | Social representation of sexual violence and its relationship with the adherence to the chemoprophylaxis protocol of HIV in young women and adolescents | Free Theme |
| 152 | 2014 | POR | RJ | Batista, AJS | The challenges of nanotechnology for the sanitary vigilance of medication | Free Theme |
| 153 | 2014 | POR | BA | Silva, TO | Disposal of drugs: an analysis of the practices in the family health program | Free Theme |
| 154 | 2014 | POR | PA | Cuentro, VS | Drug prescriptions of patients treated in a geriatric outpatient ward of a university hospital: a descriptive cross-sectional study | Original Research |
| 155 | 2014 | POR | RJ | Souza, PP | Preparedness of pharmaceutical assistance for disasters: a study in five Brazilian municipalities | Thematic Supplement |
| 156 | 2014 | POR | RJ | Magarinos-Torres, R | Essential medicines and the selection process in management practices of pharmaceutical services in Brazilian states and municipalities | Free Theme |
| 157 | 2015 | ENG/SPN/POR | ESP/PORT | Rubio, JS | Measurement of patients' knowledge of their medication in community pharmacies in Portugal | Free Theme |
| 158 | 2015 | ENG/POR | RJ | Silva, RM | "Farmácia Popular do Brasil" Program: characterization and evolution between 2004 and 2012 | Original Research |
| 159 | 2015 | POR | DF | Soares, K | Bioequivalence of dermatological topical medicines: the Brazilian scenario and the challenges for health surveillance | Free Theme |
| 160 | 2015 | ENG | MG | Vicente, ART | Uso de antidepressivos e fatores associados em idosos: o Projeto Bambuí | Original Research |
| 161 | 2015 | POR | RJ | Costa, RDF | The acquisition of medication to treat Alzheimer's disease in Brazil: an analysis of federal purchases, 2008-2013 | Original Research |
| 162 | 2015 | ENG/POR | MG | Botelho, SF | Pharmacovigilance risk mitigation plans: action in public health to promote the safe use of medication | Free Theme |

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Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. C&SC, 2020.

| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|----------|---|---------------|--|---------------------|
| 163 | 2015 | POR | SP | Zanella, CG | The role of the pharmacist in dispensing medication in Adult Psychosocial Care Centers in the city of São Paulo, Capital of the State of São Paulo, Brazil | Original Research |
| 164 | 2015 | ENG/POR | SP | Monteiro, CN | Coverage by the public health services of medication and vaccines for the population with diabetes mellitus | Free Theme |
| 165 | 2015 | ENG/POR | SP | Fonseca, E | Federalism, the Economic-Industrial Health Care Complex and High-Cost Pharmaceutical Assistance in Brazil | Free Theme |
| 166 | 2015 | ENG | RS | Trevisan, LM | Acesso ao tratamento para fenilcetonúria por via judicial no Rio Grande do Sul, Brasil | Free Theme |
| 167 | 2015 | ENG/POR | GO | Costa, SHN | Prevalence of psychotropic drug use in military police units | Free Theme |
| 168 | 2015 | ENG | POR | Pires, C | Brand names of Portuguese medication: understanding the importance of their linguistic structure and regulatory issues | Free Theme |
| 169 | 2015 | POR | CE | Silva, CDC | Por uma filosofia do medicamento | Free Theme |
| 170 | 2016 | POR | RN | Azevedo, AJP | Consumption of anxiolytic benzodiazepines: a correlation between SNGPC data and sociodemographic indicators in Brazilian capitals | Original Research |
| 171 | 2016 | POR | DF | Alexandre, RF | Specialized Pharmaceutical Services Component: federative pact for ensuring the comprehensiveness of drug treatment in the Unified Health System (SUS) | Letter |
| 172 | 2016 | POR | SP | Naloto, DCC | Prescription of benzodiazepines for adults and older adults from a mental health clinic | Free Theme |
| 173 | 2016 | POR | SC | Nakamura, CA | Construction of the work process of the Family Health Support Nucleus: the experience of pharmacists in a city in the south of Brazil | Free Theme |
| 174 | 2016 | ENG/POR | RJ | Silva, RM | Pharmaceutical services in Rio de Janeiro Municipality, Brazil: development regarding selected aspects from 2008 to 2014 | Original Research |
| 175 | 2016 | ENG/POR | MG | Pinto, IVL | An evaluation of elderly people's understanding of pharmacotherapy among those treated in the Primary Healthcare System in Belo Horizonte, Brazil | Original Research |
| 176 | 2016 | ENG/POR | SP | Prado, MAMB | Diabetes in the elderly: drug use and the risk of drug interaction | Original Research |
| 177 | 2016 | ENG/POR | MG | Lopes, LM | Use of potentially inappropriate medications by the elderly at home | Original Research |
| 178 | 2016 | POR | PR | Petris, AJ | Public sector participation in the supply of dyslipidemia medication in a population-based study | Free Theme |
| 179 | 2016 | ENG/POR | PR | Giroto, E | Continued use of drugs and working conditions among truck drivers | Original Research |
| 180 | 2016 | POR | RS | Dresch, AP | Patients' knowledge regarding medication prescribed by dentists in southern Brazil | Free Theme |
| 181 | 2017 | ENG/POR | RJ | Pimentel, A | The brief life of Norplant® in Brazil: controversies and reassemblages between science, society and State | Thematic Supplement |
| 182 | 2017 | ENG/POR | SP | Melo, DP | Pharmacist's contribution to the promotion of access and rational use of essential medicines in SUS | Free Theme |

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Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. *C&SC*, 2020.

| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|-------------|---|-----------------------|--|---------------------|
| 183 | 2017 | ENG/POR | RJ | Bonan, C | Absorption and metabolization of sex hormones and their transformation into contraceptive technologies: the paths taken by medical thought in Brazil | Thematic Supplement |
| 184 | 2017 | ENG/POR | MG | Garcia, MM | Economic evaluation of the Programs Rede Farmacia de Minas do SUS versus Farmacia Popular do Brasil | Free Theme |
| 185 | 2017 | ENG/POR | SP | Melo, DO | Training of pharmacy technicians for dispensing drugs in Primary Health Care | Free Theme |
| 186 | 2017 | POR | SP | Yamauti, SM | The essentiality and rationality of the Brazilian national listing of essential medicines | Free Theme |
| 187 | 2017 | ENG/POR | DF | Araújo, SQ | The organization of pharmaceutical services by 'health region' in Brazil's Unified Health System | Thematic Supplement |
| 188 | 2017 | ENG/POR | MG | Martins, MAP | Cross-cultural Adaptation of the Oral Anticoagulation Knowledge Test to the Brazilian Portuguese | Free Theme |
| 189 | 2017 | ENG/POR | SP | Caccia-Bava, MCGG | Availability of herbal medicines and medicinal plants in the primary health facilities of the state of São Paulo, Southeast Brazil: results from the National Program for Access and Quality Improvement in Primary Care | Free Theme |
| 190 | 2017 | ENG/POR | DF | Santana, RS | The regulation and adoption of health technologies under Brazil's Unified Health System: barriers to access to medicines for diseases of poverty? | Original Research |
| 191 | 2017 | POR | MG | Silva, SN | Pharmaceutical Assistance in Mental Health: a diagnosis of Psychosocial Care Centers | Free Theme |
| 192 | 2017 | ENG/POR | BA | Lisboa, ES | Why do people appeal to the courts for access to medication? The case of insulin analogues in Bahia (Brazil) | Original Research |
| 193 | 2017 | ENG/POR/SPN | RJ | Luiza, VL | Challenges in a product development partnership: a malaria treatment case study | Thematic Supplement |
| 194 | 2017 | ENG/POR/SPN | SP | Fedatto, MS | The AIDS Epidemic and the Mozambican Society of Medicines: an analysis of Brazilian cooperation | Thematic Supplement |
| 195 | 2017 | ENG | RN | Costa, VS | Prescription medication by physiotherapists: a Brazilian view of the United Kingdom, Canada, Australia and New Zealand | Review |
| 196 | 2017 | ENG/POR/SPN | SP | Lima, JHS | Global health and Brazilian foreign policy: the negotiations on innovation and intellectual property | Thematic Supplement |
| 197 | 2017 | ENG/POR | RJ | Hasenclever, L | The Brazilian phytotherapics industry: challenges and opportunities | Original Research |
| 198 | 2017 | ENG/POR | DF | Pontes, MA | Investment of financial resources for the procurement of medicines for primary care in Brazilian municipalities | Original Research |
| 199 | 2017 | ENG/POR | RJ | Osorio-de-Castro, CGS | Pharmaceutical Services: a field under consolidation | Editorial |
| 200 | 2017 | ENG/POR | SC | Rover, MRM | An evaluation of governance capacity of the specialized component of pharmaceutical services in Brazil | Original Research |
| 201 | 2017 | ENG/POR | MG | Barbosa, MM | Infrastructure evaluation of Pharmaceutical Services in the National Health System of Minas Gerais | Original Research |

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Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. C&SC, 2020.

| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|----------|---|------------------|---|---------------------|
| 202 | 2017 | ENG/POR | RJ | Chaves, GC | Public procurement of hepatitis C medicines in Brazil from 2005 to 2015 | Original Research |
| 203 | 2017 | ENG | RJ | Bermudez, JZ | Contemporary challenges on access to medicines: beyond the UNSG High-Level Panel | Debate |
| 204 | 2017 | SPN/POR | SP | Costa, KS | Coordination between pharmaceutical services for integrated pharmacotherapy: the case of Catalonia | Original Research |
| 205 | 2017 | ENG/POR | RJ | Vidal TJ | The lawsuits to antineoplastic drugs: the tip of an iceberg? | Original Research |
| 206 | 2017 | ENG | RJ | Silva, RM | Farmácia Popular Program: pharmaceutical market analysis of antihypertensive acting on the renin-angiotensin system medicines | Original Research |
| 207 | 2017 | ENG/POR | RS | Guttier, MC | Impact of interventions to promote the use of generic drugs: a systematic review | Thematic Supplement |
| 208 | 2017 | ENG/POR | RJ | Caetano, R | Incorporation of new medicines by the National Commission for Incorporation of Technologies, 2012 to June 2016 | Original Research |
| 209 | 2017 | ENG | RJ | Paumgarten, FJR | Nonbioequivalent prescription drug interchangeability, concerns on patient safety and drug market dynamics in Brazil | Original Research |
| 210 | 2017 | ENG/POR | RJ | Mendoza-Ruiz, A | Pan American Health Organization. Concepts, strategies and tools for a national pharmaceutical policy in the Americas. Washington, DC: PAHO, Medicines and Health Technologies Unit | Review |
| 211 | 2017 | ENG | MG | Luz, TCB | Pharmaceutical Services in Primary Health Care: are pharmacists and users on the same page? | Original Research |
| 212 | 2017 | ENG/POR | RJ | Vasconcelos, DMM | National Medicines Policy in retrospective: a review of (almost) 20 years of implementation | Opinion |
| 213 | 2017 | ENG/POR | AM | Gomes, VP | Prevalence of medicine use among Brazilian adults: a systematic review | Review |
| 214 | 2017 | ENG | USA | Abbott, FM | Reflections on the Report of the UN Secretary General's High Level Panel on Access to Medicines | Debate |
| 215 | 2017 | ENG | RJ | Azeredo, TB | Sustainability of ARV provision in developing countries: challenging a framework based on program history | Thematic Supplement |
| 216 | 2017 | ENG/POR | RJ | Esher, A | Rational use of medicines, pharmaceuticalization and uses of methylphenidate | Original Research |
| 217 | 2017 | POR | SC | Zeni, ALB | Use of medicinal plants as home remedies in Primary Health Care in Blumenau – State of Santa Catarina, Brazil | Free Theme |
| 218 | 2017 | ENG/POR | SP | Oliveira, JFM | Medicine poisoning mortality trend by gender and age group, São Paulo State, Brazil, 1996-2012 | Thematic Supplement |
| 219 | 2018 | ENG/POR | MG | Botelho, SF | Analysis of new drugs registered in Brazil in view of the Unified Health System and the disease burden | Free Theme |
| 220 | 2018 | ENG | SP | Okumura, LM | A Glance in Hepatitis C Policy in Brazil: Access and Performance | Letter |
| 221 | 2018 | POR | ES | Bonadiman, RL | Satisfaction levels of users and verification of the knowledge of pharmacists in public pharmacies in the State of Espírito Santo, Brazil | Free Theme |

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Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. C&SC, 2020.

| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|-------|----------|---|----------------|---|---------------------|
| 222 | 2018 | ENG/POR | PE | Borba, AKOT | Factors associated with elderly diabetic adherence to treatment in primary health care | Free Theme |
| 223 | 2018 | ENG | MG | Vicente, ART | Religiousness, social support and the use of antidepressants among the elderly: A population-based study | Free Theme |
| 224 | 2018 | POR | MG | Silva, GD | Profile of spending on the treatment of rheumatoid arthritis for patients of the Unified Health System in the state of Minas Gerais - 2008-2013 | Free Theme |
| 225 | 20118 | POR | RS | Alves, SP | The profile of caregivers to pediatric patients with cystic fibrosis | Original Research |
| 226 | 2018 | ENG | RS | Tramontina, MY | Comorbidities, potentially dangerous and low therapeutic index medications: factors linked to emergency visits | Original Research |
| 227 | 2018 | POR | CE | Costa, AC | Satisfaction of Chagas disease patients attended at a pharmaceutical care service in the State of Ceará, Brazil | Thematic Supplement |
| 228 | 2018 | ENG/POR | RJ | Bermudez, JAZ | Pharmaceutical Services and comprehensiveness 30 years after the advent of Brazil's Unified Health System | Thematic Supplement |
| 229 | 2018 | ENG/POR | ITA | Sachy, M | Pharmaceutical Services in Mozambique: foreign aid in public provision of medicines | Thematic Supplement |
| 230 | 2018 | ENG/POR | RJ | Freitas, PS | Use of health services and medicines by hypertensive and diabetic patients in the municipality of Rio de Janeiro, Brazil | Free Theme |
| 231 | 2018 | ENG/POR | MG | Silva, MRR | Drug utilization and factors associated with polypharmacy in individuals with diabetes mellitus in Minas Gerais, Brazil | Thematic Supplement |
| 232 | 2018 | ENG | MA | Lessa, CCR | Prevalence and factors associated with surfactant use in Brazilian Neonatal Intensive Care Units: A multilevel analysis | Free Theme |
| 233 | 2018 | POR | RS | Mota, DM | Recommendation of ICD-10 codes for surveillance of adverse drug reactions and drug intoxication | Free Theme |
| 234 | 2018 | POR | SC | Martinhalgo, F | ADHD and Ritalin: neuronarratives in a virtual community of Facebook Social Network | Thematic Supplement |
| 235 | 2018 | POR | RS | Mota, DM | Analysis of the digital preference for age in the pharmacovigilance system in Brazil, 2008-2013 | Free Theme |
| 236 | 2018 | POR | RJ | Madruza, LGSL | Aspects related to the use of antiretrovirals in high complexity patients in the state of Rio de Janeiro | Free Theme |
| 237 | 2018 | POR | SC | Mattos, G | Medicinal plants and herbal medicines in Primary Health Care: the perception of the professionals | Free Theme |
| 238 | 2018 | ENG/POR | SP | Nagai, KL | Use of triggers tools to search for adverse drug reactions in the elderly admitted to emergency departments | Free Theme |
| 239 | 2018 | ENG/POR | SC | Leite, SN | Science, Technology and Pharmaceutical Policy on the agenda: contributions from the society to the 16th National Conference on Health | Opinion |
| 240 | 2019 | ENG/POR | MG | Veloso, RCSG | Factors associated with drug interactions in elderly hospitalized in high complexity hospital | Original Research |
| 241 | 2019 | POR | RS | Raminelli, M | Medications in breastfeeding: what evidence is there? | Review |

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Chart 1. Selected articles for analysis of the theoretical-practice field of Pharmaceutical Services in the pages of *Journal Ciência & Saúde Coletiva*, 1996-2019. C&SC, 2020.

| Number | Year | Language | Study site (state or country) or Origin | First author | Title | Journal section |
|--------|------|----------|---|--------------------|---|-------------------|
| 242 | 2019 | ENG | RJ | Silva, MJS | Origin-destination flows in chemotherapy for breast cancer in Brazil: implications for pharmaceutical services | Free Theme |
| 243 | 2019 | POR | SC | Nascimento, DZ | Alternatives for identifying drug interactions among adverse drug reactions in hospital units | Letter |
| 244 | 2019 | POR | GO | Cardoso, BS | The use of phytotherapy during pregnancy: a global overview | Free Theme |
| 245 | 2019 | POR | RJ | Ribeiro, LHL | Analysis of medicinal plant and herbal medicine programs in the Unified Health System (SUS) from the territorial perspective | Original Research |
| 246 | 2019 | ENG | ESP/BRA | Iniesta-Navalón, C | Potential and clinical relevant drug-drug interactions among elderly from nursing homes: a multicentre study in Murcia, Spain | Free Theme |
| 247 | 2019 | ENG/POR | RJ | Lima, SGG | Health technology assessment in Brazil – an international perspective | Free Theme |
| 248 | 2019 | ENG | PR | Muller, EV | Risk factors for cardiovascular disease in HIV/AIDS patients treated with highly active antiretroviral therapy (HAART) in the Central-southern region of the state of Paraná – Brazil | Free Theme |
| 249 | 2019 | ENG/POR | MG | Carvalho, PP | Factors associated with antiretroviral therapy adherence in adults: an integrative review of literature | Original Research |
| 250 | 2019 | ENG/POR | RJ | Zorzanelli, RT | Consumption of the benzodiazepine clonazepam (Rivotril®) in Rio de Janeiro State, Brazil, 2009-2013: an ecological study | Free Theme |
| 251 | 2019 | ENG/POR | PE | Barbosa, VFB | Medicalization and Indigenous Health: An analysis of the consumption of psychotropics by the Xukuru de Cimbres indigenous people | Free Theme |
| 252 | 2019 | POR | RJ | Oliveira, NR | Review of national and international legal and regulatory mechanisms on the management of drugs and the residues thereof | Free Theme |
| 253 | 2019 | ENG/POR | CE | Santos, VF | Use of the telephone for accessing people living with HIV/AIDS to antiretroviral therapy: systematic review | Review |
| 254 | 2019 | POR | SP | Didone, TVN | Validation of the “Conocimiento del Paciente sobre sus Medicamentos” (CPM-ES-ES) questionnaire | Free Theme |
| 255 | 2019 | ENG | SP | Molino, CGRC | Comparison of the methodological quality and transparency of Brazilian practice guidelines | Free Theme |
| 256 | 2019 | ENG/POR | SP | Santimaria, MR | Arterial hypertension diagnostic and drug therapy failure among Brazilian elderly – FIBRA Study | Free Theme |
| 257 | 2019 | ENG/POR | DF | Barberato, LC | The pharmacist in the Brazilian Primary Health Care: insertion under construction | Review |
| 258 | 2019 | ENG | RJ | Paumgarten, FJR | The tale of lenalidomide clinical superiority over thalidomide and regulatory and cost-effectiveness issues | Free Theme |
| 259 | 2019 | POR | RJ | Santos, JS | Potential drug interactions in adults and the elderly in primary health care | Free Theme |
| 260 | 2019 | POR | RJ | Ferreira, DP | Adherence of adolescents with cystic fibrosis to enzyme replacement therapy: associated factors | Free Theme |

Note: Language (ENG: English, POR: Portuguese, SPN: Spanish. Abbreviation according to the Brazilian ISBN Association).

Source: Authors, 2020.

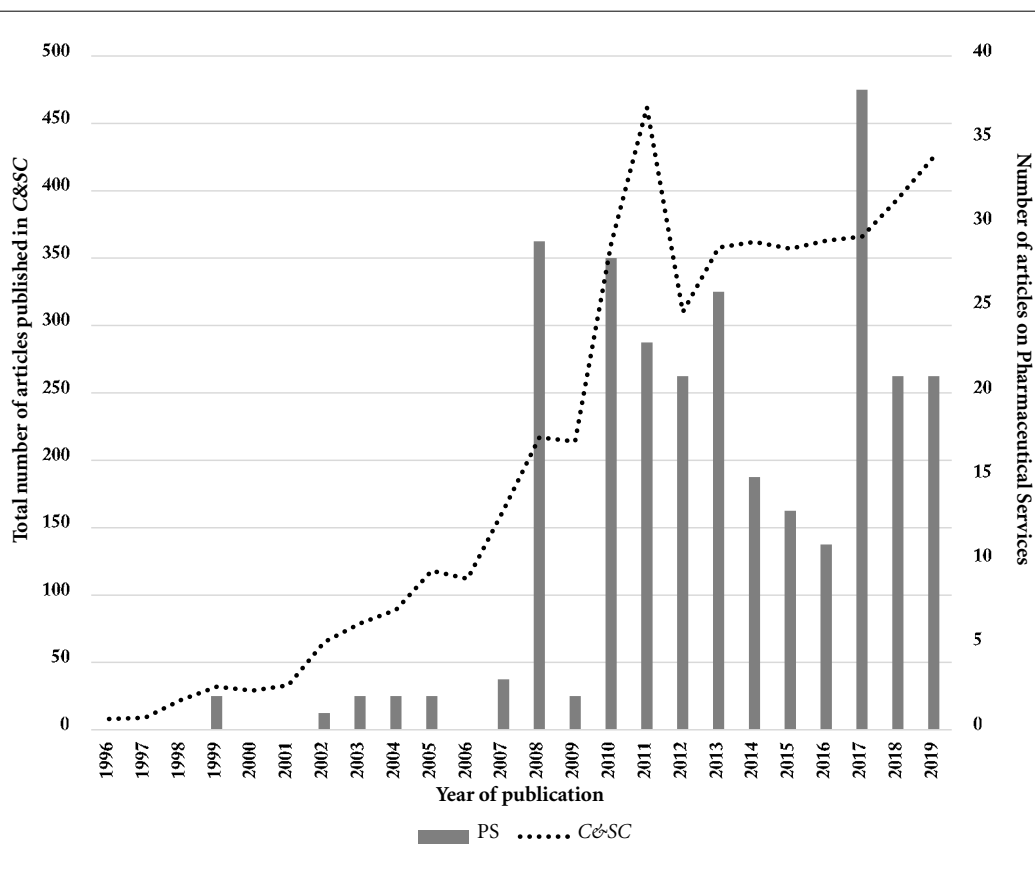


Figure 2. Number of articles addressing themes in the field of pharmaceutical services published in the *Journal Ciência & Saúde Coletiva* between 1996 and 2019. *C&SC*, 2020.

Note: the left side of the graph shows the total number of articles published in *C&SC*, while the right side shows the number of articles on Pharmaceutical Services (PS).

Source: Authors, 2020.

assessment, and PS services. The core theme tangential aspects of the PM cycle (C) encompassed secondary themes related to health regulation across all periods, with the themes global health, registration, technology assessment, and research and development emerging in the last period.

With the classification of the articles into primary themes, secondary themes, and specific topics, it was possible to build the ontology of PS in the pages of the *C&SC* set out in Chart 2.

The chart shows each primary theme together with the dependent secondary themes and specific topics and the frequency of each classification. Two characteristics in particular stand out in the box: first, the same secondary themes and specific topics are present across the different

primary themes, depending on the approach of the study; second, secondary themes also appear as specific topics in cases where they are the object of study. With regard to specific topics, the findings show that the frequency of the generic topic 'frameworks and concepts' decreased over the period, while the frequency of 'the elderly', 'psychotropic drugs', and 'primary health care' increased, becoming prominent topics in the publications. The relatively large number of articles with the secondary theme knowledge about medicines (26 articles), pharmacoepidemiology (26), and medicalization and pharmaceuticalization (18), also warrants highlighting.

The primary themes showed the following number of secondary themes and specific topics,

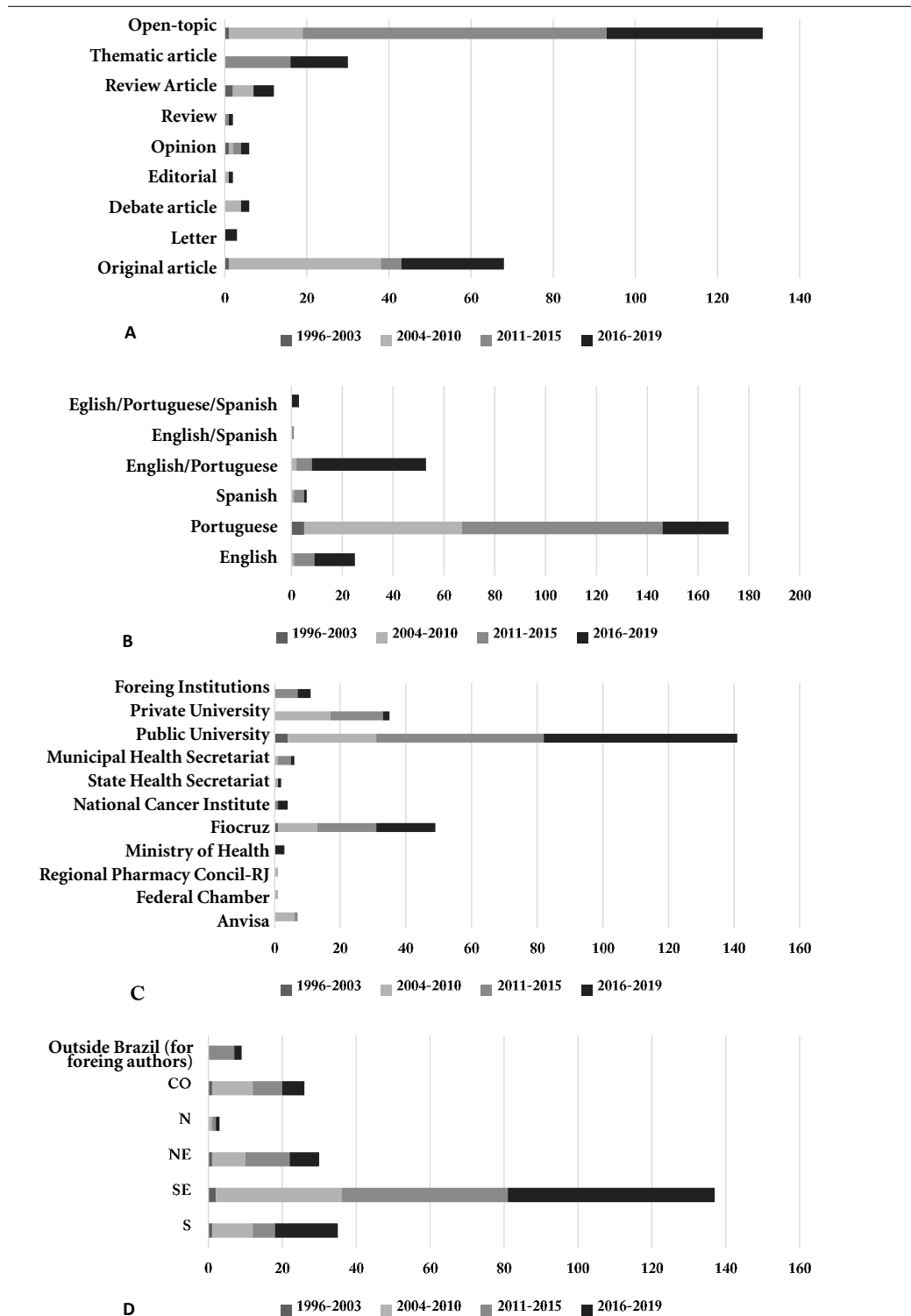


Figure 3. Characteristics of articles addressing themes in the field of pharmaceutical services published in the *Journal Ciência & Saúde Coletiva* between 1996 and 2019 - (A) article type, (B) language, (C) type of institution of origin of the lead author, and (D) lead author's place of origin. C&SC, 2020.

Note: The lead author's place of origin was classified by region in the case of Brazilian authors (South Region (S); Southeast Region (SE); Northeast Region (NE); North Region (N); Center-West Region (CW) or as outside Brazil (for non-Brazilian authors).

Source: Authors, 2020.

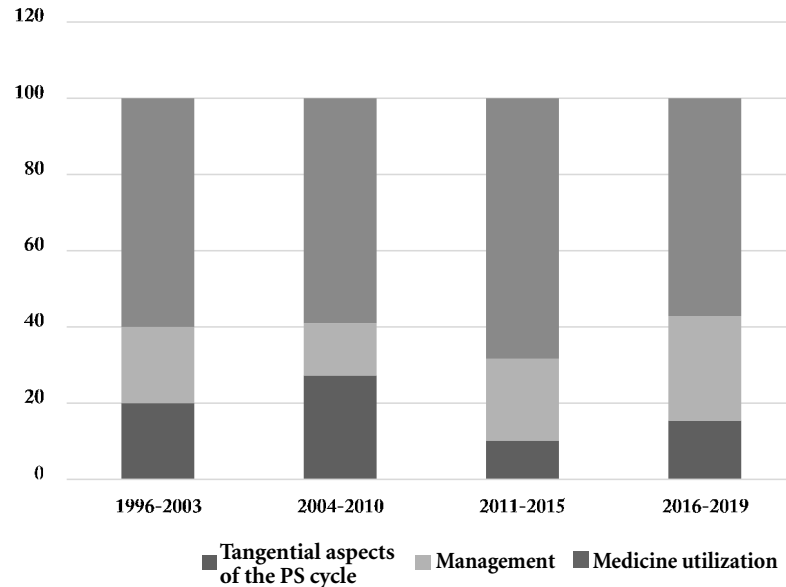


Figure 4. Proportion of articles published in the *Journal Ciência & Saúde Coletiva* between 1996 and 2019 in the field of pharmaceutical services, by primary theme. *C&SC*, 2020.

Source: Authors, 2020.

respectively: tangential aspects of the PM cycle, 10 and 21; management, 18 and 31; and medicine utilization, 24 and 50. The box also shows the interconnection between each primary theme and the secondary themes and specific topics, according to the number of related articles.

Discussion

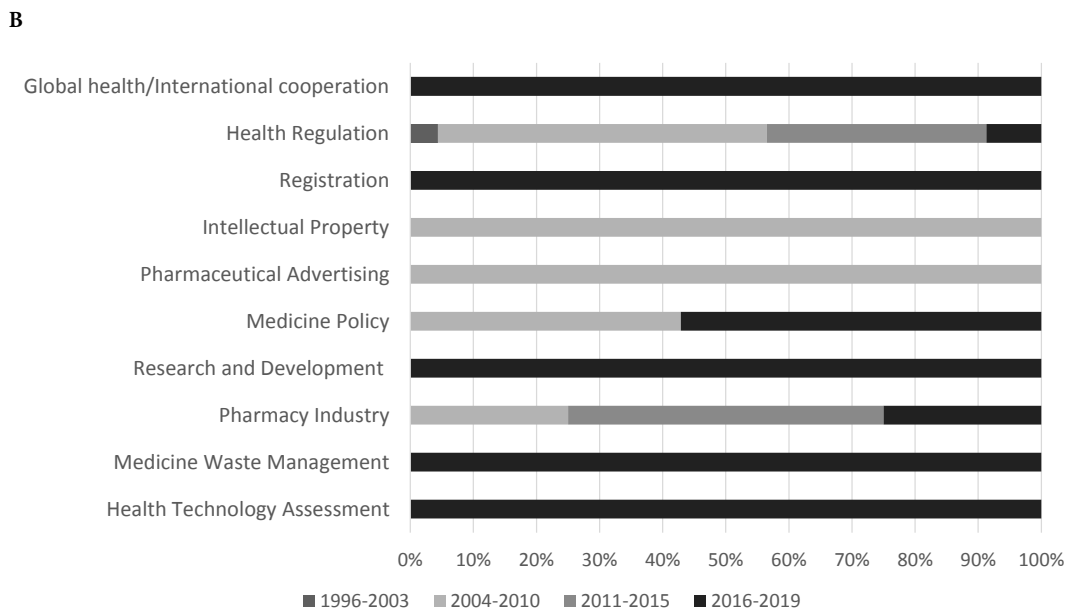
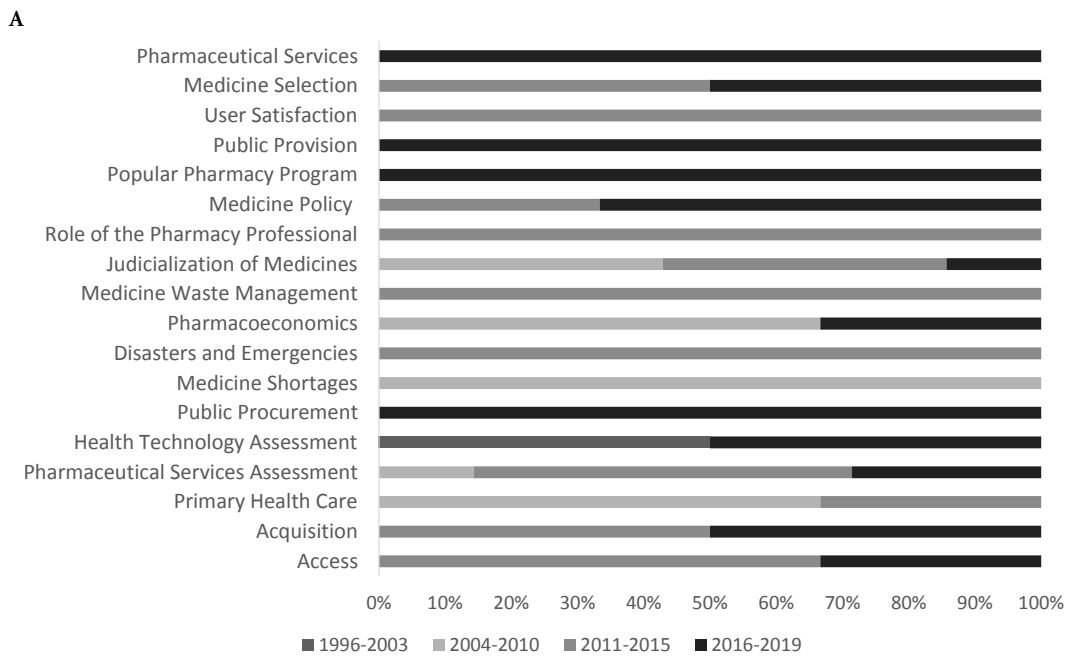
The growth of the theme of PS in the pages of the *C&SC* in recent years is notable. The publication of a thematic issue on medicines in 2008 marked an inflection point for the theme, appearing to have aroused interest in the area among researchers.

A number of journals in the area of Pharmaceutical Sciences reflect biomedical research output – be it laboratory studies, research in the field of pharmacology, or clinical studies. The research output is accompanied by the fact that most post-graduate courses in pharmaceutical sciences are within the pharmacy framework rather than the public health framework^{22,23}.

However, the findings show a growth in studies describing the results of pharmaceuti-

cal services within the theme of drug utilization research (DUR), which reflects the discussions and changes in the field over recent years. The increase in the number of works is to be expected, mainly due to the publication of national curriculum guidelines for pharmacy degrees in 2002 and 2017. These guidelines reinforce that essential content for the training of pharmacy professionals should encompass the health-disease process, focusing on users, their family, and the community, and drawing on the human and social sciences²⁴⁻²⁶.

PS has gained more prominence in the published literature over the years, covering a range of topics, including the development of the SUS^{11,27}, health issues and health spending^{28,29}, the evolution of pharmacoepidemiology^{30,31}, and the discussion of activities and procedures designed to meet the population's health needs^{32,33}. Despite the increasing presence of articles about PS in other national periodicals, journals in the field of public health like the *C&SC* remain focused more on the so-called “social” aspects of the pharmaceutical sciences. It is evident that the *C&SC* is an important vehicle for disseminating the theme, accounting for between 5 and 10% of



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Figure 5A and B. Secondary themes addressed by the articles published in the *Journal Ciência & Saúde Coletiva* between 1996 and 2019 in the field of pharmaceutical services, by primary theme - (A) Management, (B) Tangential aspects of the PS Cycle, and (C) Medicine Utilization. *C&SC*, 2020.

Source: Authors, 2020.

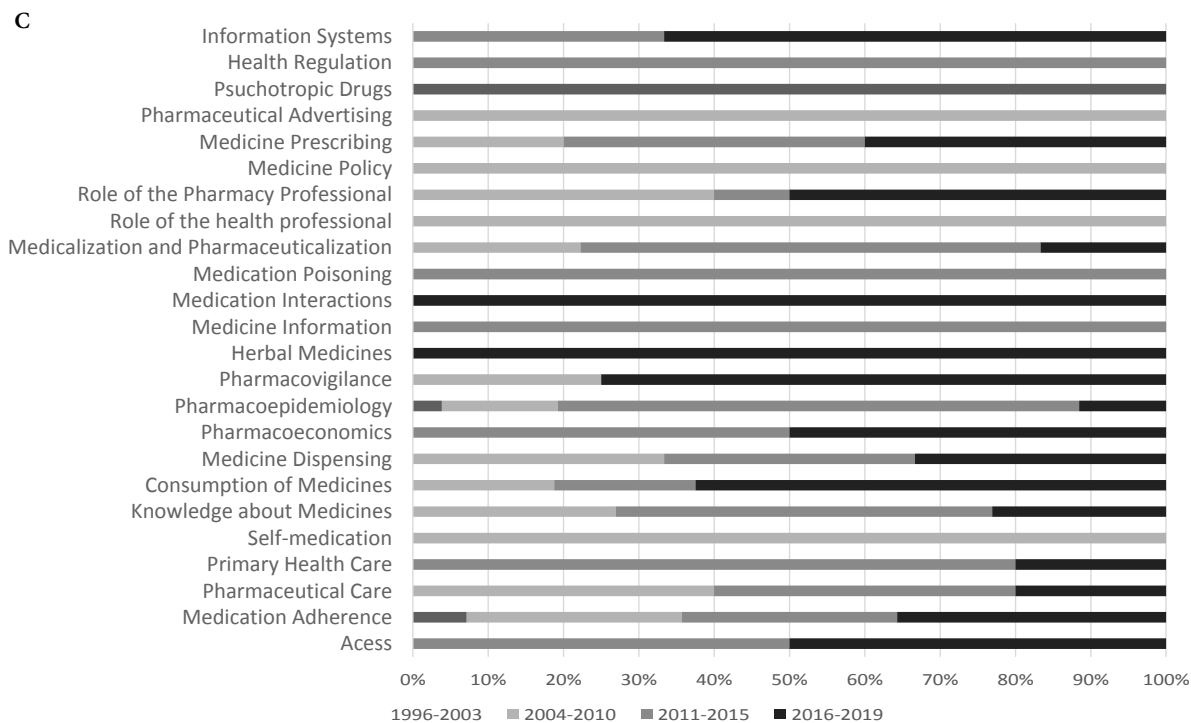


Figure 5C. Secondary themes addressed by the articles published in the *Journal Ciência & Saúde Coletiva* between 1996 and 2019 in the field of pharmaceutical services, by primary theme - (A) Management, (B) Tangential aspects of the PS Cycle, and (C) Medicine Utilization. *C&SC*, 2020.

Source: Authors, 2020.

Chart 2. Ontology of pharmaceutical services in the *Journal Ciência & Saúde Coletiva*, between 1996 and 2019. *C&SC* 2020.

| Primary Theme | Secondary Theme | Specific Topics |
|---|---|---|
| Tangential Aspects of the PS Cycle (43) | Health Technology Assessment (2) | Incorporation of Medicines (2) |
| | Medicine Waste Management (1) | Frameworks and Concepts (1) |
| | Pharmacy Industry (4) | Herbal Medicines (2); Generics (1) Biotechnology (1) |
| | Research and Development (1) | Antimalarial Medicine (1) |
| | Medicine Policy (7) | Antiretroviral Medicines (2); Generics (1); Frameworks and Concepts (2); Global Health (2) |
| | Pharmaceutical Advertising (1) | Frameworks and Concepts (1) |
| | Intellectual Property (1) | Antiretroviral Medicines (1) |
| | Registration (1) | Incorporation of Medicines (1) |
| | Health Regulation (23) | Commercialization of Medicines (1); Medicine Quality Control (1); Pharmacovigilance (1); Generics (1); Medicine Waste Management (2); Medicine Information (2); Frameworks and Concepts (2); Manipulated Medicines (2); Nanotechnology(1); Psychotropic Drugs (1); Pharmaceutical Advertising (5); Registration (2); Medicine Labeling (1); Pharmaceutical Services (1) |
| | Global health/International cooperation (2) | Antiretroviral Medicines (1); Intellectual Property (1) |

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Chart 2. Ontology of pharmaceutical services in the *Journal Ciência & Saúde Coletiva*, between 1996 and 2019. C&SC 2020.

| Primary Theme | Secondary Theme | Specific Topics |
|-----------------------------|--|--|
| Management (56) | Access (3) | Hypertension and/or Diabetes (2); Popular Pharmacy Program (1) |
| | Acquisition (2) | Public Procurement (2) |
| | Primary Health Care (3) | Pharmaceutical Services Assessment (1); Frameworks and Concepts (2) |
| | Pharmaceutical Services Assessment (7) | Pharmaceutical Care (1); Specialized Components of Pharmaceutical Services (2); Hospital Pharmacy (1); Frameworks and Concepts (1); Pharmaceutical Services (2) |
| | Health Technology Assessment (2) | Frameworks and Concepts (1); Clinical Practice and Therapy Guides (1) |
| | Public Procurement (1) | Hepatitis C (1) |
| | Medicine Shortages (1) | Access (1) |
| | Disasters and Emergencies (1) | Preparation |
| | Pharmacoeconomics (3) | Frameworks and Concepts (2); Popular Pharmacy Program (1) |
| | Medicine Waste Management (2) | Primary Health Care (1); Frameworks and Concepts (1) |
| | Judicialization of Medicines (8) | Antineoplastic Agents (1); Right to Health (1); Rare Diseases (3); Insulin (1); Therapeutic Itinerary (1); Medicine Provision (1) |
| | Role of the Pharmacy Professional (1) | Pharmacy Education (1) |
| | Medicine Policy (12) | Antimicrobial Medicines (1); Specialized Components of Pharmaceutical Services (2); Rare Diseases (1); Herbal Medicines (1); Hepatitis C (1); Frameworks and Concepts (4); Popular Pharmacy Program (1); Pharmaceutical Services (1) |
| | Popular Pharmacy Program (1) | Antihypertensive Medicines (1) |
| | Public Provision (2) | Dyslipidemia (1); Strategic Medicines (1) |
| | User Satisfaction (1) | Medicine Dispensing (1) |
| Medicine Selection (2) | Essential Medicines (2) | |
| Pharmaceutical Services (4) | Primary Health Care (1); Antineoplastic Agents (1); Mental Health (1), Regionalization (1) | |

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the annual publication of articles on PS in Brazil over the last 11 years.

Internationally, there are a number of periodicals in the fields of pharmaceutical sciences and public health. As in Brazil, scientific output on the theme tends to be dichotomized between biomedical research and the social sciences. However, conceptual differences related to the term PS adopted in the descriptors used in and outside Brazil remain a challenge for the appropriation of the theme across countries and influences publications in the field of PS. *Assistência Farmacêutica* has been translated to English in a variety of ways. A first such translation was “pharmaceutical care”. However, the international literature emphasizes the element of care, which involves interaction between the pharmacy professional and the pa-

tient, contributing to improve quality of life³⁴. The term pharmaceutical care therefore refers to *Atenção Farmacêutica* in Portuguese. On the other hand, a free translation of this *assistência farmacêutica* would be “pharmaceutical assistance”, which is completely inadequate as a descriptor, because it refers to pharmaceutical benefits.

The term *pharmaceutical services*³⁵ emerged in the context of the Americas as part of the discussions about local health systems. Although this term has not achieved unanimity, because it can refer to specific point-of-care services³⁶⁻³⁸, it is important to highlight that the Latin American and Caribbean Center on Health Sciences Information, or BIREME, adopts the English and Spanish terms “pharmaceutical services” and “*servicios farmacéuticos*” for *assistência far-*

Chart 2. Ontology of pharmaceutical services in the *Journal Ciência & Saúde Coletiva*, between 1996 and 2019. C&SC 2020.

| Primary Theme | Secondary Theme | Specific Topics |
|--------------------------------|---|--|
| Medicine Utilization (161) | Access (2) | Generics (1); Herbal Medicines (1) |
| | Medication Adherence (14) | Antiparkinson Drugs (1); Antiretroviral Medicines (4); Rare Diseases (1); Hypertension and/or Diabetes (2); The elderly (3); Frameworks and Concepts (2); Sexual Violence (1) |
| | Pharmaceutical Care (5) | Frameworks and Concepts (2); Pharmaceutical Services (1); The elderly (1); User Satisfaction (1) |
| | Primary Health Care (5) | Herbal Medicines (3); Therapeutic Itinerary (1); Hypertension and/or Diabetes (1) |
| | Self-medication (4) | Analgesics (1); The elderly (1); Students (1); Commercialization of Medicines (1) |
| | Knowledge about Medicines (26) | Cross-cultural Adaption(4); Adherence (1); Anti-inflammatory Drugs(1); Antimalarial Medicine (1); Antimicrobial Medicines (1); Antiretroviral Medicines (1); Storage (1); Primary Health Care (3); Contraceptives (1); Rare Diseases (1); Herbal Medicines(1); Generics (1); Hypertension and/or Diabetes (2); The elderly(2); Pediatrics/ Neonatology(1); Prescription (1); Health Promotion(1); Psychotropic Drugs (2) |
| | Consumption of Medicines (16) | Adults (2); Primary Health Care (1); Self-medication (1); Generics (1); The elderly (3); Pediatrics/Neonatology (2); Pharmaceutical Advertising (1); Psychotropic Drugs (5) |
| | Medicine Dispensing (3) | Frameworks and Concepts (2); Primary Health Care (1) |
| | Pharmacoeconomics (2) | Anorectics (1); Rheumatoid Arthritis (1) |
| | Pharmacoepidemiology (26) | Anorectics (1); Antimicrobial Medicines (2); Antiretroviral Medicines (1); Primary Health Care (2); Contraceptives (2); Gender (1); Pregnant Women (2); Hypertension and/or Diabetes (2); The elderly(3); Medication Poisoning (1); Psychotropic Drugs (3); Thalidomide (1); Frameworks and Concepts (2); Pediatrics/Neonatology(2); Health Workers (1) |
| | Pharmacovigilance (4) | Psychotropic Drugs (1); Medication Interactions (1); Medication Poisoning (1); The elderly (1) |
| | Herbal Medicines (1) | Pregnant Women (1) |
| | Medicine Information (1) | Methylphenidate (1) |
| | Medication Interactions (5) | The elderly (4); Pharmacovigilance (1) |
| | Medication Poisoning (1) | Gender (1) |
| | Medicalization and Pharmaceuticalization (18) | Adolescents (1); Anorectics (2); Antiretroviral Medicines (1); Self-medication (1); Contraceptives (1); Palliative Care (1); Gender (1); Frameworks and Concepts (4); Methylphenidate(1); Misoprostol (1); Psychotropic Drugs (3); Social Representation of Medicines(1) |
| | Role of the health professional (1) | Frameworks and Concepts (1) |
| | Role of the Pharmacy Professional (10) | Primary Health Care (4); Frameworks and Concepts (4); Mental Health (1); User Satisfaction (1) |
| | Medicine Policy (1) | Rare Diseases (1) |
| | Medicine Prescribing (10) | Antimicrobial Medicines (2); Pharmaceutical Services Assessment (1); Hospital Pharmacy (1); Knowledge about Medicines (1); Herbal Medicines(1); The elderly(1); Frameworks and Concepts (1); Psychotropic Drugs (1); Health Regulation (1) |
| Pharmaceutical Advertising (1) | Medicine Prescribing (1) | |
| Psychotropic Drugs (1) | Medicine Policy (1) | |
| Health Regulation (1) | Misoprostol (1) | |
| Information Systems (3) | Pharmacovigilance (2); Medication Poisoning (1) | |

Source: Authors, 2020.

*macêutica*³⁹. Thus, although the terms are close, but not identical, a concerted effort should be made to align terms towards a common, official synonym. Ensuring the use of the same descriptors is a strategy that seeks to consolidate the field and promote commonality throughout scientific publications. In the pages of the *C&SC*, this effort seems to be working, with poor translations of the term PS being witnessed only on rare occasions, especially after 2010.

Open-topic articles, and more recently original articles, make up a significant proportion of published articles, reflecting the adoption of this practice in health facilities and management practices. There are still relatively few reviews in the field of PS, be they systematic, narrative, scoping, or qualitative. This may be because the growth in research in this area is only recent and there is therefore an unmet need to bring together enough references on the same topic to ensure a robust review⁴⁰⁻⁴⁴.

An increasing number of articles are submitted for publication in English. The strategy adopted by the *C&SC* and other journals to translate articles and accept papers written in English and Spanish, based on a requirement established by SciELO, has helped not only to disseminate knowledge but also place authors in a better position for dialogue with international peers and partners. The topics brought by the articles on PS, such as pharmacoepidemiology, resource allocation, and technology assessment, are increasingly finding shared identity outside Brazil. In addition, the study of the advances made by the SUS – right to health and universal access to health care – reinforces the importance of studying system disparities brought about by context and disruption phenomena, which generate inequalities – leading for example to health-related litigation to gain access to medicines – and draw interest from the international community⁴⁵⁻⁴⁸.

The lead authors were predominantly from academic institutions such as universities and FIOCRUZ, showing that the theme is being disseminated and producing knowledge. However, it is public universities that dominate PS research output. Foreign institutions and authors made only a small contribution to publications over the period.

The findings show that output remains concentrated in the Southeast, the country's leading region for scientific output. This reflects so many other "concentrations" in the Southeast, including research groups, research funding, and decision-making power in the allocation resources to health and PS⁴⁹.

The predominant primary theme across all periods was medicine utilization. Medicine utilization involves questions often related to the characteristics of medicines, professionals – prescribers, dispensers – and patients. Its development is therefore largely driven by the need to understand the positive and negative consequences of medicine utilization, its relationship with health regulations, and the real obligation to provide inputs to support the adequate management of these supplies.

The first period (1996-2003) coincides with the beginnings of PS in the recently created SUS and the publication of the NMP. It is no coincidence therefore that open-topic articles addressing theoretical frameworks and concepts were the most frequent. The history of the normative framework that delineates PS in Brazil is recent. Despite the introduction of the NMP in 1998, the infra-legal rules that govern PS only emerged later. The drug fraud crisis of 1998 led to a focus on health surveillance and medicine regulation. The system, faced with the challenge of restructuring itself, focused on quality assurance for supplies and products, forcing the reshaping of public and private pharmaceutical services to ensure the guarantee of origin of products provided to the public⁵⁰. This led to the emergence of themes related to regulation in the pages of the *C&SC*.

Another important moment was the launch of the *Pacto pela Saúde* or "Health Pact" in 2006^{51,52}. The Pact introduced a package of institutional reforms for the SUS, with a series of innovations in management processes and instruments, including the funding of PS. This gave rise to the appropriation of the new rules and their "impacts" on the population and system by both managers and academics.

In the second period (2004-2010), the country witnessed the expansion of the SUS and establishment of PS programs and original articles became more prominent. In this regard, studies addressing topics related to the components of PS funding, medicine access programs like the *Farmácia Popular*, and judicialization only began to be published after the limits and possibilities of PS and the SUS were delineated. Although medicine utilization remained the dominant theme throughout, management gained in relative importance over the period, reflecting professional practice in the organization of the SUS⁵³⁻⁵⁷. During the third period (2011-2015), PS experienced the turbulence generated by the conceptual modification of RENAME, the country's essential medicines list, reducing it from a set of

low, medium, and high complexity medicines to meet health needs to a mishmash of funding lists of on-demand medicines⁵⁵.

With regard to the primary theme tangential aspects of the PM cycle, the number of publications addressing themes that shaped the field of PS at the beginning, such as health regulation, intellectual property, and the struggle for access to antiretroviral medicines, decreased proportionately over the period with the emergence of new themes like global health and international cooperation^{58,59}. It is interesting to note that the number of studies addressing this primary theme increased in the last period (2016-2019), suggesting that it is the more innovative and global themes in the field of PS that will be more discussed and explored in coming years.

The ontology⁶⁰ produced by this study reveals the wide diversity of themes related to the field of PS in the pages of the *C&SC*, bringing together a variety of recurring secondary themes, together with new topics (such as global health and international cooperation), others that have taken on greater prominence (such as pharmacoepidemiology, pharmacoconomics, health technology assessment, and pharmaceuticalization and medicalization), and emerging themes like health emergencies and disasters. Our findings show that there are numerous specific topics that cut across the primary and secondary themes. It is this variety and range of perspectives that promotes the dissemination of various points of view on the same topic, bringing development and conceptual solidity and pointing to new pathways for analysis and new knowledge. The ontology shows that the field is not static, but rather dynamic, and, more importantly, integrated, demonstrating its utility for the investigation of relations of interdependency between themes and for future articles on the theme of PS.

This study has some limitations. Although article identification was conducted by the entire review team and special care was taken to ensure a systematic selection process and clear

up doubts regarding article eligibility, there were differences of opinion regarding the inclusion of articles. However, the joint review of the articles by the review team meant that it was possible to resolve these differences. Another challenge was the classification of articles according to primary themes, secondary themes, and specific topics. Differing views on the themes and their interdependencies meant that the classification relied on objective judgment, which may have resulted in reductionist decisions regarding themes. Nevertheless, we believe that the ontology depicts the diversity of the field.

Finally, the descriptors used for an initial search of the SciELO website did not provide a reliable search, resulting in a series of information gaps. The search was only successful when it was repeated and validated by checking *C&SC*'s site. This shows the utility and reliability of *C&SC*'s site as a tool for future reviews using the Journal.

Conclusions

Our findings reveal the sustained growth and dynamism of the field of PS in the pages of the *C&SC* over the last 24 years, becoming one of the Journal's core themes today. Although the Journal includes studies from all regions of Brazil, efforts should be made to increase the contribution of authors from the North, Northwest, and Center-West regions and authors outside Brazil. The types of institutions that contributed most to the expansion of the field were public universities, followed by Fiocruz.

The articles were classified into core primary themes (medicine utilization, management, and tangential aspects of the PM cycle), complemented by secondary themes and specific topics, illustrating the diversity of and interrelation between themes.

Different phenomena that had an impact on public health over the study period were present to a greater or lesser extent. As we have seen, PS

has reflected the emerging knowledge in the field of medicines and medication therapy. It was PS that brought the theme of judicialization to the fore; It was PS that brought the discussion of themes like access to medicines and intellectual property. New and challenging studies on the theme directed at the *C&SC* are awaited.

PS is an expanding field that encompasses the complexity of public policy combined with management and frontline activities involved in the delivery of health care to the population. The field produces a diverse range of interrelations and it is hoped that these interrelations will be increasingly addressed by future publications.

Collaborations

All authors participated in the work in all its stages, including its conception and planning, data collection and analysis, as well as the preparation of the text and figures, and the review and approval of the final version of the manuscript.

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Article submitted 15/04/2020
Approved 08/06/2020
Final version submitted 10/06/2020