

Pharmaceutical services: opportunities and perspectives for generating scientific evidence

Assistência farmacêutica: oportunidades e perspectivas para geração de evidências científicas

Servicios farmacéuticos: oportunidades y perspectivas para la generación de evidencia científica

Pharmaceutical services play a fundamental role in the care of health service users at all levels of complexity. Their incorporation as a public policy in the Brazilian Unified Health System (*Sistema Único de Saúde*, SUS) paved the way for advances in the organizational arrangements of the Brazilian healthcare system and strengthened linkage with the population through improved access to and availability of medications (1). However, the scope and objectives of pharmaceutical services are comprehensive and transcend the focal context of medication supply. Pharmaceutical service practices are also relevant for ensuring the rational use of these therapeutic resources, including their appropriate administration according to the clinical and individual needs of each patient, aiming to achieve effectiveness, safety and convenience of the dosage regimen (2,3).

In pharmaceutical service practice, there are numerous challenges to achieving pharmacological goals with acceptable safety and cost. It is important to consider access indicators that involve diagnosis, therapeutic options, supply, cost, regional aspects, among others. Individual factors can also influence the medication use process, including the following: sex, age, lifestyle, socioeconomic status, level of knowledge about the disease and treatment, level of health literacy, beliefs, attitudes, motivation, family dynamics, patient engagement in self-care and adherence to drug therapy. Drug therapy monitoring is therefore necessary, both in outpatient and inpatient settings, to identify and manage medication-related problems. Thus, clinical pharmaceutical services can make significant contributions to reducing morbidity and mortality related to such problems and improving the medication user experience (4).

Medication-related problems include adverse reactions, drug interactions, medication errors, patient non-adherence and self-medication. Given the rapid aging of the population, this scenario becomes even more complex due to the high prevalence of chronic diseases and consequent polypharmacy (4). In addition to the risks for certain subgroups (e.g. the very young and the very old, pregnant women, people with kidney or liver dysfunction), some therapeutic classes or specific medications present higher risk of serious or fatal clinical complications when used inappropriately or involved in medication errors, and are known as potentially dangerous medications (e.g. antithrombotics, chemotherapy drugs and insulin) (5). Prevention and management of adverse drug events requires coordinated actions and a multidisciplinary approach, involving health service managers, healthcare professionals, patients and caregivers. This approach demands a high level of commitment from the healthcare system and the strengthening of practices guided by the best available evidence, to continuously improve these processes and establish a culture of safety with a broad and systemic vision, aligned with the guidelines of the National Patient Safety Program (6).

Given the challenges outlined, pharmaceutical service research in Brazil takes on great importance, as it contributes to a better understanding of drug utilization processes in the country. Epidemiological methods are highly useful tools for characterizing utilization, effectiveness, risks, costs, and other dimensions when drugs are used on a large scale, that is, in the post-marketing phase. Study design with methodological rigor allows for the generation of scientific evidence from data collected in healthcare services, which can feed back into the system with reliable results to support decision-making and the development of

strategies focused on promoting the rational use of medications. Such studies can also contribute to the understanding of regional particularities and challenges in the SUS.

Research in this area has been increasingly important for the national and international scientific community. Topics related to pharmaceutical services are within the scope of Epidemiology and Health Services: Journal of the Brazilian National Health System (*Epidemiologia e Serviços de Saúde: revista do SUS - RESS*), which seeks to disseminate public health knowledge and relevant evidence to researchers, students, health service managers and health professionals. The number of publications in this field has also been growing recently in RESS, although there is room for expansion. In recent years, research results in the field of pharmaceutical services have been published, covering medication storage (7), dispensing (8), access (9,10), costs (11), medication use (12,13), patient safety (14,15), antimicrobial resistance (16), polypharmacy (17,18), and self-medication (19), in studies that address various realities of the SUS.

Among the study designs and themes that could be further explored, we highlight systematic reviews and analytical observational studies based on service data, including those using telehealth tools. Qualitative methods employed in pharmaceutical service research allow for a better understanding of behaviors and subjectivities related to the illness and treatment process from the perspective of health service users, caregivers and healthcare professionals. Infectious diseases and antimicrobial resistance are also topics of great interest due to their impact on public health.

RESS is committed to increasing the dissemination of such evidence and encourages the academic and healthcare community to submit studies that explore the various dimensions of medication use. As such, it is essential to develop research with high standards of quality, ethics and transparency, fostering in-depth reflection on its impact and implications for the SUS. Studies on medications in populations need to follow these premises to strengthen pharmaceutical services in Brazil and consolidate their social impact.

Maria Auxiliadora Parreiras Martins¹, Jorge Otávio Maia Barreto², Everton Nunes da Silva³, Taís Freire Galvão⁴

¹Universidade Federal de Minas Gerais, Faculdade de Farmácia, Belo Horizonte, MG, Brazil

²Fundação Oswaldo Cruz, Gerência Regional de Brasília, Brasília, DF, Brazil

³Universidade de Brasília, Faculdade de Ciências e Tecnologias em Saúde, Brasília, DF, Brazil

⁴Universidade Estadual de Campinas, Faculdade de Ciências Farmacêuticas, Campinas, SP, Brazil

Correspondence: Maria Auxiliadora Parreiras Martins  auxiliadorapmartins@hotmail.com

References

1. Bermudez JAZ, Esher A, Osorio-de-Castro CGS, Vasconcelos DMM, Chaves GC, Oliveira MA, et al. Pharmaceutical Services and comprehensiveness 30 years after the advent of Brazil's Unified Health System. *Cien Saude Colet*. 2018;23(6):1937-49.
2. Brasil. Ministério da Saúde. Secretaria de Ciência, Tecnologia, Inovação e Insumos Estratégicos em Saúde. Departamento de Assistência Farmacêutica e Insumos Estratégico. Contribuições para a promoção do uso racional de medicamentos - vol. 1. Brasília: Ministério da Saúde; 2021 [cited 2025 Oct 21]. Available from: https://bvsmis.saude.gov.br/bvs/publicacoes/contribuicoes_promocao_uso_racional_medicamentos.pdf
3. Brasil. Ministério da Saúde. Secretaria de Ciência, Tecnologia, Inovação e Insumos Estratégicos em Saúde. Departamento de Assistência Farmacêutica e Insumos Estratégico. Contribuições para a promoção do uso racional de medicamentos - vol. 2. Brasília: Ministério da Saúde; 2021 [cited 2025 Oct 21]. Available from: https://bvsmis.saude.gov.br/bvs/publicacoes/contribuicoes_promocao_uso_racional_medicamentos_v2.pdf

4. Brasil. Ministério da Saúde. Secretaria de Atenção Primária à Saúde. Departamento de Saúde da Família. Gestão do Cuidado Farmacêutico na Atenção Básica. Brasília: Ministério da Saúde; 2019 [cited 2025 Oct 21]. Available from: https://assistencia-farmaceutica-ab.conasems.org.br/wp-content/uploads/2021/02/Gestao_Cuidado_Farmaceutico_Atencao_Basica.pdf.
5. Instituto para Práticas Seguras no Uso de Medicamentos. Medicamentos potencialmente perigosos de uso hospitalar e ambulatorial [Internet] 2015 [cited 2025 Oct 20]. Available from: <https://ismp-brasil.org/boletins/medicamentos-potencialmente-perigosos/>
6. Brasil. Ministério da Saúde. Gabinete do Ministro. Portaria n.º 529, de 1 de abril de 2013. Institui o Programa Nacional de Segurança do Paciente. Brasília: Diário Oficial da União, 2013; [cited 2025 Oct 20] Available from: https://bvsms.saude.gov.br/bvs/saudelegis/gm/2013/prt0529_01_04_2013.html
7. Raglione D, Bezerra GA, Lopes MH, Nerger ML, Guimaraes TC, Sartori AM. [Evaluation of the cold chain for vaccine conservation in primary healthcare centers in the South and Midwest regions of Sao Paulo city, Brazil, in 2011-2012]. *Epidemiol Serv Saude*. 2016;25(1):65-74.
8. Venâncio SI, Bersusa AAS, Martins PN, Figueiredo G, Awakamatsu A, Alves VAF. Avaliação do processo de dispensação de medicamentos aos portadores de hepatite C crônica em farmácias de componentes especializados da Secretaria de Estado da Saúde de São Paulo, em 2010*. *Epidemiol Serv Saude*. 2014;23(4):701-10.
9. Costa KS, Tavares NUL, Tierling VL, Leitao VBG, Stopa SR, Malta DC. National Health Survey 2019: medication obtainment through the Brazilian Popular Pharmacy Program by adults being treated for hypertension and diabetes. *Epidemiol Serv Saude*. 2022;31(spe1):e2021366.
10. Silva SN, Saliba MF, Ribeiro LR, Cota G. Miltefosine implementation for treatment of cutaneous leishmaniasis: access indicators in the state of Minas Gerais, 2021-2024. *Epidemiol Serv Saude*. 2025;34:e20240690.
11. Martins RR, Zara A, Melo DO, Simone ALM. Financial impact of centralized purchasing of rituximab by the Brazilian Ministry of Health for lymphoma treatment, 2015-2022: an exploratory study. *Epidemiol Serv Saude*. 2025;34:e20240203.
12. Souza IG, Duarte YAO, Nascimento M, Molino C, Rezende CP, Santos JLF. Therapeutic competitions and frailty among older adults in Sao Paulo city: a cross-sectional population-based study, 2015. *Epidemiol Serv Saude*. 2025;34:e20240104.
13. Pires M, Sobreira-da-Silva MJ, Araujo PP, Retto MPF. Use of medications in women with triple-negative breast cancer between 2018 and 2019 in a Brazilian public hospital: a retrospective study. *Epidemiol Serv Saude*. 2025;34:e20240180.
14. Donnini DA, Silva CMB, Gusmao JD, Matozinhos FP, Silva RB, Amaral GG, et al. Incidence of immunization errors in the state of Minas Gerais, Brazil: a cross-sectional study, 2015-2019. *Epidemiol Serv Saude*. 2022;31(3):e2022055.
15. Maia CS, Freitas DRC, Gallo LG, Araujo WN. Registry of adverse events related to health care that results in deaths in Brazil, 2014-2016. *Epidemiol Serv Saude*. 2018;27(2):e2017320.
16. Rocha VF, Barbosa MS, Neves EDS, Santos VJ, Rego R, Pessoa TL, et al. Vancomycin-resistant Enterococcus infections in a hospital in Salvador, Bahia: a descriptive study, 2021-2023. *Epidemiol Serv Saude*. 2025;34:e20240135.
17. Muller CH, Bertoldi AD, Bielemann RM, Machado KP, Tomasi E, Gonzalez MC, et al. Prevalence of polypharmacy use and association with mortality: a cohort study of elderly people in Southern Brazil, 2014-2017. *Epidemiol Serv Saude*. 2025;34:e20240081.
18. Tiguman GMB, Biase T, Silva MT, Galvao TF. Prevalence and factors associated with polypharmacy and potential drug interactions in adults in Manaus, Amazonas state, Brazil: a cross-sectional population-based study, 2019. *Epidemiol Serv Saude*. 2022;31(2):e2021653.
19. Domingues PHF, Galvao TF, Andrade KRC, Araujo PC, Silva MT, Pereira MG. Prevalence and associated factors of self-medication in adults living in the Federal District, Brazil: a cross-sectional, population-based study. *Epidemiol Serv Saude*. 2017;26(2):319-30.