

REVIEW

Pharmacy practice in Latin America: a review of published literature, 2017–2021

Laura Cristina Vargas López¹, David Chavez Gallegos²

¹Health Sciences Institute, Autonomous University of Hidalgo State, Hidalgo, Mexico;

²Health Services of Hidalgo State, Hidalgo, Mexico

Abstract

Background: Pharmacy practice (PP) research is a new discipline that studies the scope of interventions and health services performed by pharmacists. Information on PP in Latin America is available; however, to date, it has not been methodically analysed. It is critical to understand the current level of evolution of pharmaceutical activities to support evidence-based decision-making.

Methods: We performed a review of PP literature published in five databases, of which two were international and three were focused on Latin America. The data obtained were qualitative, such that the strategies used for data search and collection were structured by PRISMA guidelines, and data synthesis and analysis were conducted through a narrative review.

Results: Of the 1863 articles found in the initial search, 108 were included in the final analysis. The majority of these were conducted in Brazil ($n=73$, 74%) and Colombia ($n=14$, 13%). The interventions and services most frequently reported were dispensing ($n=24$, 22%), clinical pharmacy services ($n=21$, 19%)

and pharmaceutical care ($n=21$, 19%). Most studies focused on only one key strategic area ($n=94$, 87%), specifically on health services provision.

Conclusion: PP in Latin America follows worldwide trends to some extent with regard to the inclusion of clinical pharmacy and pharmaceutical care. However, the region also demonstrates particularities, including the heterogenous level of development amongst its countries. It is vital for Latin American pharmacists to publish their activities, interventions and services in order to generate a solid evidence base to evaluate practice and support informed decision-making.

Keywords: health service, health system research, Latin America, pharmaceutical services, pharmacy practice.

Citation

Vargas López LC, Chavez Gallegos D. Pharmacy practice in Latin America: a review of published literature, 2017–2021. *Drugs Context*. 2022;11:2022-3-4. <https://doi.org/10.7573/dic.2022-3-4>

Introduction

Pharmacy practice (PP) is a subject that has evolved significantly over time.¹ Pharmacists have gone from the simple preparation and dispensing of medications, to taking on clinical and healthcare roles.² This evolution may be attributed to the integration of pharmacists within healthcare teams, increasing populational needs, natural professional evolution, and the necessity to bolster the safety, efficiency and cost-effectiveness of the growing number of pharmaceutical drugs available.^{3,4}

Although the definition of PP may differ depending on the health system characteristics of each individual country, in general, it has evolved over time.⁵ For example, in 1996, the World Health Organization defined good pharmacy practice as “that which responds to the necessities of those individuals

who use the services pharmacists provide in an effort to offer the optimal quality of evidence-based care” and also mentions “the contribution of pharmacists may extend to all levels of healthcare service planning and provision”.⁶ In 2013, Moullin et al. defined professional pharmacy services in community pharmacy as “an action or set of actions undertaken in or organized by a pharmacy, and delivered by a pharmacist [...] who applies their specialized health knowledge [...] to optimize the care process”.⁷ In 2020, the Pharmacy Practice Research Special Interest Group defined PP as a scientific discipline that “studies the different aspects of the practice of pharmacy and its impact on health care systems, medicines use, and patient care”.⁸

The development of this new pharmacist role has led to the emergence of a new discipline: pharmacy practice research (PPR). This new area has met with fundamental challenges, including determining the scope of PP.⁹ In this sense, various

researchers have attempted to describe and characterize PPR, shedding light on the elements and characteristics that it must include.^{10,11} Nevertheless, certain gaps are evident, amongst them, that the majority of available information on PP globally comes from developed countries.^{12–14}

In diverse regions worldwide, frameworks have been developed with the objective to generate comparable and homogenous evidence around PP. In 2019, Hasan et al. postulated that PPR should consider three factors: medicines use, health services provision and patient-centred care.⁵ On the other hand, García Cárdenas et al.⁴ Point out that, to achieve a structured focus in PP research, it is useful to apply the Medical Research Council framework, which consists of four steps (or pharmacy practice key strategic areas of research reported): design, implementation, evaluation and sustainability.⁴ In this Review, we apply both frameworks in order to characterize PP in Latin America.

This study aims to describe the characteristics of PP in Latin America by reviewing the related literature published over the last 5 years assessing the scope and characteristics of the PP in the region.

Methods

Studies included in the final analysis were those published between 2017 and 2021 focused on Latin America and which explored the following topics: pharmacy, pharmaceutical services, community pharmacy, hospital pharmacy, clinical pharmacy and pharmaceutical care. No language restrictions were applied. All included articles were published in peer-reviewed journals. Published editorials or letters to the editor were excluded from the present review.

The following databases were used as information sources: PubMed, EBSCO-International Pharmaceutical Abstracts (IPA), Redalyc, IMBIOMED and SciELO. The search algorithms used are described in Supplementary File 1 (available at: <https://www.drugsincontext.com/wp-content/uploads/2022/06/dic.2022-3-4-Suppl.pdf>).

Inclusion and exclusion criteria

Articles included in the final analysis explored the aspects of PP mentioned by Hasan et al.⁵ (medicines use, health services provision and patient-centred care) and/or that identified the role of pharmacy in the provision of an intervention or service. Articles were excluded according to the following criteria: (1) developed in a country not within Latin America or focused on a location other than hospital or pharmacy department; (2) meta-analyses and systematic reviews in which the role of pharmacists was not clearly identifiable or in which information from Latin American countries could not be isolated; (3) interventions or services provided by a multidisciplinary team from which the role of the pharmacist could not be isolated; and (4) grey literature, including

protocols, conference posters, editorials, commentaries and letters to the editor.

Strategies for data search and collection

Articles found in the initial database search were screened by title. For articles still under consideration, abstracts were then reviewed to verify coherence with the eligibility criteria, and duplicates were eliminated. Articles that appeared to meet inclusion criteria through these initial screenings were then reviewed in full and screened a final time to discard all those not meeting all eligibility criteria.

Included studies were critically analysed in order to extract the following variables: author, year, title, language, country, type of article, study design, phase and interventions. Furthermore, all articles were classified by the criteria previously mentioned as those under ‘facets of pharmacy practice and its research’ and ‘pharmacy practice key strategic areas of research reported’. Data selection and extraction were performed in independent processes by each of the two authors. If discrepancies were revealed, they were discussed until consensus was reached on the inclusion or exclusion of the article in question. The strategies for literature search and data collection were performed according to guidance established by PRISMA.¹⁵

Data analysis

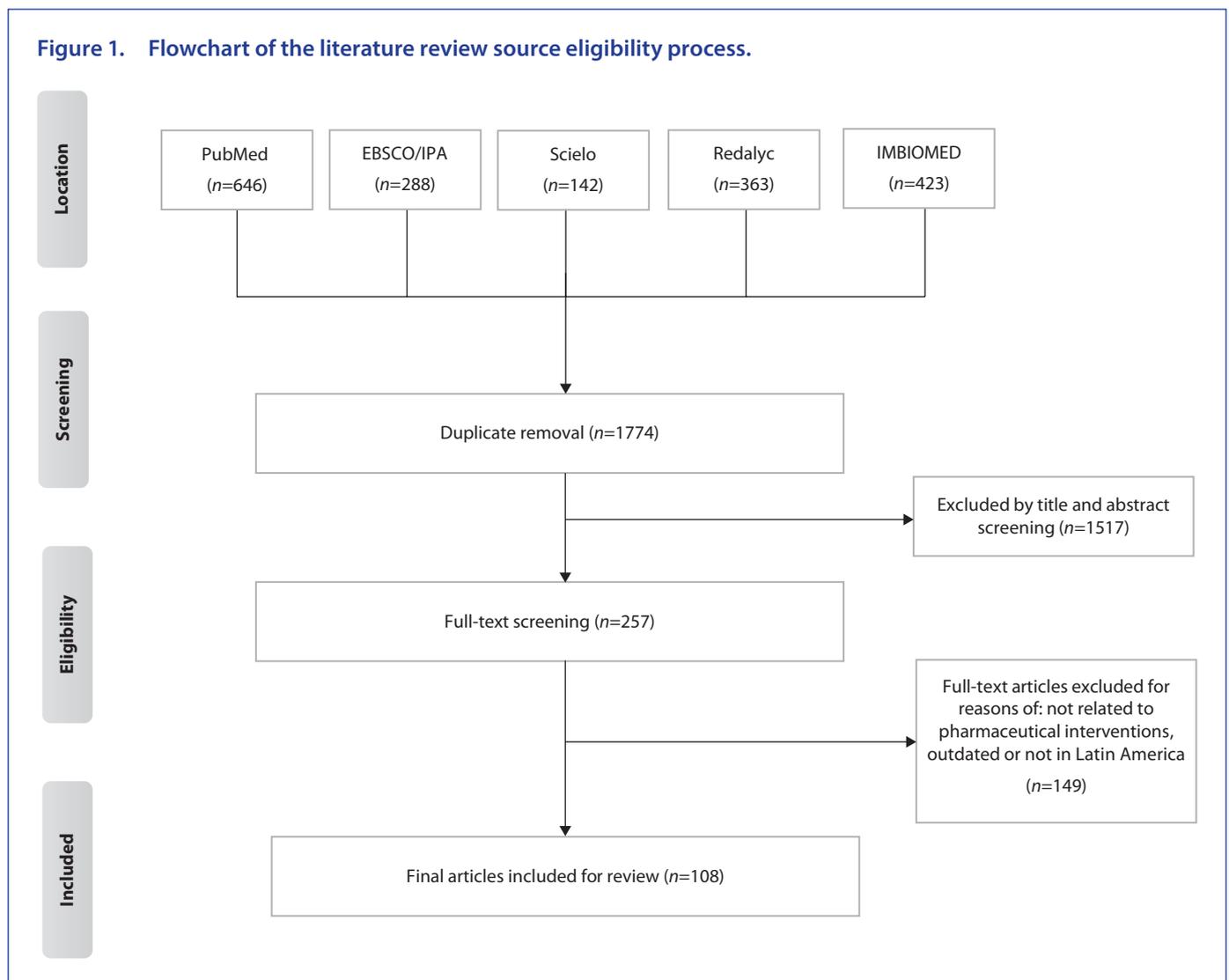
Extracted data were used to construct a table. Data obtained were qualitative in nature, and therefore synthesis and analysis were performed according to guidance for a narrative review. Data analysis used a method of qualitative content analysis known as the Framework method, which is characterized by the use of a matrix in spreadsheet format. This structure allows the systematic reduction of data by categorization according to case and code.¹⁶

Results

Our search provides an overview of how the pharmacy profession and practice are changing in Latin America and the emerging challenges and opportunities determined from the published literature.

Initial database searches recovered a total of 1863 articles. After review of title and abstract, 1517 articles were excluded due to not representing pharmacist interventions, being outdated or not presenting results from a Latin American country. Duplicate articles were also eliminated ($n=89$). Following the full-text review of the remaining articles, a total of 108 articles were included in the final analysis. Figure 1 shows the flow diagram for the source eligibility process.

The majority of included studies took place in Brazil ($n=73$, 68%), followed by Colombia ($n=14$, 13%). Within the 5-year period of interest, 2017 was the year in which most articles were published ($n=31$, 29%). The study design most frequently

Figure 1. Flowchart of the literature review source eligibility process.

used was a transversal study ($n=39$, 36%) published as original research ($n=93$, 86%). Table 1 summarizes the characteristics of the included articles. Articles were published in English ($n=79$, 73%), Spanish ($n=20$, 18.5%) and Portuguese ($n=9$, 8.6%). Supplementary File 2 contains a list of the selected articles and their characteristics.

The pharmaceutical services and interventions evaluated principally consisted in dispensing ($n=24$, 22%), clinical pharmacy services ($n=21$, 19%) and pharmaceutical care ($n=21$, 19%). However, it was also necessary to categorize the diverse activities reported in order to facilitate analysis, for which nine interventions were classified as 'other'. Within this category were included, for example, activities related to an antimicrobial stewardship programme, medication litigation, and the analysis of laws and/or regulations.

The categorization of PP reported in the included articles was guided by the pharmacy practice key strategic areas of research reported by García Cárdenas et al.⁴ The majority of studies addressed only one area ($n=94$, 87%), whilst of all the articles selected only one examined all four key strategic areas (design, implementation, evaluation and sustainability).

Finally, categorization of the results of the selected studies applied the framework proposed by Hasan et al.⁵: 'facets of pharmacy practice and its research' (medicines use, health services provision and patient-centred care). We observed no clear division between these facets within any single study included, of which many applied multiple approaches. However, for purposes of classification, we prioritized the approach that mainly characterized the methodology and results of each study. Therefore, we determined that the majority of studies fit within the category of health service provision ($n=96$, 91%).

Furthermore, four articles described a facet that was not mentioned in either of the analytical frameworks applied: pharmaceutical policy. Although some authors have included this concept within the category of 'healthcare system',^{17,18} we considered it as constituting a new facet given its impact on PP.

Discussion

This study revealed various regional differences in the quantity of studies focused on PP in Latin America, where Brazil represents the vast majority of PPR. This shows a trend

of considerably high production of PP, PPR and publication of related results in Brazil, though this does not necessarily mean that PP is not also evolving in other countries.

In Brazil, the National Drug Policy and the National Pharmaceutical Assistance Policy (created from the formed in 2004) have defined a series of actions in the field of PP. These policies gave rise to the Popular Pharmacy Program in Brazil, which is considered one of the most discussed pharmaceutical policies in the literature.^{19,20} This could explain the overwhelming number of articles on PP in this country, though the authors do not identify it as PP but rather report cross-sectional studies on the implementation, design and evaluation of some pharmaceutical services (mainly dispensing).

On the other hand, in Colombia, the subject of most of the articles included in our analysis (35%) was the use/interventions in antimicrobial programmes and pharmaceutical care (14%). The number of Colombian articles found in this review could be attributed to a growing interest in antimicrobial stewardship initiatives²¹ more than to a pharmaceutical policy or a group of researchers in particular.

In addition, more than half of the articles included in our review reported results of pharmaceutical services or interventions developed in a community pharmacy service. Although the community pharmacy represents, in many countries, the first contact of the patient with the health system, we believe that it is necessary to consider other locations for PP and increase the research on this topic, for example, in the hospital pharmaceutical services, home visits settings and on innovations such as telepharmacy.

Table 1. Main characteristics of the studies reviewed on pharmacy practice in Latin America, 2017–2021.

Study characteristics ^a	Number of studies (%)
Publication year	
2017	31 (28.7%)
2018	18 (16.7%)
2019	18 (16.7%)
2020	18 (16.7%)
2021	23 (21.3%)
Country	
Brazil	73 (67.6%)
Colombia	14 (13%)
Chile	4 (3.7%)
Cuba	4 (3.7%)
Argentina	3 (2.8%)
Ecuador	3 (2.8%)
Mexico	3 (2.8%)
Peru	2 (1.9%)
Dominican Republic	1 (0.9%)
Bolivia	1 (0.9%)

Article type	
Original research	93 (86.1%)
Review article	1 (0.9%)
Case report	1 (0.9%)
Special article	1 (0.9%)
Navigation article	1 (0.9%)
Not specified	11 (10.2%)

Language	
English	79 (73.1%)
Spanish	20 (18.5%)
Portuguese	9 (8.3%)

Study design	
Transversal	39 (36.1%)
Prospective	14 (13%)
Observational (cohort or case-control)	9 (8.3%)
Retrospective	6 (5.6%)
Comparative	4 (3.7%)
Evaluative	4 (3.7%)
Health service research	4 (3.7%)
Descriptive	3 (2.8%)
Systematic review	3 (2.8%)
Randomized-controlled trial	2 (1.9%)
Case study	2 (1.9%)
Longitudinal	15 (13.9%)
Other ^b	

Facets of pharmacy practice and its research	
Health services provision	96 (88.9%)
Pharmacy policy	4 (3.7%)
Patient-centred care	5 (4.6%)
Medicines use	3 (2.8%)

Pharmacy practice key strategic areas of research reported (design, implementation, evaluation and sustainability)	
1 area	94 (87%)
2 areas	7 (6.5%)
3 areas	2 (1.9%)
4 areas	1 (0.9%)
Not applicable	4 (3.7%)

Interventions	
Dispensing	24 (22.2%)
Clinical pharmacy services	21 (19.4%)
Pharmaceutical care	21 (19.4%)
Service quality improvement	13 (12%)
Pharmacotherapeutic follow-up	11 (10.2%)
Pharmacovigilance activities	2 (1.9%)
Patient orientation and education	7 (6.5%)
Other ^c	9 (8.3%)

^aAs reported by the authors of each included study.

^bQuasi-experimental, economic analysis, single-arm trial, proposal for a consensus on a clinical pharmacy care path for intensive care.

^cMedication litigation, application of an antimicrobial stewardship programme, governance indicators, practice dissemination, organizational practice and laws/regulations.

Multiple authors have indicated that low- and middle-income countries have lagged behind in strengthening PP.^{22,23} Although the region defined as ‘Latin America’ can vary according to different criteria, it generally includes countries that use Spanish or Portuguese as their official language, which corresponds with 20 countries within the Western hemisphere. Notably, these countries are not a homogenous group and significant variations amongst them could explain why some have achieved greater gains in PP than others.²⁴

Notably, no information was found in relation to half of the Latin American countries considered. It is possible that these countries have achieved advancements in PP but without the subsequent PPR and publication of results. Information about PP in these countries may be available in grey literature such as academic theses and local conference reports, which indicates the need for future revisions to broaden their evidence base to include national databases and grey literature.

Our review revealed articles that highlight the importance of the role of authorities and governments in improving the quality and safety of medications through the implementation of pharmaceutical services.^{19,25,26} Although this has been previously noted in the literature,²⁷ we consider it critical to take a deeper look at this perspective as a new approach to PPR, given that, as commented by Reich “...the health sector can make better use of knowledge about politics, power and political analysis to improve the effectiveness of its policy process”.²⁸

Given the current health emergency due to the pandemic caused by SARS-CoV-2, a large number of related articles was expected. However, our search yielded only one study in which a proposal for a triage service from the pharmacy office was presented. A literature search including PPR terms specifically related to COVID-19 in Latin America may provide different results.

Our study has certain limitations, including the possibility that, as in any literature review, our search strategies did not reveal every study that may have been relevant. Furthermore, we chose to evaluate the variables that we considered most important; however, we recognize the existence of other variables that could be evaluated in future studies. Another limitation was that, given the scope of the narrative review approach, we did not evaluate the quality of the studies included.

Conclusions

PP in Latin America, as in most countries around the world, has evolved from the simple preparation and dispensing of medications, to the participation of pharmacists in clinical and healthcare roles. However, this advancement has been heterogenous amongst countries and limited to certain countries. It is critical to strengthen efforts to professionalize pharmacists and educate them in their broadening role, to standardize PP concepts, to conduct PPR and to publish PPR results.

Contributions: VL conceptualized the study, determined methodology, analysed data and wrote the manuscript. CG participated in the systematic review of full-text articles, analysed data and reviewed the manuscript. Both authors read and approved the final manuscript. All named authors meet the International Committee of Medical Journal Editors (ICMJE) criteria for authorship for this article, take responsibility for the integrity of the work as a whole and have given their approval for this version to be published.

Disclosure and potential conflicts of interest: The authors declare that they have no conflicts of interest relevant to this manuscript. The International Committee of Medical Journal Editors (ICMJE) Potential Conflicts of Interests form for the authors is available for download at: <https://www.drugsincontext.com/wp-content/uploads/2022/06/dic.2022-3-4-COI.pdf>

Acknowledgements: The authors would like to thank Jennifer Hegewisch Taylor for her advice in building the search algorithms.

Funding declaration: There was no funding associated with the preparation of this article.

Copyright: Copyright © 2022 Vargas López LC, Chavez Gallegos D. Published by *Drugs in Context* under Creative Commons License Deed CC BY NC ND 4.0, which allows anyone to copy, distribute and transmit the article provided it is properly attributed in the manner specified below. No commercial use without permission.

Correct attribution: Copyright © 2022 Vargas López LC, Chavez Gallegos D. <https://doi.org/10.7573/dic.2022-3-4>. Published by *Drugs in Context* under Creative Commons License Deed CC BY NC ND 4.0.

Article URL: <https://www.drugsincontext.com/pharmacy-practice-in-latin-america-a-review-of-published-literature-2017-2021>

Correspondence: Laura Cristina Vargas López, Health Sciences Institute, Autonomous University of Hidalgo State, Carretera Pachuca-Actopan camino a Tilcuautla s/n Pueblo San Juan Tilcuautla, 42160 Hidalgo, Mexico. Email: laura_vargas@uaeh.edu.mx

Provenance: Invited; externally peer reviewed.

Submitted: 14 March 2022; **Accepted:** 27 May 2022; **Publication date:** 12 July 2022.

Drugs in Context is published by BioExcel Publishing Ltd. Registered office: 6 Green Lane Business Park, 238 Green Lane, New Eltham, London, SE9 3TL, UK.

BioExcel Publishing Limited is registered in England Number 10038393. VAT GB 252 7720 07.

For all manuscript and submissions enquiries, contact the Editorial office editorial@drugsincontext.com

For all permissions, rights and reprints, contact David Hughes david.hughes@bioexcelpublishing.com

References

1. Miller RR. History of clinical pharmacy and clinical pharmacology. *J Clin Pharmacol*. 1981;21(4):195–197. <https://doi.org/10.1002/j.1552-4604.1981.tb05699.x>
2. Hepler CD. Clinical pharmacy, pharmaceutical care, and the quality of drug therapy. *Pharmacotherapy*. 2004;24(11):1491–1498. <https://doi.org/10.1592/phco.24.16.1491.50950>
3. Tsuyuki RT, Bond C. The evolution of pharmacy practice research—part I: time to implement the evidence. *Can Pharm J*. 2019;152(2):71–72. <https://doi.org/10.1177/1715163519828318>
4. Garcia-Cardenas V, Rossing CV, Fernandez-Llimos F, et al. Pharmacy practice research—a call to action. *Res Soc Adm Pharm*. 2020;16(11):1602–1608. <https://doi.org/10.1016/j.sapharm.2020.07.031>
5. Hasan SS, Thiruchelvam K, Kairuz T, Abbas N, Babar ZUD. Pharmacy practice and its research: evolution and definitions. In: Babar ZUD, editor. *Encyclopedia of Pharmacy Practice and Clinical Pharmacy*. Elsevier; 2019:1–6. <https://doi.org/10.1016/B978-0-12-812735-3.00623-3>
6. International Pharmaceutical Federation. World Health Organization. *Good Pharmacy Practice in Community and Hospital Pharmacy Settings*. 1996. <https://digicollections.net/medicinedocs/documents/s21088en/s21088en.pdf>. Accessed June 27, 2022.
7. Moullin JC, Sabater-Hernández D, Fernandez-Llimos F, Benrimoj SI. Defining professional pharmacy services in community pharmacy. *Res Soc Adm Pharm*. 2013;9(6):989–995. <https://doi.org/10.1016/j.sapharm.2013.02.005>
8. International Pharmaceutical Federation (FIP). Pharmacy practice research special interest group. <https://www.fip.org/pharmacy-practice-research>. Accessed March 3, 2022.
9. Toklu HZ, Hussain A. The changing face of pharmacy practice and the need for a new model of pharmacy education. *J Young Pharm*. 2013;5(2):38–40. <https://doi.org/10.1016/j.jyp.2012.09.001>
10. Wiedenmayer K, Summers RS, Mackie CA, Gous AGS, Everard M, Tromp D. *Developing Pharmacy Practice. A Focus on Patient Care*. World Health Organization. 2006. https://apps.who.int/iris/bitstream/handle/10665/69399/WHO_PSM_PAR_2006.5_eng.pdf. Accessed May 29, 2019.
11. Scahill S, Atif M, Babar Z. Defining pharmacy and its practice: a conceptual model for an international audience. *Integr Pharm Res Pract*. 2017;6:121–129. <https://doi.org/10.2147/IPRP.S124866>
12. Moles RJ, Stehlik P. Pharmacy Practice in Australia. *Can J Hosp Pharm*. 2015;68(5):418–426. <https://doi.org/10.4212/cjhp.v68i5.1492>
13. Dawoud D, Chen AMH, Verner C, et al. Pharmacy practice research priorities during the COVID-19 pandemic: recommendations of a panel of experts convened by FIP Pharmacy Practice Research Special Interest Group. *Res Soc Adm Pharm*. 2021;17(1):1903–1907. <https://doi.org/10.1016/j.sapharm.2020.08.020>
14. Babar Z. *Global Pharmaceutical Policy*. London: Palgrave Macmillan; 2020.
15. Page MJ, Mckenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. <https://doi.org/10.1136/bmj.n71>
16. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol*. 2013;13(1):117. <https://doi.org/10.1186/1471-2288-13-117>
17. Roberts MJ, Reich MR. *Pharmaceutical Reform*. 2011. <https://doi.org/10.1596/978-0-8213-8760-3>
18. Organización Panamericana de la Salud. *Conceptos, Estrategias y Herramientas Para Una Política Farmacéutica Nacional En Las Américas*. 2016. http://iris.paho.org/xmlui/bitstream/handle/123456789/28211/9789275318874_spa.pdf?sequence=1&isAllowed=y. Accessed June 8, 2022.
19. de Oliveira Silva Alencar T, Sodré Araújo P, Alves Costa E, Damasceno Barros R, Ramos Lima YO, Silva Paim J. Programa Farmácia Popular do Brasil: uma análise política de sua origem, seus desdobramentos e inflexões. *Saúde Debate*. 2018;42:159–172. <https://doi.org/10.1590/0103-11042018S211>
20. Observatório de análise política em saúde. Eixo de Política de Medicamentos, de Assistência Farmacêutica e Vigilância Sanitária [internet]. Salvador: OAPS; 2018. <https://proceedings.ciaiq.org/index.php/ciaiq2018/article/view/1856>. Accessed June 27, 2022.
21. Hegewisch-Taylor J, Dreser-Mansilla A, Romero-Mónico J, Levy-Hara G. Antimicrobial stewardship in hospitals in Latin America and the Caribbean: A scoping review. *Rev Panam Salud Publica*. 2020;44(1):e68. <https://doi.org/10.26633/RPSP.2020.68>
22. Yemeke T, McMilan S, Marciniak M, Ozawa S. A systematic review of the role of pharmacists in vaccination services in low-and middle-income countries. *Res Soc Adm Pharm*. 2020;17(2):300–306. <https://doi.org/10.1016/j.sapharm.2020.03.016>
23. Smith F. The quality of private pharmacy services in low and middle-income countries: a systematic review. *Pharm Worl Sci*. 2009;31:351–361. <https://doi.org/10.1007/s11096-009-9294-z>
24. Babar Z-U-D, Scahill S. Barriers to effective pharmacy practice in low-and middle-income countries. *Integr Pharm Res Pract*. 2014;2014:25–27. <https://doi.org/10.2147/IPRP.S35379>
25. Vargas López LC, Viso Gurovich F, Dreser Mansilla A, Wirtz VJ, Reich MR. The implementation of pharmaceutical services in public hospitals in Mexico: an analysis of the legal framework and organizational practice. *J Pharm Policy Pract*. 2021;14(41):1–14. <https://doi.org/10.1186/s40545-021-00318-7>

26. Mattozo Rover MR, Vargas Peláez CM, Baierle Faraco E, Rocha Farias M, Nair Leite S. An evaluation of governance capacity of the specialized component of pharmaceutical services in Brazil. *Cienc Saude Coletiva*. 2017;22(8):2487–2499. <https://doi.org/10.1590/1413-81232017228.01602017>
27. Babar Z-U-D. Ten recommendations to improve pharmacy practice in low and middle—income countries (LMICs). *J Pharm Policy Pract*. 2021;14(6):4. <https://doi.org/10.1186/s40545-020-00288-2>
28. Reich MR. Political economy analysis for health. *Bull World Health Organ*. 2019;97(514):514. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6653823/pdf/BLT.19.238311.pdf>