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Submitted: 04 Nov. 2021
Accepted: 16 May 2022
Published: 01 Nov. 2022

[doi](https://doi.org/10.20396/riesup.v10i00.8667470) 10.20396/riesup.v10i00.8667470
e-location: e024023

ISSN 2446-9424



Overview of Residency Programs for Pharmacists in South America

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ABSTRACT

The research mapped residency programs for pharmacists in South America. A cross-sectional, descriptive, quantitative study was carried out. Data were collected by consulting the websites and public notices of residency programs from January to June 2021. The variables analyzed were geographic region, financing, number of vacancies, concentration area, and profile of institutions. The results show that although there are bibliographies on programs in Argentina, Brazil, and Peru, it was only possible to identify active programs for the first two. Thirty-five courses offered in Argentina and 216 in Brazil were identified. While most programs in Buenos Aires are concentrated in the province of Buenos Aires, in Brazil, courses were identified in all regions, mainly in the southeast region, mainly in the state of São Paulo. The public sector is primarily responsible for supporting scholarships in both countries. While in Brazil, there are two residency models, monoprofessional and multiprofessional, only monoprofessional programs were observed in Argentina. The hospital is the main practice setting in both countries, 97.2% in Argentina and 83.7% in Brazil. Although residency programs are successful models of continuing education in several countries, there is still a lack of professional training in South American countries.

KEYWORDS

Pharmacy residency. Postgraduate education. Professional training. South America.

Panorama dos Programas de Residência para Farmacêuticos na América do Sul

RESUMO

A pesquisa mapeou os programas de residências para farmacêuticos na América do Sul. Foi realizado estudo transversal, descritivo, quantitativo. Os dados foram coletados em consulta aos sítios eletrônicos e editais dos programas de residência, no período de janeiro a junho de 2021. As variáveis analisadas foram a região geográfica, financiamento, número de vagas, área de concentração e perfil das instituições. Os resultados apontam que embora tenham bibliografias sobre programas na Argentina, Brasil e Peru, apenas para os dois primeiros foi possível identificar programas ativos. Foram identificados 35 cursos oferecidos na Argentina e 216 no Brasil. Enquanto a maioria dos programas de Buenos Aires estão concentrados na província de Buenos Aires; no Brasil, os cursos foram identificados em todas as regiões, a maior parte na região sudeste, principalmente no estado de São Paulo. O setor público é o principal responsável pelo financiamento das bolsas de estudo, em ambos os países. Enquanto no Brasil existem dois modelos de residência, uniprofissional e multiprofissional, na Argentina, observou-se apenas programas uniprofissionais.

O hospital é o principal cenário de prática em ambos os países, 97,2 % na Argentina e 83,7 % no Brasil. Apesar dos programas de residência serem modelos de educação permanente bem sucedidos em diversos países, ainda há carência deste tipo formação profissional nos países da América do Sul.

PALAVRAS-CHAVE

Residência em farmácia. Educação de pós-graduação. Capacitação profissional. América do Sul.

Resumen de los programas de residencia para farmacéuticos en América del Sur

RESUMEN:

La investigación realizó un mapeo de los programas de residencia para farmacéuticos en América del Sur. Se realizó un estudio transversal, descriptivo y cuantitativo. Los datos se recogieron consultando los sitios web y avisos públicos de los programas de residencia, de enero a junio de 2021. Las variables analizadas fueron región geográfica, financiamiento, número de vacantes, área de concentración y perfil de las instituciones. Los resultados muestran que, existen bibliografías sobre programas en Argentina, Brasil y Perú, pero solo para los dos primeros fue posible identificar programas activos. Se identificaron 35 cursos ofrecidos en Argentina y 216 en Brasil. Si bien la mayoría de los programas en Buenos Aires se concentran en la provincia de Buenos Aires; en Brasil, se identificaron cursos en todas las regiones, la mayoría en la región sureste, principalmente en el estado de São Paulo. El sector público es el principal responsable de la financiación de becas en ambos países. Mientras que en Brasil existen dos modelos de residencia, uniprofesional y multiprofesional, en Argentina solo se observaron programas uniprofesionales. El hospital es el centro de práctica principal en ambos países, 97,2% en Argentina y 83,7% en Brasil. Si bien los programas de residencia son modelos exitosos de educación continua en varios países, aún existe una falta de este tipo de formación profesional en los países de América del Sur.

PALABRAS CLAVE:

Residencia en farmacia. Educación de posgrado. Formación profesional. Sudamérica.

CRediT

- **Recognitions:** Not applicable.
- **Financing:** Not applicable.
- **Conflicts of interest:** The authors certify that they have no commercial or associational interest that represents a conflict of interest with respect to the manuscript.
- **Ethical approval:** Not applicable.
- **Availability of data and material:** Not applicable .
- **Author's contributions:** Conceptualization, Methodology; Visualization; Writing: Calil-Elias S.; Gonsalves, Z. S.; Castilho, S. R. Formal Analysis; Validation; Writing - original draft: Gonsalves, Z. S.

Section Editor: Andréia Aparecida Simão

1 Introduction

Since the 1960s, the social role of the pharmacist has been changing due to the development of the pharmaceutical industry and the search to meet the needs of promoting the rational and safe use of medicines. As a consequence, since then, there has been a greater direction for pharmacists to work in hospital units and in primary health care in Brazil. This new scenario has led to the intensification of the offer of courses aimed at these areas, as a form of Permanent Education, being an educational proposal aimed at intervening and provoking reflections on the work process aimed at improving the quality of service and functional conditions: education at work, for work and for work. Among these, the residency programs in health stand out, which involve the formation of professional competences through in-service training (BRASIL - MINISTÉRIO DA SAÚDE, 2004).

On the verge of completing a centenary of contributing to the training of pharmaceutical professionals at a *lato sensu* postgraduate level, residency programs in the United States of America (USA) began in the 1930s. Over these years they developed an extensive history, initially involving aspects of hospital pharmacy management. The American Society of Hospital Pharmacists (ASHP) considers that Harvey A. K. Whitney conducted the first non-academic residency program at the University of Michigan Hospital (ASHP, 1987). Currently, the USA, Canada and Australia have residency programs for pharmacists structured, such as competency matrices, accreditation processes and measurement of reliable professional activities (GONSALVES; CALIL-ELIAS; CASTILHO, 2021; PITTENGER *et al.*, 2016).

More than 1,500 graduates a year are estimated at North American pharmacy residencies, coming from more than 800 programs in different areas. The standard basic cycle of residency programs lasts one year, called Post Graduate Year 1 (PGY1), is paid and includes the provision of health care to the participant. There is also, if the pharmacist so wishes, the opportunity to specialize in a specific area, such as hospitals, for example, through the Post Graduate Year 2 (PGY2). For the most part, the two stages of American residency programs occur independently, although some programs must integrate PGY 1 and PGY 2 (GRACE, 2018).

Unlike in the United States, Canadian pharmaceutical residencies last 12 months with structured rotations that cover aspects such as pharmaceutical practice, education, research and management. Some health centers may expand the course to provide follow-up in a more specialized area, which occurs through the second year, which is not mandatory. All accredited residencies take place in collaboration with universities, local health authorities and the Canadian Society of Hospital Pharmacists (CSHP, 2018).

In Oceania, the Australian postgraduate training system has demonstrated far-reaching advances. The Society of Hospital Pharmacists of Australia (SHPA) identified that the lack of formal or structured post-registration professional (post-licensing) practical training programs

was a barrier to strengthening and expanding the functions and scopes of pharmaceutical practices. In 2016, SHPA decided to form an agreement with the American Society of Hospital Pharmacists (ASHP) of the United States, in a strategy to mitigate these difficulties (MATTHEWS; FOWLER; DOOLEY, 2017).

In Europe, there is a diversity of formats for specialization after graduation in pharmacy, not all countries have adopted the Residency Programs strategy. In general, they present a less structured organization of their residency programs than the aforementioned North American countries. In France, for example, residency lasts four years. Residents are generally trained in hospitals and there are three specialties: Hospital Pharmacy, Medical Biology and Pharmaceutical Innovation and Research. Upon completion of the course, the pharmacist obtains the title of PharmD (Doctor of Pharmacy) (ONP, 2020).

Considering that there are still few works that discuss the scenario of residencies for pharmacists in South America, the motivation arose to characterize the profile of the offer and scope of these courses.

2 Methods

This is a cross-sectional, descriptive and quantitative study. Data were collected during the period from January to June 2021 in two stages: (i) identification of South American countries that offer residency courses for pharmacists and (ii) description of the profile of residency courses available in each country.

In the first stage, a structured review of works related to training through Residency Programs for pharmacists in South America was carried out. This bibliographic survey was guided by the method proposed by Cervo and Bervian (2002), which aims to raise all the references found on a given topic. It is worth mentioning that, in addition to the primary articles indexed in databases, the method recommends considering books, electronic sites, magazines, videos, in short, everything that can contribute to the first contact with the object of study. It is observed that in this option there is no detailed and specific criterion for the selection of the source of the material (CERVO; BERVIAN; DA SILVA, 2006). Furthermore, the choice for this type of review is justified by the difficulty in finding scientific articles that analyze how residency programs for pharmacists are developed in South American countries.

The indexed databases consulted were: PubMed via Medline, Scopus, Scielo and Google Scholar. The search strategy included the terms: Pharmacy Residency, South America, Certification, Graduate Education. Articles directly associated with the study objectives, published in English, Spanish or Portuguese, were included; with free access to the full text, without publication date limitation. In addition, an internet search was carried out for documents from pharmaceutical societies and organizations that mentioned residency programs in pharmacy in the countries of this continent.

The second step involved defining the profile of residencies for pharmacists in South American countries. To this end, a survey of public notices accessible on the internet was carried out for admission to the courses for the year 2021, offering vacancies for pharmacists. Residency programs that were inactive were excluded.

The variables analyzed were: geographic region, state; number of programs; number of vacancies; number of programs (distribution of vacancies by type of course) in each federative unit and type of funding: public (federal, state or municipal) or private. All data collected were transcribed and stored in electronic spreadsheets and analyzed using descriptive statistics.

It is noteworthy that the data used in this stage of the research are in the public domain, secondary, do not involve direct contact with humans and animals. For this reason, approval by the Research Ethics Committee was not required.

3 Results and discussion

Residency courses for pharmacists were found only in Argentina, Peru and Brazil (Chart 1). Although a document mentioned the existence of a residency program in Peru (AMARILES; OSORIO-BEDOYA; CARDONA, 2019), it was not possible to retrieve further information about this experience. Thus, only in Brazil and Argentina was it possible to verify data on the trajectory of the courses, which is solid and long-lasting in both countries.

It is noteworthy that Chilean pharmacy schools have made many changes to their curricula since 1998, both at undergraduate and graduate levels, offering several specialization courses, including hospital and clinical pharmacy, as a training strategy for pharmacists. These courses differ from the residency modality, as they have a lower workload and do not necessarily have in-service training as the main form of learning development (CHILE, 2021).

Chart 1 – Identification of South American countries that have residency programs for pharmacists obtained through literature review, Brazil, 2021.

COUNTRY	DOCUMENT SOURCE	TITLE	AUTHORSHIP	YEAR
ARG	https://aafh.org.ar/residencia-aafh	<i>Residencias en Farmacia Hospitalaria</i>	AAFH	2020
ARG	Rev. Hosp. Niños (B. Aires); 61(275):211-216	<i>Bodas de oro de la Sociedad Argentina de Farmacia Hospitalaria</i>	Bologna, V. G.	2019
PER	Farmacia Hospitalaria, vol. 43, no. 2, pp. 66-73	<i>Teaching of pharmaceutical care in Latin America: a structured review</i>	Amariles P, Osorio-Bedoya, E. J., Cardona D	2019
ARG	<i>Ministerio de Salud de la Provincia de Buenos Aires</i>	<i>Farmacia Hospitalaria, serie: Programa de Residencia</i>	Briñoli et al.	2000

BRA	Google Scholar	Lei nº 11.129, de 30 de julho de 2005 - Institui o Programa Nacional de Inclusão de Jovens - ProJovem; e dá outras providências.	Presidência da República	2005
BRA	https://comunicacaoeff.wixsite.com/residencia/home	Panorama da Residência no Brasil	Conselho Federal de Farmácia	2014
BRA	Rev Gaúcha Enferm. set;37(3) - https://doi.org/10.1590/1983-1447.2016.03.57046	P. Implementação de residência multiprofissional em saúde de uma universidade federal: trajetória histórica.	Martins <i>et al.</i>	2016
BRA	http://www.sbrafh.org.br/	Padrões para Residências Farmacêuticas em Hospitais e demais Serviços de Saúde – PaRes Sbrafh	SBRAFH	2017
BRA	http://www.sbrafh.org.br/	Padrões Mínimos para Farmácia Hospitalares e Serviços de Saúde	SBRAFH	2017
BRA	Diversitates, Vol 10, nº 3 (setembro / Dezembro)	Residência em Farmácia Hospitalar: 20 anos contribuindo para a formação de farmacêuticos de excelência	Gonsalves Z. S. <i>et al.</i>	2018
BRA	Brasília: Conselho Federal de Farmácia. 46 p.: il.	Relatório: perfil dos farmacêuticos egressos de programas de residência no Brasil	CFF	2019
BRA	REAS/EJCH Vol.13(2)	Caracterização das residências multiprofissionais em saúde do Brasil	da Silva <i>et al.</i>	2021
BRA	Research, Society and Development, [S. l.], v. 10, n. 3, p.	<i>Competency framework for hospital pharmacy residency: a scoping review</i>	Gonsalves, Z. S.; Calil-Elias, S.; Castilho, S. R.	2021

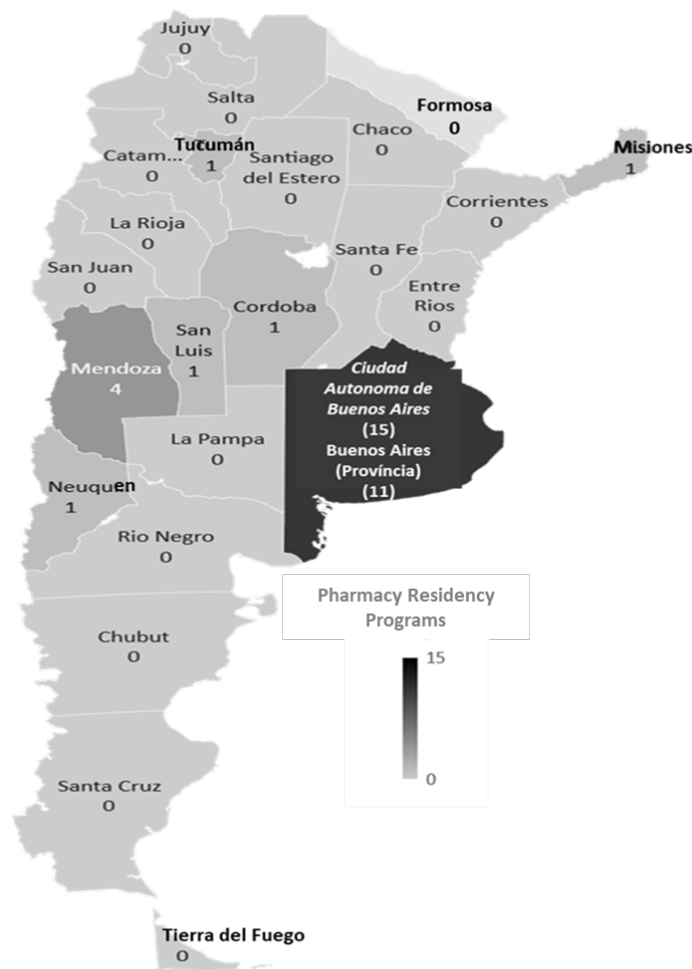
Caption: ARG (Argentina); BRA (Brasil); PER (Peru); AAFH (*Asociación Argentina de Farmacéuticos de Hospital*); SBRAFH (Sociedade Brasileira de Farmácia Hospitalar e Serviços de Saúde); CFF (Conselho Federal de Farmácia).

Source: Elaboration of the authors with data from the research.

Another aspect worth mentioning is the fact that no reference was found of certification (accreditation) processes consolidated in residency programs in Brazil and Argentina.

In Argentina, 35 residency courses were identified with 58 places in total. All are residency programs in Hospital Pharmacy with a duration of 3 years, except one that is in the area of Quality Control of Medicines and offers two places, with national funding. Of the 23 provinces in Argentina, only seven have residency courses for pharmacists. Most courses are offered in the province of Buenos Aires (74.3% - 26), with 57.7% (15) being concentrated in the Ciudad Autonoma de Buenos Aires (Figure 1). The funding of scholarships for these programs is primarily from public sources. Just over half, 54.3% (19) have funding from the provinces, 17.1% (6) from the federal and Ciudad Autonoma de Buenos Aires and only 5 (14.3%) programs have private funding.

Figure 1 – Distribution of Pharmacy Residency Programs in the provinces of Argentina (2021)



Source: Elaboration of the authors with data from the research.

In Argentina, this postgraduate model was created with the aim of promoting the training of young graduated pharmacists. The Sociedad Argentina de Farmacéuticos de Hospital published, under the title of “Hospital Pharmaceutical Residency”, the objectives of the residency programs, in its magazine of the year 7 n° 1-2, in 1978. However, this project was concluded only in 1985, the year in which the pharmacy residencies were inaugurated at Dr. Ignacio Pirovano and in Infantil Dr. Ricardo Gutierrez of the City of Buenos Aires. Even today, almost all pharmaceutical residencies in Buenos Aires are specialized in hospital pharmacy services. (BOLOGNA, 2019).

In Brazil, in 2021, there were 216 residency programs with open notices with vacancies for pharmacists, distributed in 23 states, in addition to the Federal District (Brasília). Unlike Argentina, in Brazil, there are two types of residency for non-medical professionals, uniprofessional and multiprofessional¹, which provided a total of 664

¹ Residencies in the Professional Health Field (Uniprofessional) or Multiprofessional, created from the enactment of Law No. 11,129 of 2005, are guided by the principles and guidelines of the Unified Health System (SUS), based on local and regional needs and realities, and cover the health professions: Biomedicine, Biological Sciences, Physical Education, Nursing, Pharmacy, Physiotherapy, Speech Therapy, Veterinary

vacancies for pharmacists. Of these, most were offered in the multiprofessional modality (85.4% - 567).

The distribution of vacancies for pharmacists in residency programs in Brazil is concentrated in the Southeast region (39.3%). It should be noted that the states of Amapá, Acre and Roraima did not offer vacancies for pharmacy residents (Figure 2).

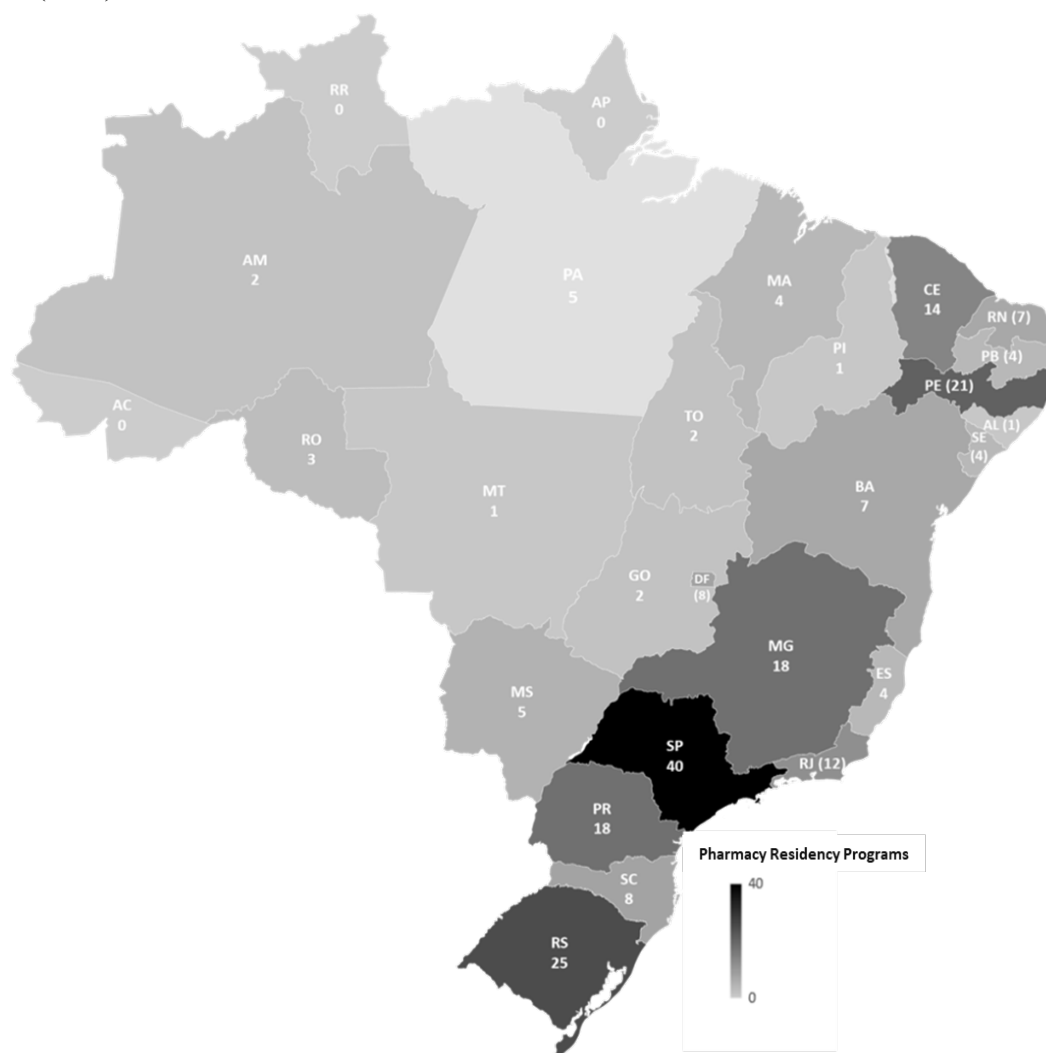
Uniprofessional courses are concentrated in the south (45.4%) and southeast (36.4%) regions. This modality is not available to pharmacists in the North and Midwest regions of Brazil. The financing of these programs, regardless of the modality, is carried out by the federal government (38.9%), state (26.4%), municipal (3.2%) or private institutions (31.5%).

The observed panorama also made it possible to verify that the residency programs for pharmacists, multiprofessional or uniprofessional, have the hospital as their main practice scenario (83.7%). The main areas of concentration in which they are distributed are oncology (9.6%), intensive care (9.1%) and urgency and emergency (6.7%). In addition to the hospital area, there are multidisciplinary programs in Primary Health Care, with 62 programs (9.3%) and 73 courses (11%) in Collective Health. This last concentration area is predominant in the northeast region, in the state of Pernambuco. This state has 3 programs in this area, with 41 vacancies in total, which are of wide competition for several health professionals.

In Brazil, some successful experiences also took place in the form of specialization, initially involving pharmaceutical care in hospitals. In this sense, the first specialization course in Hospital Pharmacy, at the Faculty of Pharmacy of the Federal University of Rio de Janeiro (UFRJ), in 1980, and the first Brazilian Clinical Pharmacy Course, at the Hospital das Clínicas of the Federal University of Rio Grande do Norte (UFRN), in 1983. Despite these pioneering initiatives, there was still a great lack of training possibilities in this area and a desert in other fields of action for the pharmacist (GONSALVES et al., 2018).

Medicine, Nutrition, Dentistry, Psychology, Social Work, Occupational Therapy, Medical Physics and Public Health. The uniprofessional residency consists of only one profession in the health area, while the multiprofessional residency, the program must consist of at least three of the aforementioned health professional categories. (BRASIL, 2021).

Figure 2 - Distribution of Residency Programs for Pharmacists by states (Federative Units - UF) in Brazil (2021).



Caption: Acre (AC); Alagoas (AL); Amapá (AP); Amazonas (AM); Bahia (BA); Ceará (CE); Distrito Federal (DF); Espírito Santo (ES); Goiás (GO); Maranhão (MA); Mato Grosso (MT); Mato Grosso do Sul (MS); Minas Gerais (MG); Pará (PA); Paraíba (PB); Paraná (PR); Pernambuco (PE); Piauí (PI); Rio de Janeiro (RJ); Rio Grande do Norte (RN); Rio Grande do Sul (RS); Rondônia (RO); Roraima (RR); Santa Catarina (SC); São Paulo (SP); Sergipe (SE); Tocantins (TO).

Source: Elaboration of the authors with data from the research.

The first Brazilian pharmaceutical residency programs emerged in the 1990s. At first, these programs were uniprofessional, targeting specific professional categories, as in the case of pharmacy and nursing, for example. They were named as specialization programs in the “modality” of residence and without legal support for the affixation of the title “resident” to the diplomas of their graduates (SBRAFH, 2017).

The Sanitary Reform movement in the 1980s, associated with the guidelines of the Brazilian Federal Constitution of 1988 and Law No. 8.080/1990 – which established the Unified Health System – and the institution of the National Policy for Permanent Education (BRASIL, 1988, 1990; MS, 2004), encouraged the publication of Law No. 11,129, of June 30, 2005, which established the Multiprofessional Residency and in the Professional Health

Area and created the National Commission for Multiprofessional Residency in Health – CNRMS in Brazil.

However, it was the regulation of this law, through the Interministerial Ordinance MEC/MS N° 1,077, of November 12, 2009, which pointed out among its guiding axes that residency programs should promote the “integration of knowledge and practices that allow to build shared competences for the consolidation of permanent education, in view of the need for changes in training, work and health management processes”. As of 2010, residency programs were expanded throughout Brazil, led mainly by federal university hospitals and fully supported by the CNRMS (SBRAFH, 2017).

The difference in the offer of vacancies for pharmacists in Brazil between the two models of structuring residency courses can be explained by the prioritization, by the Ministries of Education and Health, of funding multidisciplinary courses, both in primary and hospital care. In 2015, the Federal Council of Pharmacy identified the offer of 428 residency vacancies (CFF, 2015) for pharmacists. In the present study, an increase of 60% of these vacancies was observed.

In the US, experts in the field of pharmaceutical education point out that it is recommended for career development to enter a one-year residency program (PGY1), followed by professional certification in the area of expertise. Optionally, entry into the second year of residency provides subspecialty training (PGY2), with additional training in applied research, and, if the professional so desires, a third year fellowship or academic doctorate is offered. In Canada (CSHP, 2018) and France (ONP, 2020), entry into residency programs must precede entry into the job market, as selection processes give preference to pharmacists with an ACPR (Accredited Canadian Pharmacy Resident) credential in Canada, and with a diploma (Diplôme d’Études Spécialisées), in France. These processes differ from the evaluated scenarios. While in Argentina most programs last for 3 years, in Brazil they last for two years. It is noteworthy that the Brazilian multiprofessional programs have several areas of concentration, such as cancer, intensive care, collective health, among others, which was not observed in Buenos Aires programs.

4 Final Considerations

In South America, only two countries provided consolidated data on residency programs offering vacancies for pharmacists in the year 2021. This scenario contrasts with that of countries on other continents such as the USA, Canada and Australia, which are traditionally references of social innovations in the world and in the field of professional education. In these countries, significant advances can be identified in relation to the qualification of programs and processes for evaluating the training of residents based on competences (AACP, 2021; ASHP, 2016; CSHP, 2021; PSA, 2016). The only report found that demonstrates an initial structure and may support the implementation of a certification process, as in the three countries mentioned, was the publication by the Brazilian Society of

Hospital Pharmacy and Health Services of the Standards for pharmaceutical residencies in hospitals and other Brazilian health services – PaRes (SBRAFH, 2017).

Analyzing the regional deserts found in the offer of residency programs in both South American countries, it would be interesting to carry out a study to assess the demographic density of pharmacists, to assess the need to implement residency courses in these regions. This assumption is aligned with the fact that professional training through residency courses is recommended by international education and health institutions as a form of qualified training, especially for recent graduates (FIP, 2017; FIP; UNESCO; WHO, 2008). In addition, it can be inferred that this postgraduate model plays an important role in providing work experience to recent graduates, being, in many cases, the gateway to the job market and a great opportunity for qualification for these professionals (BOLOGNA, 2019; CFF, 2019).

The mapping of this research showed that few South American countries have this model of continuing education for training new graduates. Minimum requirements for the performance of pharmaceutical professionals in South America have been available since 2006, through Mercosul Resolution No. 66/2006. This norm instituted a minimum matrix for the Registration of Health Professionals in the Common Market of the Southern Cone and aims to establish the standard understanding in all States parties, among them: the pharmacist, as the higher-level professional to work in the areas of pharmaceutical sciences at the graduation level (MERCOSUL, 2006).

Before that, in 1995, OPAS, which acts as a consultant for the maintenance of common and permanent cooperation activities among the countries of the bloc, guided the “creation of a specific cooperation strategy in the field of formation, capacity building and dynamics of the workforce in Human Resources in Health”. Although the field of health does not constitute a specific activity within the areas of integration provided for in the document, previous experiences such as the European Common Market demonstrate the progress of economic integration processes, including the circulation of the workforce among the components of these advances (OPAS/OMS, 1995). This arrangement would help to strengthen the pharmaceutical profession, including through residency courses, encouraging the expansion of this format and certification processes with the possibility of exchanging Human Resources between the countries of the bloc, led by Brazil and Argentina, with expertise in this model of formation. In this way, this strengthening could corroborate the search for expanding professional development strategies in other South American countries.

Residency programs for South American pharmacists are relatively recent and present in only two countries, Argentina and Brazil. Scientific productions on this type of professional training in the continent are scarce to support discussions of this model of continuing education. It is necessary to stimulate scientific production in the area so that it can understand how to improve existing programs and, above all, expand this successful model of training pharmacists. The present mapping demonstrated the diversity of courses, mainly in Brazil. It was also observed that the profile of the programs may vary according to the sociodemographic demand of the country. In this way, it is possible to consider that

Argentine and Brazilian programs can be a reference to subsidize the implementation of this training model for pharmacists in other South American countries.

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