Analysis of vaccination practice in community pharmacies: a cross-section study from Brazil

Análise da prática de vacinação em farmácias comunitárias: um estudo transversal do Brasil

Análisis de la práctica de vacunación em farmácias comunitarias: um estudio transversal de Brasil

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ABSTRACT

Objective: To analyze the practice of vaccination services in community pharmacies in Brazil. **Methods:** This is a cross-sectional descriptive study carried out in Brazil, between January 2020 and December 2021, with a pharmacy network composed of 400 stores distributed in 10 Brazilian states. Data were collected from the institutional database, called Clinicar Rx®, which has the entire monitoring, follow-up, and management process of existing pharmaceutical services in establishments. The study was approved by the Research Ethics Committee. **Results:** 2,981 doses of vaccines were applied from 2020 to 2021 in 18 establishments in Brazil. The state that had the highest number of vaccinations was São Paulo. The most sought-after vaccine was Influenza with 2,934 doses administered. **Conclusion:** It was found that the vaccination service in pharmacies is evolving, and the pharmaceutical professional has a fundamental role in this process, being able to contribute to the access and increase of vaccination coverage rates in the country.

Keywords: Pharmacist, Pharmacy, Vaccines.

RESUMO

Objetivo: Analisar a prática dos serviços de vacinação em farmácias comunitárias no Brasil. **Métodos:** Trata-se de um estudo descritivo transversal realizado no Brasil, entre janeiro de 2020 e dezembro de 2021, com uma rede de farmácias composta por 400 lojas distribuídas em 10 estados brasileiros. Os dados foram coletados do banco de dados institucional, denominado Clinicar Rx®, que possui todo o processo de monitoramento, acompanhamento e gestão dos serviços farmacêuticos existentes nos estabelecimentos. O estudo foi aprovado pelo Comitê de Ética em Pesquisa. **Resultados:** Foram aplicadas 2.981 doses de vacinas nos anos de 2020 a 2021 em 18 estabelecimentos no Brasil. O estado que obteve o maior número de vacinações foi São Paulo. A vacina mais procurada foi a Influenza com 2.934 doses administradas. **Conclusão:** Constatou-se que o serviço de vacinação nas farmácias está evoluindo, e o profissional farmacêutico tem papel fundamental nesse processo, podendo contribuir para o acesso e aumento das taxas de cobertura vacinal no país.

Palavras-chave: Farmacêutico, Farmácia, Vacinas.

RESUMEN

Objetivo: Analizar la práctica de los servicios de vacunación en farmacias comunitarias en Brasil. **Métodos:** Este es un estudio descriptivo transversal realizado en Brasil, entre enero de 2020 y diciembre de 2021, con una red de farmacias compuesta por 400 tiendas distribuidas en 10 estados brasileños. Los datos fueron recolectados de la base de datos institucional, denominada Clinicar Rx®, la cual cuenta con todo el proceso

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de monitoreo, seguimiento y gestión de los servicios farmacéuticos existentes en los establecimientos. El estudio fue aprobado por el Comité de Ética en Investigación. **Resultados:** Ae aplicaron 2.981 dosis de vacunas de 2020 a 2021 en 18 establecimientos de Brasil. El estado que tuvo el mayor número de vacunas fue São Paulo. La vacuna más demandada fue la Influenza con 2.934 dosis administradas. **Conclusión:** Se constató que el servicio de vacunación en farmacias está evolucionando, y el profesional farmacéutico tiene un papel fundamental en este proceso, pudiendo contribuir al acceso y aumento de las tasas de cobertura vacunal en el país.

Palabras clave: Farmacéutico, Farmacia, Vacunas.

INTRODUCTION

The name "vaccine" first appeared in 1798, thanks to the expertise of the English physician and scientist Edward Jenner. He heard reports that farm workers did not get smallpox, as they had already caught cowpox, which had less of an impact on the human body. He then introduced the two viruses to an eight-year-old boy and discovered that the myth had a scientific basis. The term vaccine is derived from the scientific name Variolae vaccinae, which was given to a cowpox (HOGUE M, et al., 2006).

Artificial active immunization agents, immunobiologicals or vaccines, are obtained through attenuated or modified pathogens or their fragments. Therefore, they do not cause the disease. These pathogens induce immunity by generating memory cells. When there is a current exposure to the infectious agent, the immune system will recruit specific cells and produce responses more quickly and effectively (BARBOSA R, et al., 2021).

In the United States of America (USA), there is a solid participation of pharmacists in actions involving immunizations, being considered a provider of this service, in addition to filling an area that historically belongs to doctors, nurses and nursing technicians (RODRIGUES SMF, et al., 2022).

Vaccination for public health has an indisputable collective, sanitary, and economic magnitude. According to the World Health Organization (WHO), it is second only to drinking water. Thus, vaccines are of relevance to the sustainability and effectiveness of health systems, the well-being of patients, families, communities, and prosperity in all countries (POUDEL A, et al., 2019).

Vaccination services to combat many diseases remain below those indicated by the WHO and other international agencies. Although many countries have created successful and efficient programs, there is still a long way to go, not only to achieve high rates of population immunity against various diseases, but also to achieve lifetime equality of reach (VIEIRA EW, et al., 2020).

In this sense, to achieve 75% of vaccination coverage in the world, the WHO presented a campaign involving numerous health establishments, including pharmacies. Thus, the preference of users for these places should represent a greater commitment of these establishments in achieving this goal (TRITANY RF, et al., 2020).

In Brazil, when discussing the approach to public health policies, activities related to vaccination gained notoriety, due to the good results in the prevention and eradication of vaccine-preventable diseases. The National Immunization Program is seen as a model for similar actions in other countries, thanks to the positive results of the campaigns that controlled smallpox at the time and its incessant concern to expand the supply of immunobiological, strengthening the vaccination schedule (ARAÚJO TM, et al., 2019).

Many professionals have the legal prerogative to work in vaccination programs as the true authors of this action, because they have the technical capacity to perform this service. Among them, there are some professionals such as doctors, nurses and, currently, through the Collegiate Board Resolution (CBR) nº 654/18, the pharmacist. This CBR provides for the requirements necessary for the provision of the vaccination service by the pharmacist and makes other provisions. In addition, it establishes that the presence of a qualified professional to provide vaccination services is mandatory during the entire period of operation of the establishment, with a guarantee of technical autonomy (RODRIGUES SMF, et al., 2022).

In line with this, since 2014, through Law Nº. 13,021, which deals with the exercise and inspection of pharmaceutical activities, pharmacies have been allowed to offer vaccines and serums to serve the population. However, for the activity to be regulated, the National Health Surveillance Agency published in December 2017, CBR nº 197, which defines the requirements for the operation of human vaccination services in the country, whether public, private, philanthropic, civilian, or military (PÉREZ-RUBIO A, et al., 2018).

In Australia, the provision of vaccines by pharmacists in community pharmacies was regulated by the Poisons and Therapeutic Goods Act 1966. In New Zealand, the government authorizes professionals to provide funded flu vaccines to patients over 65, pregnant women and adults under 65 years of age. In the Philippines, the Republic Act, known as the Pharmacy Act 2016, also confirms vaccination by pharmacists. Other countries such as France, Portugal, Switzerland, Ireland, Canada, United States of America (USA), carry out vaccination services by pharmacists. In South America, the process is no different, countries such as Argentina, Chile, Peru, and Venezuela have vaccination services in pharmacies being applied by these professionals (HOMMA A, et al., 2011; ARAÚJO TM, et al., 2019; BARBOSA R, et al., 2021).

In Brazil, the vaccination service conducted by pharmacists has been highlighted, as it has strengthened clinical practice and consolidated the pharmacy as a health facility. The importance of this professional in the National Immunization Program (NIP) is also highlighted (NOORMANDI A, et al., 2021).

Therefore, the pharmacist's role in immunization is linked to the approval of a complementary training course and the presentation of the supporting document to the Regional Pharmacy Councils (RPC's) of each State. Courses must be certified by the Federal Council of Pharmacy (FCP) or by Higher Education Institutions (HEI) that have been approved by the Ministry of Education and Culture (MEC). Thus, only pharmacists who have a postgraduate degree, fulfilling the basic requirements set out in the resolution, or also professionals who certify knowledge around at least one year can perform the service (BRAZIL, 2018; GALATO D, et al., 2021).

Regarding regulatory aspects, Resolution nº 197/2017 guarantees the permission to health establishments, including pharmacies and drugstores, to work and apply vaccines, being a service already established by Law nº 13.021/14 and as a necessary requirement, the performance of this service by pharmacists must follow what says the Resolution of FCP nº 654/2018 (BRASIL, 2014; BRASIL, 2017; BRASIL, 2018).

With this, the administration of vaccines in community pharmacies facilitates the population's access to vaccination, contributing positively to the increase of vaccine coverage, without reducing the quality of the service (PÉREZ-RUBIO A, et al., 2018). The pharmacist will be able to make interventions in the community, promoting vaccination, informing the population of its benefits, clarifying doubts and demystifying misconceptions, which are often the cause of non-adherence to therapy, thus helping to increase vaccine coverage and decrease morbidity and mortality rates from vaccine-preventable diseases. So, pharmacies, due to their capillarity and geographic distribution, and the pharmacist due to their competence and availability, have a wide potential to bring benefits in terms of public health (NOORMANDI A, et al., 2021).

Therefore, this is an eminent victory for the pharmaceutical profession in Brazil, as professionals have the legal right and the technical competence to supply and administer medicines with quality. Thus, this practice was of paramount importance in the process of developing the objective of professionals in providing immunization services, whether in pharmacies or any other health establishments (FREITAS GR, et al., 2021).

However, even with these great achievements, there are problems to be overcome, such as: expanding the number of pharmacists accredited to provide immunization services; increasing the number of courses that provide training in basic life support, which will have an impact on the education of immunizing pharmacists; opportunity for pharmacists and pharmacies to educate patients about the importance of immunization, based on data from the Brazilian Ministry of Health (MOH), which point to a decrease in immunization coverage rates among adults and the elderly (NOORMANDI A, et al., 2021; ARAÚJO TM, et al., 2019).

In this context, the objective of this study is to analyze the practice of the vaccination service in pharmacy in Brazil.

METHODS

Study design and configuration

This was a cross-sectional descriptive study carried out in Brazil, between January 2020 and December 2021, with a pharmacy network made up of 400 stores distributed in 10 Brazilian states. This establishment is among the six largest pharmacy chains in Brazil, with an average gross revenue of 2.1 billion reais. It was approved by the Research Ethics Committee of the Institute of Health Sciences of the Federal University of Pará, under number 5,066,929 and CAAE: 52708221.8.0000.0018.

Data collection

Community pharmacies regularly registered with the Regional Pharmacy Council, and which had a pharmacist, complied with the insertion rules, and were admitted to the study. Manipulation pharmacies, hospital was excluded. Data were collected from the institutional database, called Clinicar Rx®, which has the entire monitoring, follow-up, and management process of existing pharmaceutical services in establishments. The data were organized in a spreadsheet and divided by category, such as: age, sex, municipality of residence, name of the vaccine (BARBOSA R, et al., 2021).

Statistical analysis

The data obtained were organized in a database in *Microsoft Excel® software* for descriptive statistics and the results were categorized and presented in percentage tables.

RESULTS

A total of 18 community pharmacies carried out the vaccination service in Brazil and 2,981 doses were administered during the years 2020 and 2021. The state of São Paulo was the most prevalent with 49.6% of the total doses administered. All establishments had pharmacists able to perform the procedure (**Table 1**).

Table 1 - Vaccination data in community pharmacies by Brazilian state.

Characteristics	State of Pará	State of São Paulo	State of Maranhão
2020			
administered doses	94	325	0
number of pharmacies	1	2	0
number of pharmacists	2	4	0
2021			
administered doses	889	1154	519
number of pharmacies	2	10	3
number of pharmacists	4	20	6

Source: Sales CA, et al., 2022.

The female sex was what was researched, and in 2020 it obtained a percentage of 59.9% and 2021, 55.3%, therefore, presenting an average of 57.6% of the total of vaccinated in the years of the years, with a median age of 45.6 years (**Table 2**).

Table 2 - Characteristics of users of vaccination services.

Characteristics	2020	2021
Sex		
Male (%, n)	40,1 (168)	44,6 (1145)
Feminine (%, n)	59,9 (251)	55,3 (1417)
Age (years)		
Male	42,1 (7-96)	42,3 (0-98)
Feminine	43,9 (1-95)	47,3 (1-99)

Source: Sales CA, et al., 2022.

The demand for the vaccine was more recurrent, reaching a media in the years 2020 and 2021 of vaccine, 3%, while the others available (Yellow fever, Hepatitis B, Human papillomavirus, Influenza and Bacterial tripe) establishment, together, added up to 1.4 % of demand.

Table 3 - Representation of vaccinees administered in community pharmacies.

Vaccine	2020 (%.n)	2021 (%, n)	%**
Yellow fever	0,2 (1)	0,4 (11)	0,3
Hepatitis B	0,4 (2)	1,1 (29)	0,7
Human papillomavirus	0,7 (3)	0	0,3
Influenza (Flu)	98,3 (412)	98,4 (2.522)	98,3
Bacterial triple	0,2 (1)	0	0,1
Total	100 (419)	100 (2562)	

Legenda: ** average for the years 2020 and 2021.
Source: Sales CA, et al., 2022.

DISCUSSION

The term “pharmaceutical care” refers to the model of professional practice aimed at ensuring the best results of pharmacological treatment and patient well-being. This term is included in the context of Pharmaceutical Care (PC). Because of this, the services provided by pharmacists are defined as the set of tasks performed by this professional so that users have access, care, and monitoring of vaccine-preventable diseases (FERRAREZI S, et al., 2018). Thus, both counseling and problem solving are part of the PC provided through immunization services (ARAÚJO TM, et al., 2019).

A Pharmaceutical Immunization Service (PIS) refers to a set of actions developed by a pharmacist or under his supervision to meet the immunization needs in diseases that can be prevented through vaccination, both individually and collectively, and which has the goal to achieve concrete results in public health with the aim of improving the quality of life of users (ISENOR J, et al., 2018).

The pharmacy is seen as the access door of the population in relation to the consumption of medicines and should be understood as an advanced post of Primary Health Care (PHC). According to data from the Ministry of Finance, pharmacies would be responsible for 76% of the direct supply of medicines to the population (BRASIL, 2014). These establishments perform various clinical services and procedures, offered by the pharmacist, in which they use their knowledge and expertise to improve the pharmacotherapy and management of the pathology, through communication with the patient or with another health professional, when necessary (SOARES LA, et al., 2020).

In the study, a total of 2,981 doses of vaccines were observed during the period 2020 to 2021. Therefore, only 15 pharmaceutical establishments, distributed in three states, provided the service. However, few professionals were able to perform the task. This shows that we still need to act more effectively in this segment. In other countries, such as the USA, the participation of pharmacists involved in immunizations is well established. The author Grabenstein J (2001) carried out a study on the patient's perception regarding the application of vaccines in pharmacies, and they reported being satisfied and would recommend the service.

Females were the ones who most sought the vaccination service, with a median age of 45.6 years. Research in the field of public health affirms that gender relations influence the way men and women conceive and deal with their health (BRASIL, 2016). A study carried out in the USA compared the health situation between men and women and described that men have been shown to be more vulnerable to diseases, especially serious and chronic ones, and that they have a life expectancy lower than that of women by about seven years. Also, according to this study, health-related beliefs and behavior are factors that contribute to this result (ARAÚJO TM, et al., 2019).

As a result, men have greater difficulty in adopting healthy behaviors that do not pose risks to their health. Despite this greater vulnerability and high mortality rates, males do not seek preventive services, more commonly sought by women, and enter the system through hospital care of medium and high complexity. This attitude has resulted in the worsening of morbidities, which could be avoided if men regularly performed primary prevention measures (FREITAS GR, et al., 2021).

In 2019, a FCP survey on pioneering services in the country revealed the existence of 12 pharmaceutical clinics and the implementation of a vaccination service in 90 pharmacies. Among the data identified, it was found that during the first three months of 2019, pharmacy chains affiliated to the Brazilian Association of Pharmacy and Drugstore Networks administered 18,218 doses (200 doses/day) (BARBOSA R, et al., 2021).

These pharmacies use a computerized system to track all treatments. Thus, it was found that the vaccines most used by pharmacists were against influenza (57.75%) and antimeningococcal B (24.04%). The system also recorded that 290 people were not vaccinated during the study period because it discovered a contraindication during anamnesis (patient data collection), which prevented the procedure (BRASIL, 2022).

Another study examined influenza immunization policies in Nova Scotia, Canada from 2006 to 2016 and found that, as of 2013, the participation of pharmacists in vaccination activities positively influenced vaccine coverage when compared to previous years (ISENOR J, et al., 2018).

The year 2020 was extremely important for pharmacists in private companies, as they supported the public sector in the national flu campaign during the Covid-19 pandemic. A total of 155,056 doses of a total of 719,573 were administered by private pharmacies in Porto Alegre, representing 22% of the total. There is also a growing expansion of the offer of vaccination services in clinical analysis laboratories across the country (ISENOR J, et al., 2018).

One of the most significant challenges that public vaccination services face, without a doubt, is the inadequacy of children's vaccination schedule. This is due to a variety of factors, such as: low education of mothers or guardians, low purchasing power of families, working hours of mothers or guardians incompatible with the opening hours of the service, distance of the professional from the vaccination room and the lack of an educational process involving mothers and vaccinating professionals (FERRAREZI S, et al., 2018). Reinforcing the vaccination service in drugstores due to its capillarity and opening hours, facilitating access to the service at more convenient times for workers and students.

It was noticeable that the role of the pharmaceutical professional in vaccination is evolving due to the clinical expansion of this professional, which helps to increase vaccine coverage rates and consequently decrease the number of deaths from vaccine-preventable diseases and assist in the promotion of health and other related conditions.

In this study, it was observed that the influenza vaccine was the most prevalent. By getting vaccinated, the user greatly reduces the chance of being contaminated by viral infections. The vaccine helps the body to recognize the virus and define a defense response against it. In addition, those people who were vaccinated and were still contaminated, have a lower chance of suffering complications, being hospitalized and progressing to death (RODRIGUES SMF, et al., 2022).

Despite being cost-effective, flu vaccination has been decreasing in our population since the 2007 and 2008 campaign, when it reached its peak. Adequate seasonal vaccination is estimated to save more than half of hospitalizations and up to 80% of deaths. The widespread use of adjuvanted and/or tetravalent vaccines may bring additional benefits to some red blood cells, in addition to being economically beneficial to the system (PÉREZ-RUBIO A, et al., 2018).

CONCLUSION

In conclusion, vaccination services are available in Brazilian pharmacies, so they need to be expanded, as it would facilitate the population's access to the immunization service, contributing positively to the increase in vaccine coverage, without reducing the quality of the service. Therefore, community pharmacies represent the first access to care and health and have a capable and active professional in the control and monitoring of health problems. Our future involves an investigation of the implementation costs, as well as the business and population interest in carrying out these services in community pharmacies in Brazil. Thus, the pharmacist is of paramount importance in pharmaceutical care and/or quality care. With the responsibility of guaranteeing the execution of medicines, such as vaccines, enabling actions that guide users to a better understanding of their health status, their medicines, their therapeutic project, and their needs.

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