Logistics of Medicine Distribution from the Public Network versus Access to Medicines by the Brazilian Population

Logística de Distribuição de Medicamentos da Rede Pública *versus* Acesso aos Medicamentos pela População Brasileira
Logística de Distribución de Medicamentos Públicos versus Acceso a Medicamentos por Parte de la Población Brasileña

RESUMO
Objetivo: Analisar o sistema logístico da distribuição de medicamentos da rede pública brasileira de saúde, explorando conceitos do fornecimento de medicamentos e o ciclo da Assistência Farmacêutica. **Método:** Este estudo consiste em uma revisão integrativa da literatura, através da coleta de dados em revistas e periódicos científicos nacionais acerca do tema de interesse. **Resultados:** Existem inúmeras evidências do aumento crescente dos gastos em saúde, sendo que os medicamentos são responsáveis por uma grande parcela desse custo. Na gestão da assistência farmacêutica, o gerenciamento da logística de medicamento visa manter o abastecimento de medicamentos das farmácias dos serviços de saúde, compatibilizando os recursos disponíveis com as necessidades. A ampliação do acesso da população ao sistema de saúde exigiu mudanças na distribuição de medicamentos, de maneira a aumentar a cobertura e ao mesmo tempo minimizar custos. **Conclusão:** uma maior eficiência na organização dos processos logísticos farmacêuticos reduz a interrupção de fornecimento de medicamentos na rede pública brasileira.
DESCRITORES: Logística; Rede Pública de Saúde; Assistência Farmacêutica; Medicamentos.

ABSTRACT
Objective: To analyze the logistics system for the distribution of medicines in the Brazilian public health network, exploring concepts of the supply of medicines and the Pharmaceutical Services cycle. **Method:** This study consists of an integrative literature review, collecting data from national scientific journals and magazines on the topic of interest. **Results:** There is ample evidence of the growing increase in health expenditure, with medicines accounting for a large proportion of this cost. In the management of pharmaceutical care, the management of drug logistics aims to maintain the supply of drugs in health service pharmacies, matching available resources with needs. The expansion of the population's access to the health system has required changes in the distribution of medicines in order to increase coverage while minimizing costs. **Conclusion:** greater efficiency in the organization of pharmaceutical logistics processes reduces interruptions in the supply of medicines in the Brazilian public network.
DESCRIPTORS: Logistics; Public Health Network; Pharmaceutical Assistance; Medicines.

RESUMEN
Objetivo: Analizar el sistema logístico de distribución de medicamentos en la red pública de salud brasileña, explorando conceptos del abastecimiento de medicamentos y del ciclo de Servicios Farmacéuticos. **Método:** Este estudio consiste en una revisión bibliográfica integradora, recogiendo datos de revistas y periódicos científicos nacionales sobre el tema de interés. **Resultados:** Existe amplia evidencia del creciente aumento del gasto en salud, siendo los medicamentos responsables por gran parte de este costo. En la gestión de la atención farmacéutica, la gestión de la logística de medicamentos tiene como objetivo mantener el abastecimiento de medicamentos en las farmacias de los servicios de salud, adecuando los recursos disponibles a las necesidades. La ampliación del acceso de la población al sistema sanitario ha exigido cambios en la distribución de los medicamentos para aumentar la cobertura minimizando los costes. **Conclusión:** una mayor eficiencia en la organización de los procesos de logística farmacéutica reduce las interrupciones en el suministro de medicamentos en la red pública brasileña.
DESCRIPTORES: Logística; Red de Salud Pública; Asistencia Farmacéutica; Medicamentos.

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INTRODUCTION

Access to medicines is a fundamental point to guarantee comprehensive health care. In Brazil, according to the Federal Constitution and other legislative publications, all citizens must have the right and access to the medicines they need to prevent and treat illnesses, free of charge, through the Unified Health System (SUS).

The reality of the medicine distribution system in the public health network, however, is delicate and marked by obstacles and complaints from the population regarding the availability of medicines in health units. A large majority of the Brazilian population depends directly on the service offered by the SUS, since they do not have the financial means to purchase medicines outside the network, and these are extremely important for the treatment of these patients' illnesses. In view of this, it is necessary to implement logistics management activities, comprising the Pharmaceutical Assistance Cycle, in order to offer a good structure and planning to guarantee the population's access to treatment. The characteristics and processes related to the pharmaceutical service, as well as the political and socioeconomic characteristics also have an influence on access to medicines.[1] In pharmaceutical logistics management, programming, acquisition, storage and distribution activities are management activities that require adequate planning, and are intrinsically related to the level of access to medicines, and are directly linked to the low availability and discontinuity of the supply of essential medicines in health units.

In this sense, pharmaceutical logistics aims to maintain the supply of medicines to health service pharmacies, structuring the activities related to the programming and acquisition process, as well as enriching the relationship between the user and the rational use of medicines, in order to match the available resources with the needs.

Thus, this paper aims to discuss the relationship between the logistics system for distributing medicines in the Brazilian public health network and the population's access to treatment. To this end, it addresses concepts involving the Brazilian public network for supplying medicines and the Pharmaceutical Assistance cycle. It also discusses the definition and characterization of the pharmaceutical logistics process, addressing definitions such as selection, programming, acquisition, receipt, storage, distribution and dispensing of medicines.

The free distribution of medicines in the SUS is an integral part of the process of healing, rehabilitation and prevention of diseases. The expansion, mainly through the ABS, has required, over the last few years, changes in the organization of Pharmaceutical Assistance (PA) within the SUS. The expansion and growing demand for the population's access to the public health system have democratized access to medicines by the Brazilian population, requiring, over the last few years, changes in the organization of logistics operations in the pharmaceutical sector of the SUS, in order to increase the coverage of the free distribution of medicines and at the same time minimize costs.

METHOD

This article consists of an integrative literature review study. The bibliographic survey was carried out through research on the topic of this work. The data collected were obtained through bibliographic searches in national scientific journals and periodicals, made available through theses and dissertations. Using Boolean operators (or and and), scientific articles indexed in databases such as Scielo were searched. For this research, the following terms were used to obtain the references used: Logistics; Public Health Network; Pharmaceutical Assistance; Medications. The bibliographic research was limited to the Portuguese and Spanish languag-

es, in which the articles analyzed were chosen because they were coherent with the theme.

THEORETICAL FRAMEWORK

OVERVIEW OF PUBLIC HEALTH IN BRAZIL

In Brazil, since the creation of the Unified Health System (SUS), linked to the Federal Constitution and other laws, it has become the State's obligation to guarantee the population's right and free access to medicines necessary for their treatment. [2] However, the implementation of social public policies that make such rights a reality often lacks resources that are outside the scope of the State administration, generating a huge disparity between reality and constitutionally guaranteed access.

> Art. 196: Health is a right of all and a duty of the State, guaranteed through social and economic policies that aim to reduce the risk of disease and other injuries and universal and equal access to actions and services for its promotion, protection and recovery. [3]

The institutionalization of SUS pharmaceutical assistance policies contributed to expanding access and public provision, reducing inequalities and regulating the health of medicines, proving to be essential in the process of healing, rehabilitation and disease prevention. [4] It is worth noting that a large majority of Brazilian citizens depend exclusively on the SUS, however, the minority that does not depend on it, and can finance their own healthcare, also benefits from the system.

The medicines distributed in the Primary Health Care of the SUS are classified as essential medicines, characterized by the World Health Organization (WHO) as those used to satisfy the priority needs of basic health care of the population, and are considered by the United Nations (UN) as one of the indicators that measure progress in the realization of the right to health, although a third of the world's population does not have regular access to these supplies. [5]

From the 1990s onwards, several Brazilian public policies were implemented to ensure the availability of medicines for the population. [6]

The National Drug Policy (PNM - *Política Nacional de Medicamentos*), approved in 1998, was enacted with the aim of promoting access to and rational use of essential medicines. In 2004, the National Pharmaceutical Assistance Policy (PNAF - *Política Nacional de Assistência Farmacêutica*) was implemented, defining the guarantee of access and equity in health actions as a strategic axis, including, among these, Pharmaceutical Assistance, defined as a set of actions aimed at promoting, protecting and restoring health, with medicines as an essential input and aiming at access and their rational use. [7] Despite the advent of public policies aimed at promoting access to medicines, studies point to problems related to the availability of medicines, in the public sector, in quantities adequate to the population's needs, marked by difficulties for the State to fulfill its duty towards this right of citizens, in accordance with the constitutional order. [6] The provision of medicines stands out in particular. "The system is insufficient in view of the current demand, facing a lack of resources to cover the right to health in accordance with the constitutional order. [6]

Finally, the scenario from 2017 onwards proved to be quite worrying regarding the possibilities of expanding access to medicines in the SUS. [7] Finally, the SUS scenario was established with the purpose of covering, free of charge, fully, universally and equally, all citizens, but the reality experienced, however, shows an incomplete assistance program, due to financial hardship combined with increasingly limited demands, failing to respond adequately to the health needs of the entire society.

LOGISTICS IN THE PHARMACEUTICAL SECTOR

The term "logistics" was first defined during World War II, in the context of activities carried out in military operations. [1]

Costa and Vilhena [8] emphasize that logistics has evolved following the development of the global economy, currently constituting one of the elements in companies' competitive strategy. Logistics has several different definitions with the same focus on planning, implementing and controlling the efficient and effective flow of raw materials until the delivery of the final product to its point of consumption, in order to meet consumer requirements.

The development of logistics has led to its division into areas, characterizing a form of organization of logistics processes, including inventory, storage, distribution, planning and transportation, order processing system, marketing and customer service.

De Souza [9] corroborates that the Pharmaceutical logistics aims to establish the control, planning and implementation of the flow, storage and transportation stages of pharmaceutical products from sale to the end consumer, valuing distribution efficiency and low operating costs, aiming to guarantee the integrity, safety and efficacy of the medicine and the maintenance of its pharmacological action.

Carefully controlling and managing inventory levels makes economic sense to balance maintenance, acquisition and material shortage costs, as well as to ensure that the supply of products to the customer is not interrupted. 8 Maintaining a minimum safety stock is essential to avoid stock shortages and the consequent

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interruption of activities dependent on that material, enabling corrective measures to be taken.

"Defining the correct time to buy, the ideal quantity to be purchased, the best prices, the safety levels, the quality of the good or service, are important characteristics in stock management". [8]

The storage of pharmaceutical products consists of implementing a set of methods and techniques for the safekeeping, preservation and rational disposal of the material in the storage sectors and units.

Order processing is of utmost importance, classified as the final key activity, as it triggers the movement of products and the dispensing service, starting the order cycle that is the principle of the logistics areas.

Transportation is one of the main logistics functions as it represents the largest share of logistics costs. It is essential to achieve the logistics objective, which is the right product, in the right quantity, at the right time, in the right place at the lowest possible cost. [8]

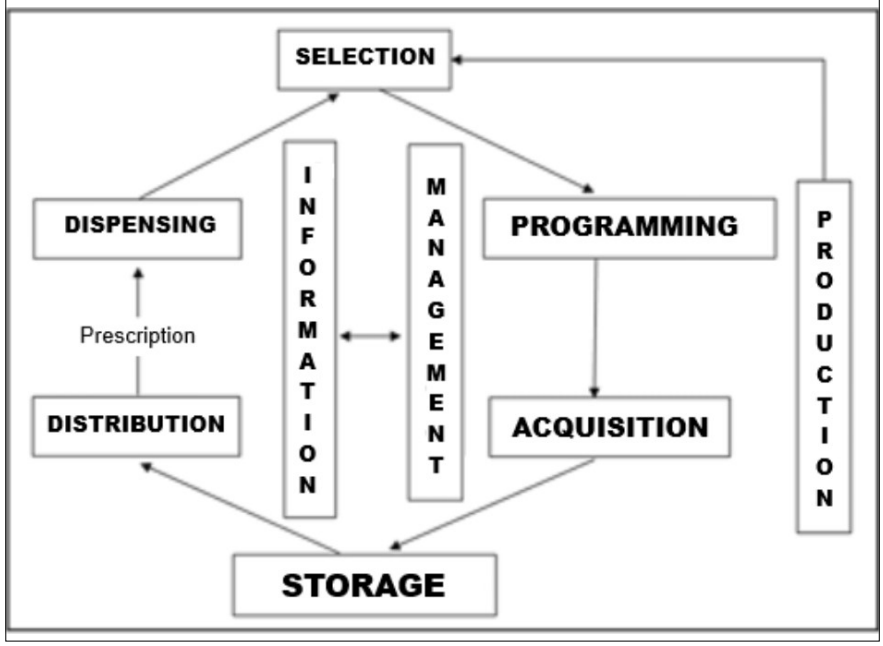
PHARMACEUTICAL ASSISTANCE IN PUBLIC HEALTH

The institutionalization of SUS pharmaceutical assistance policies contributed to expanding access and public provision, reducing inequalities and regulating the health of medicines. [4]

In Brazil, access to drug therapy is a constitutional right, supported by several public policies. Of note are the enactment of the Generic Drug Law, the National Drug Policy, the adoption of the National List of Essential Drugs (RENAME - *Relação Nacional de Medicamentos Essenciais*) and the National Pharmaceutical Assistance Policy (PNAF - *Política Nacional de Assistência Farmacêutica*). Subsequently, the programs Farmácia Popular do Brasil, Aqui Tem Farmácia Popular and Saúde Não Tem Preço were created.

The PNM also establishes, at municipal, state and federal levels, the availability of citizens' access to the medicines necessary for their treatment free of charge. To this end, it was necessary to apply logistics management activities, making up the Pharmaceutical Assistance Cycle (Figure 1).

Figure 1: Pharmaceutical Assistance Cycle



Source: Adapted from Ministry of Health (2006) cited by Costa and Vilhena [8]

Selection consists of the process of choosing the medicines that will be purchased, based on epidemiological, technical and economic criteria, respecting the needs of the local populations. After selection, programming is carried out, which consists of estimating the quantities to be purchased to meet demand for a given period of time.

In pharmaceutical care management, medication programming and inventory management are key activities due to their relationship with the level of access to medicines and their losses, always seeking to maintain the supply of medicines to health service pharmacies, matching available resources with needs. [10]

Proper service management must provide an efficient inventory control system that satisfactorily presents information on inventory status, consumption data, demand, coverage percentage, expenditures on medications, and the financial amount of medication losses in the healthcare network.

The next step in the Pharmaceutical Care Cycle is acquisition. The medication purchase process must be followed by storage, which involves procedures and physical structure that ensure adequate product conservation conditions. The storage process is defined by the storage of medications, according to their characteristics and conservation nature, and it is essential that medications are stored under appropriate conditions in order to maintain their identity and integrity. [11]

Next, we have distribution, which consists of supplying healthcare

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units with the quantity, quality and timely supply. The process of distributing medicines encompasses the movement of products, where distribution is any activity involving possession, supply, storage and dispatch of pharmaceutical products, excluding supply to the public. [6] Finally, we have the dispensing, which consists of distributing the medication for final consumption.

Currently, the organization and financing of PS within the SUS reflect disparities and several organizational and financial problems that compromise users' access to medications, resulting in low availability and discontinuity in the supply of essential medications in public health units.

The analysis of the results of the consulted bibliography makes it possible to identify possible causes for the obstacles to access to medications, such as the lack of technical criteria and commitment to PS; scarcity of financial resources for the acquisition of medications; mistaken acquisitions; deficient operational system; storage in inappropriate conditions; and unprepared human resources.

The lack of technical criteria can compromise the programming process. It is important to use evaluation methods in order to monitor the process over time. Programming should be decentralized so that it can accurately reflect local needs, avoiding excessive acquisitions and significant shortages, which could impact the resolution of services. [12]

The information system must allow the measurement of supply according to demand, providing concrete parameters related to distribution, together with the real demand (met and unmet), the periods of shortages and the existing stocks (inventory). "An efficient information system makes it possible to avoid the lack and/or waste of medicines; ensure regularity in supply; and meet the needs of health services". [10]

The reality observed in the physical conditions and human resources of pharmacies in health units is also reflected in the organization of their physical environments, which generally occupy small spaces, without the minimum conditions necessary for storing medicines. [7]

The limitation of financial resources, which are increasingly scarce, has transformed programming into an eminently administrative process, which ends up being carried out based on the available financial resources and not on the real needs of the population. [11]

Inadequate access to medicines violates the right to life, worsens health indicators and quality of life and is responsible for the impoverishment of many families, preventable suffering, prolonged illness and the occurrence of avoidable deaths. [7]

CONCLUSION

This paper addressed some topics within the theoretical concepts of general and pharmaceutical logistics activities, considered crucial for access to medicines from the Brazilian public health system.

The history of health in Brazil is marked by the creation of the Unified Health System (SUS), considered one of the largest health systems in the world, covering the entire population in a comprehensive, universal, free and egalitarian manner, offering both primary care services and those of greater complexity and high cost, thus complying with the order established in the Constitution. However, to implement a system that aims to fulfill the fundamental right to health under these conditions, it is undoubtedly essential to have a financial contribution capable of, or compatible with, the infinite demands verified in this area, since health is one of the most expensive human rights.

According to this study, it was observed that pharmaceutical logistics must be well structured and planned from the factory to its final destination. The structure and methods used to manage the drug supply chain must be fully aligned with the legal parameters of the National Pharmaceutical Assistance Policy, providing satisfactory conditions for the provision of a quality service to the population.

Pharmaceutical logistics encompasses dozens of important activities applied in the Pharmaceutical Assistance Cycle, including the processes of storage, distribution and transportation of drugs, which are responsible for ensuring the quality of the drug that will be dispensed to the end customer. However, problems that cause obstacles to access to drugs in the public network are still identified, arising from inefficient programming, deficient financial and human resources and insufficient technical requirements, for example.

Increasing spending in the SUS, qualifying management and implementing equitable policies are essential to enable adequate access to drugs for the Brazilian population.

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