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Characterization of dispensing processes in primary care pharmacies in Rio Grande do Sul

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Abstract

Objective: The objective of this study is to characterize processes carried out in municipal pharmacies in Rio Grande do Sul (RS); mainly addressing dispensation, in addition to pharmacovigilance and drug disposal actions. **Methods:** The study included the 18 municipalities with Regional Health Coordinators of the Health Secretariat of the State of RS and other municipalities with more than 100,000 inhabitants, resulting in a total of 29 municipalities. Data collection took place through on-the-spot interviews with those responsible for municipal pharmacies, and the data collection instrument was prepared from a review of the scientific literature. **Results:** Among the main results, 39,6% of those responsible for dispensing services were pharmacists; all pharmacies have a computerized system to control and record dispensation; actions related to pharmacovigilance are still incipient; fractionation of medications is a practice used in the pharmacies (64.6%), but a minority seems to follow the Good Practices of fractionation of medications (12.9%); expired, broken, leaked, and unused medications from users are received by pharmacies (89.6%); in all pharmacies, pharmaceutical services are offered, from which dispensation(100%) and pharmaceutical guidance (91.7%) are the most common. **Conclusion:** There is a need to qualify dispensing services so that pharmaceutical assistance goes hand in hand with the SUS principles and guidelines, with rational use of medications as a purpose that decisively influences the users' quality of life and health.

Keywords: pharmaceutical services; primary health care; community pharmacy services; health services research.

Caracterização dos processos de dispensação em farmácias da Atenção Básica no Rio Grande do Sul

Resumo

Objetivos: O objetivo deste estudo é caracterizar processos realizados em farmácias municipais do Rio Grande do Sul, abordando principalmente a dispensação, além de ações de farmacovigilância e de descarte de medicamentos. **Métodos:** Foram incluídos no estudo os 18 municípios sede das Coordenadorias Regionais de Saúde da Secretaria de Saúde do Estado do RS e outros municípios com mais de 100 mil habitantes, resultando em um total de 29 municípios. A coleta de dados deu-se por meio de entrevistas *in loco* com os responsáveis pelas farmácias municipais, sendo o instrumento da coleta de dados um questionário com perguntas elaboradas a partir de revisão da literatura científica. **Resultados:** Dentre os principais resultados, tem-se que 39,6% dos responsáveis pelos serviços de dispensação são farmacêuticos; todas as farmácias possuem sistema informatizado para controle e registro da dispensação; ações relacionadas a farmacovigilância ainda são incipientes; o fracionamento de medicamentos é uma prática utilizada nas farmácias (64,6%), mas uma minoria parece seguir as Boas Práticas de Fracionamento de Medicamentos (12,9%); os medicamentos vencidos, quebrados, vazados e sem utilizar dos usuários são recebidos pelas farmácias (89,6%); em todas as farmácias ofertam-se serviços farmacêuticos, em que a dispensação (100%) e a orientação farmacêutica (91,7%) são os mais realizados. **Conclusão:** Há necessidade de qualificar as farmácias para que a assistência farmacêutica caminhe junto com os princípios e diretrizes do SUS, tendo o uso racional de medicamentos como propósito que influencia de forma decisiva na qualidade de vida e na saúde dos usuários.

Palavras-chave: assistência farmacêutica; atenção primária à saúde; serviços comunitários de farmácia; pesquisa sobre serviços de saúde.



Introduction

Dispensation of medications is part of the set of services and actions of Pharmaceutical Assistance (PhA)¹ in the Unified Health System (*Sistema Único de Saúde*, SUS). The National Medication Policy² adds to the concept of dispensation pharmaceutical information and guidance on the use of the medication, providing this activity with a professional character while determining that pharmacists are responsible not only for the supply of the medication, but also for the guidance about its proper use.³ In recent years, emphasis has been given to strategies for qualifying medication use so that patients receive the correct medication, at the ideal moment, for them to use it properly and enjoy its benefits. Therefore, organizing and qualifying pharmacies in health centers becomes indispensable.⁴⁻⁶ It is through a qualified pharmaceutical service that users will enforce their rights with regard to access to medications, information and guidance for proper use.⁷

Brazilian studies on the evaluation of the services offered by pharmacies to users point to worrying results in relation to the quality of the organization, structure, operation and integration with health actions.^{4,8} These research studies suggest that the services may be limited by the working conditions due to the number of professionals, infrastructure and management⁴. In addition to that, the level of information provided to the user and the development of clinical activities seems to be low, both in isolated services and in health units.^{7,9,10} Considering that the excellence of pharmacotherapy is related to the condition of these services and that they are in a strategic position for the health care process, this study aimed at characterizing processes carried out in municipal pharmacies in Rio Grande do Sul; mainly addressing dispensation, in addition to pharmacovigilance and drug disposal actions. It is hoped that the results of this study can contribute to the purposes of the services offered by the pharmacies being adequately achieved.

Methods

This is a cross-sectional and descriptive study conducted from data collected by the project entitled "Assessment of the Organization of Pharmaceutical Assistance in Primary Care in Municipalities of Rio Grande do Sul: Structure, Process and Results". The municipalities that made up the sample were the 18 municipalities with regional health coordinators of the Health Secretariat of the State of Rio Grande do Sul, in addition to those with more than 100,000 inhabitants, totaling 29 municipalities that comprise more than 50% of the state population. In each municipality, data were collected from two municipal pharmacies – one small and the other large – with the exception of the municipalities that had only one pharmacy.

Data collection was conducted by means of in loco interviews, documentary analysis and direct observation. The data collection instruments were questionnaires developed from a review of the scientific literature, organized into sections, considering the PhA Structure, Processes and Results. During the field research, the software used for data collection was Epicollectc[®]. The application allows capturing the data by means of forms to enter text, photographs and videos. For this article, only information referring to the dispensation processes was extracted from the questionnaire. From the software it was possible to export the database to an Excel[®] file. With the file exported, the variables

were coded for a subsequent descriptive analysis, choosing to express the results as frequencies and mean values. The data were collected from January to March 2020. The participants signed the Free and Informed Consent Form.

This research was approved by the UFRGS Ethics Committee of Research, Teaching and Extension under opinion No. 2,437,516.

Results

Forty-eight pharmacies were analyzed (Table 1) and 46 people responsible for dispensing the medications were interviewed, 43 of whom were pharmacists.

There was a pharmacist in all the pharmacies; however, this professional was mentioned in less than half of the answers (39.6%) as the one responsible for delivering the medications. In the other pharmacies, the interviewees indicated that delivery of the medications was carried out by administrative assistants (50%), pharmacy assistants (42.3%), pharmacists (33.3%) – but not the person in charge –, interns (27.1%) and nursing technicians (7.7%).

All the pharmacies offered pharmaceutical services (Table 2). Among these, dispensation was the only service performed in all the pharmacies. In addition, 12.5% of the pharmacies offered phytotherapy (83.3%) and aromatherapy (16.7%) as Integrative and Complementary Health Practices (IChPs). In addition to that, only 35.4% of the pharmacies had an exclusive room for pharmaceutical care, where 82.4% had air conditioning running. Existence of physical barriers between users and attendants was found in 50% of the pharmacies, in which 79.2% were glass barriers.

All the pharmacies had a computerized system for recording and controlling dispensation, and 77.1% of the systems used allowed blocking identical dispensations in other pharmacies in the municipal network. In addition to that, in 39.6% of the dispensing systems, it was possible to have access to the patient's medical record, in which 89.5% of these only the pharmacist had access. In 39.6% of the systems it was possible to register pharmaceutical care. Furthermore, in 97.9% of the pharmacies, there was Internet access in the dispensing area (Table 3).

The interviewees stated that the pharmacist reviewed the prescription when there were doubts related to the prescription (72.9%) and when a medication included in Ordinance 344/98 was present (10.4%). In 16.7% of the pharmacies, the prescriptions were always reviewed by the pharmacist, while no review or assessment was performed in 4.2%. When errors in the prescription were verified, 85.4% of the interviewees stated that the pharmacist performed the intervention. Among the interventions reported, the pharmacist contacted the prescriber (80.5%) and the user was instructed to return to the physician to correct the error (24.4%).

Actions related to pharmacovigilance were identified, as 27.1% of the pharmacies had a differentiated strategy for dispensing potentially dangerous medications (PDMs). Among these, the interviewees stated that they adopted strategies such as: pharmacist did the dispensing (30.7%); delivery of the potentially dangerous medication(s) was made separately from the other medications (15.4%); double-check (15.4%); verbal guidance (15.4%); the medication was placed in a strategic location to



avoid errors (7.7%); the medication was delivered by a trained professional (7.7%); and the medication was dispensed for a maximum of 30 days of treatment, even if the prescribed amount was higher (7.7%).

Notification of adverse drug reactions (ADRs) was made in 6.3% of the pharmacies, in which 66% recorded via VigiMed and 33% via the manufacturer. Registration of technical complaints/quality deviation was also carried out (25%), with 41.7% of these records being made via NOTIVISA, 41.7% via the purchasing sector/Pharmaceutical Supply Center (*Central de Abastecimento Farmacêutico*, CAF), 8.3% via the manufacturer, and 8.3% via

other channels. In addition to these, 10.4% of the pharmacies recorded suspected and/or confirmed occurrence of Drug-Related Problems. The dispensing errors were recorded in 39.6% of the pharmacies, with the adopted strategies being the following: recording in an exclusive document (78.9%), in minutes of team meetings (15.8%) and via the Horus system (5.3%). In addition, 87.5% of the pharmacies adopted measures in cases of dispensing errors. Contacting the patient to correct the error (88.1%), guidance from the team (64.3%) and recording the error in an exclusive document (4.8%) were among the measures adopted (Table 4).

Table 1. Number of pharmacies and pharmaceutical services offered in the municipalities analyzed (Rio Grande do Sul, Brazil, 2020).

Municipality	No. of pharmacies analyzed	Pharmaceutical services provided
Alegrete	1	Pharmaceutical dispensation and guidance
Alvorada	2	Pharmacotherapeutic follow-up, dispensation, education in health, health condition management, therapeutic drug monitoring, pharmaceutical guidance, pharmacotherapy review and home visit
Bagé	2	Dispensation, health condition management, management of self-limited health problems, therapeutic drug monitoring and pharmaceutical guidance
Bento Gonçalves	2	Dispensation, education in health, health condition management, management of self-limited health problems, therapeutic drug monitoring, pharmaceutical guidance and pharmacotherapy review
Cachoeira do Sul	1	Dispensation
Cachoeirinha	1	Dispensation, education in health and pharmaceutical guidance
Canoas	2	Medication reconciliation, dispensation, therapeutic drug monitoring, pharmaceutical guidance and pharmacotherapy review
Caxias do Sul	2	Dispensation, education in health, pharmaceutical guidance and health screening
Cruz Alta	1	Dispensation, education in health, pharmaceutical guidance, pharmacotherapy review
Erechim	1	Dispensation, education in health and pharmaceutical guidance
Estrela	2	Medication reconciliation, dispensation, management of self-limited health problems, pharmaceutical guidance and home visits
Frederico Westphalen	2	Pharmaceutical dispensation and guidance
Gravataí	1	Pharmaceutical dispensation and guidance
Ijuí	1	Dispensation, education in health and pharmaceutical guidance
Novo Hamburgo	2	Dispensation, education in health, pharmaceutical guidance, pharmacotherapy review and home visits
Osório	1	Dispensation, education in health, pharmaceutical guidance and pharmacotherapy review
Palmeira das Missões	1	Dispensation, pharmaceutical guidance and pharmacotherapy review
Passo Fundo	2	Medication reconciliation, dispensation, education in health, pharmaceutical guidance and home visits
Pelotas	2	Pharmaceutical dispensation and guidance
Porto Alegre	2	Pharmacotherapeutic follow-up, medication reconciliation, dispensation, education in health, management of self-limited health problems, pharmaceutical guidance, health screening and pharmacotherapy review
Rio Grande	2	Dispensation, therapeutic drug monitoring, pharmaceutical guidance and pharmacotherapy review
Santa Cruz do Sul	2	Pharmacotherapeutic follow-up, medication reconciliation, dispensation, education in health, pharmaceutical guidance and pharmacotherapy review
Santa Maria	2	Pharmacotherapeutic follow-up, dispensation, therapeutic drug monitoring, pharmaceutical guidance and health screening
Santa Rosa	2	Dispensation, education in health, health condition management, therapeutic drug monitoring, pharmaceutical guidance, pharmacotherapy review and home visits
Santo Ângelo	2	Dispensation, education in health, health condition management, therapeutic drug monitoring and pharmaceutical guidance
São Leopoldo	2	Dispensation, education in health, management of self-limited health problems, pharmaceutical guidance and pharmacotherapy review
Sapucaia do Sul	1	Dispensation, education in health, pharmaceutical guidance, health screening and pharmacotherapy review
Uruguaiana	1	Pharmaceutical dispensation and guidance
Viamão	2	Pharmaceutical dispensation and guidance
Total	48	

Table 2. Frequency of the pharmaceutical services offered in the pharmacies (Rio Grande do Sul, Brazil, 2020).

Pharmaceutical services	%	
	Yes	No
Dispensation	100.0	-
Pharmaceutical guidance	91.7	8.3
Education in health	39.6	60.4
Pharmacotherapy review	31.3	68.8
Therapeutic drug monitoring	16.7	83.3
Home visit	16.7	83.3
Medication reconciliation	12.5	87.5
Pharmacotherapeutic follow-up	8.3	91.7
Management of self-limited health problems	8.3	91.7
Health screening	8.3	91.7
Health condition management	6.3	93.8
Pharmaceutical prescription	-	100.0

Table 3. Frequency of the computerized system used to record and control dispensation in the pharmacies (Rio Grande do Sul, Brazil, 2020).

Computerized system	No. of pharmacies	%
G-MUS	8	16.7
IPM Saúde	7	14.6
Hórus	5	10.4
Others	28	58.3
Total	48	100.0

Table 4. Registration frequency of actions related to pharmacovigilance by the pharmacies analyzed (Rio Grande do Sul, Brazil, 2020).

Action	%	
	Yes	No
Drug-related adverse reactions	6.3	93.8
Technical complaint/Quality deviation	25	72.9
Dispensation errors	39.6	60.4
Measures in case of dispensation errors	87.5	12.5
Drug-related problems	10.4	89.6

Individualizing the packaging of a medication to enable dispensation to the user in the amount established by the medical prescription is the practice known as drug fractionation and was performed in 64.6% of the pharmacies. Among these, 54.9% only cut the blister; 29% cut and labeled the blister; 12.9% cut, labeled and recorded the information on the blister in a specific document. In addition, in 3.2% of the pharmacies, there was no defined process for fractionation.

Most of the pharmacies received expired, broken, leaked and unused medications (89.6%). Among these, 67.4% were responsible for disposal and forwarded them to a specialized company, 25.6% collected the medications and forwarded them to the CAF for disposal, and 7% collected the medications and forwarded them to the municipal health secretariat for disposal. In addition, 7% reused the medications, returning them to the pharmacy's stock or donating it to users. The pharmacies that did not receive medications from the users (10.4%) justified this behavior due to the lack of physical space in the pharmacy (60%) or to guidance from the municipal health secretariat (40%).

In cases of patients who needed medications from components other than the basic ones, the pharmacy provided guidance on their access (93.7%). Only 14.6% of the pharmacies implemented some type of pharmacy service satisfaction survey with the users.

Discussion

Due to the insufficient number of pharmacists in the dispensing services, delivery of medications to the users is often carried out by technicians, assistants and administrative level employees. It is important to emphasize the difference between the dispensing and delivery of medications, the former being performed exclusively by pharmacists and the latter by other professionals.¹¹ Barreto and Guimarães⁸ also indicated the absence of pharmacists in performing essential activities such as dispensing medications in municipalities in the state of Bahia. A number of studies indicate that this fact can be explained by the workload imposed on the professionals: a set of administrative and bureaucratic activities that consume a large part of their working time, limiting their direct dedication to the users.^{15,16}

The responsibility for the pharmacies is also exercised by other health professionals with higher and technical levels, in disagreement with the technical standard.¹² Technical responsibility seems to differ from practical responsibility since, even if the pharmacists are the technical responsible for the establishment before the local health authority, in some establishments, they do not seem to exercise the functions of the position or are not recognized as responsible for the service. Costa et al.¹³ also found this type of technical irregularity in the municipal pharmacies covered by their study, in which the percentage of pharmacies that were under the responsibility of a professional other than the pharmacist reached 22.4% in the South region. The absence of a professional pharmacist in the management of the dispensing services can lead to problems for the activities and planning of pharmaceutical care, favoring opportunities for improvised actions and non-compliance with technical recommendations.¹⁴

It is interesting to note that all pharmacies have a computerized system for recording and controlling medication dispensing. This result is quite satisfactory when we compare it with the study by Leite et al.,⁴ in which 41.7% of the pharmacies analyzed had computerized systems. Although the municipalities use different systems, the national database of pharmaceutical assistance actions and services in the SUS is fed by the database of the Horus system and non-Horus systems through a data submission service (web service). This tool allows for the autonomy of the federated entities and recognizes the existence of municipalities and states with their own solutions to organize Pharmaceutical Assistance. In addition to that, it makes it possible to make the Horus system compatible with systems developed in other platforms, which results in efficiency and safety in information transfer.¹⁷ Ensuring safe and quality information is a very important factor in analyzing the health situation, in making evidence-based decisions and in planning health actions.¹⁸

Although in a small number, it was identified in the interviews that some pharmacists do not review the prescription or do not intervene when they detect errors in the prescriptions. Prescription validation works as a mechanism to minimize medication errors, as dispensing only occurs after approval by the pharmacist. From the analysis of the prescription, pharmacists contribute to patient safety and to the rational use of medications, as they contribute to the patients' better understanding of their prescriptions.¹⁹

Pharmacovigilance is an area of great relevance which can be supported by the health authorities. Voluntary notification of suspected adverse reactions and other drug-related problems is already a well-known method by the health professionals, in addition to being simple and low-cost. Despite this, for needing spontaneous collaboration, its disadvantage is under-reporting. This prevents real knowledge of the ADR situation and does not provide reliable information on drug safety.²⁰ The results obtained in this study point to under-reporting in primary care. Costa et al.¹³ also report few pharmacovigilance initiatives in the different Brazilian regions. Duarte et al.²¹ note the need for more investments in this area, mainly to raise awareness among health professionals about the importance of notification to obtain these data that support health regulation strategies.

In addition to voluntary notification, the safe dispensing of PDMs is also a pharmacovigilance activity that appears to be incipient in the pharmacies analyzed. PDMs are those that present high risks of causing significant harms to the patients' health. The Protocol for Safety in Drug Prescription, Use and Administration²² indicates that the pharmacist has to review the prescriptions that include these medications. However, if some pharmacists do not perform any prescription evaluation, it is assumed that review of the prescriptions containing PDMs does not occur in all pharmacies. In addition to that, prescriptions containing these medications must be verified using the double-check system, as well as their separation for subsequent dispensing accompanied by pharmaceutical guidance. It is important to emphasize that these medications must be identified differently from general drugs in storage.²³

Drug fractionation is an act of responsibility by the pharmacist. The pharmacies that carry out this process must keep records of all the operations related to the dispensing of these medications, in order to maintain traceability of these products. The record of these operations involves information on the prescription, the medication and the user to whom it was dispensed. Fractionation is a practice that is performed in most of the pharmacies analyzed. However, non-compliance with the necessary requirements for the handling of fractionated drugs and violation of health legislation is verified, while only 12.9% of the pharmacies follow the guidelines for registration of the operations related to fractionation in accordance with the Good Drug Fractionation Practices.²⁴ It was not possible to verify whether fractionation was carried out only in medications that have adequate packaging and labeling for this process. These results are in line with the problems verified by Costa et al.,²² in which the conditions for drug fractionation were also unfavorable, with a low frequency of pharmacies that had a specific area for fractionation and equipment and materials for labeling.

The pharmacies that receive medications from users with or without quality deviations must segregate them in a safe environment as instructed in the establishment's Waste Management Plan.²⁵ However, in cases where the return is motivated by treatment interruption and the medication appears to be in adequate physical condition, the pharmacies should not return it to stock and make it available to other users, since it is not possible to guarantee the quality of the medication and its traceability. It is possible that this is done with the aim of preventing medication shortages, caused by insufficient funding or problems in the local management of pharmaceutical care, considered by Chaves et al.²⁶ as a public health problem and as an obstacle to guaranteeing the users' right to health. In addition, there are pharmacies that do

not receive any kind of return from users, claiming that they have no physical space or according to the guidance by the municipal health secretariat. Despite this, the solution to this issue seems to be in its early creation process with the publication of Decree No. 10,388/2020, which institutes the reverse logistics system for expired or out-of-date household medications. The decree provides for the installation of fixed points for the receipt of these medications and their packaging, an environmentally appropriate destination, periodic reports with qualitative and quantitative data on disposals and campaigns to disclose the reverse logistics system.²⁷

The provision of pharmaceutical services²⁸ aims at achieving the best possible health outcomes in order to adopt a patient-centered approach, establishing a therapeutic relationship and consequently improving users' quality of life. The results obtained indicate that the frequency of pharmaceutical services is still limited to dispensing and guidance, focusing work on the simple accessibility of the medication. The possibility of going beyond this model seems to be limited by the working conditions of these professionals, which are reported in several Brazilian studies,^{4, 15, 29, 30} added to the reduced number of pharmacies that have an exclusive room for pharmaceutical care. Moreover, the existence of physical barriers between users and attendants provides a quick and almost impersonal delivery of the medication, in addition to reflecting on a model based on curative medicine, in which the pharmaceutical service is restricted to meeting the demand, impairing the interaction between the pharmacist and the patient.²⁹ However, even though the existence of these partitions has been common in municipal pharmacies for a long time, today they may play some role in the prevention of COVID-19 by serving as a physical barrier to contain contaminated respiratory droplets.³¹

This study has limitations resulting from the funding for the field research, which restricted it to the medium- and large-size municipalities. In addition, the collectors were trained technicians, but not health professionals, which could lead to a biased observation. Finally, some interviews were conducted with professionals other than pharmacists, who might not know the entire pharmacy process and dynamics.

Conclusion

The panorama presented in the pharmacies analyzed provokes a reflection on the need to qualify the dispensing services. The results seem to indicate that advances were observed when compared to previous studies, but they are still insufficient in view of the needs of the health system. From this perspective, the need for more pharmacists inserted in Primary Care is perceived as a strategy to distribute the functions and avoid overload in these professionals' activities. In addition to that, investing in continuing education for pharmacists and other professionals who work in the dispensing services can be an interesting tool for the qualification of processes, prioritizing awareness about the importance of the pharmacovigilance activities, as these have shown to be deficient. Finally, this study also suggests the expansion of computerized technologies and systems that may come to help workers, not only for the control of dispensing and stock, but in the entire chain of services and actions of PhA management. The qualification of the dispensing services is essential for pharmaceutical care to follow the SUS principles and guidelines, with the rational use of medications as a purpose that decisively influences the users' quality of life and health.

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Collaborators

JWV, DP, RAB, SMG and IH: Project conception, collection, data analysis and interpretation. JWV, DP and IH: Writing of the article and relevant critical review of the intellectual content.

Conflict of interest statement

The authors declare that there are no conflicts of interest regarding this article.

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