DOI: 10.1590/1413-81232017228.10952017

Infrastructure evaluation of Pharmaceutical Services in the National Health System of Minas Gerais

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Abstract *In 2008 the state of Minas Gerais created the "Program Rede Farmácia de Minas" (RFM), a strategy to ensure adequate infrastructure of local public pharmacies, in order to improve the quality of medications use. Objectives: To characterize the infrastructure of public pharmacies in Minas Gerais, comparing municipalities that have received the RFM program to the ones that haven't, in order to verify if the State's Economic Incentives implied in improvement of local Pharmaceutical Services (PS). Methods: A cross-sectional, exploratory, evaluative study in a representative sample of the municipalities of Minas Gerais. Face-to-face interviews were conducted with users, physicians, and drug dispensers, as well as observation of pharmacy facilities and telephone interviews with municipal officials from the PS. 104 municipalities were selected, of which 41.3% had adopted the RFM. Data were collected from July 2014 to May 2015. Results: Municipalities adept to the RFM presented significantly higher rates of legal documentation, more comfort for users and staff, better storage conditions of medicine and competence to conduct clinical activities. Conclusion: The higher state investment in the PS organization for municipalities adept to the RFM developed better infrastructure that have been approved by health professionals and the users of the National Health System.*

Key words *Pharmaceutical services, Rede Farmácia de Minas, Infrastructure*

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Introduction

In the last decade, Pharmaceutical Service (PS) has experienced important advances, both with the National Policy of Medicines (*Política Nacional de Medicamentos - PNM*)[1] and with the National Policy of Pharmaceutical Service (*Política Nacional de Assistência Farmacêutica - PNAF*)[2], which have made PS part of the patient care process, with actions directed to the promotion, prevention and recovery of health. With these policies, municipalities became the main responsible for the acquisition of PS products, which demanded knowledge, organization and political management[3].

In order to meet this challenge, it is necessary to consolidate PS with articulated actions of the three spheres of power, focused on health care, going far beyond the logistical-administrative process. Despite these advances, there is still an abyss between consolidated PS and structured by laws and ordinances and the current PS practiced by municipalities, states and union, with organizational and financial problems[3]. In most cases, the operationalization of PS is incipient, with emphasis only on medicine'sacquisition[4-6]. Thus, it is assumed that the infrastructure, considered as the set of facilities, equipment, furniture and necessary services for the effective functioning of a health establishment may have stayed at the second plan in the management of PS.

Only from 2013 it was established that states and municipalities could allocate up to 15% of the budget of the basic component of PS for activities of physical space adaptation, equipment and furniture acquisition, and human resources qualification activities[7]. However, in the current scenario of scarcity of resources, it is not known if the municipalities allocate these 15% of the budget.

In 2008, the State Health Department of Minas Gerais (*Secretaria Estadual de Saúde SES/MG*), faced with the scenario of the evolution of public spending on medicines and the precarious situation of the infrastructure of pharmacies (and dispensaries) of the d Unified Health System (*Sistema Único de Saúde - SUS*), a strategy to guarantee adequate infrastructure of municipal public pharmacies was created, in order to increase access and rational use of medicines, the "Rede Farmácia de Minas" Program (RFM). To achieve RFM's objectives, the state has provided financial incentive to implement public community pharmacies with its own physical structures, standardized layouts and previously certified by health surveillance as suitable for the provision of PS. In addition, RFM predicted the monthly financing for contracting and fixing the pharmaceutical professional, as well as the qualification of human resources involved with PS in the SUS. The SES/MG also developed an Integrated Pharmaceutical Assistance Management System (SiGAF), in WEB language, to support and subsidize the performance of activities and work processes conducted in pharmacies in each municipality and integrate them into a single network within the SUS of the state of Minas Gerais[8].

In the initial phase, RFM program prioritized municipalities with up to 10,000 inhabitants, that corresponded about 50% of the state's total. In general, these municipalities presented worse conditions of infrastructure for the storage and dispensation of medicines, besides having high per capita expenditure with medicines, when compared to larger cities. In 2009, RFM was expanded to municipalities with up to 30,000 inhabitants and, in 2013, to other municipalities in the state[8-10].

Currently, there are 584 inaugurated units of RFM with an expense, until 2015, of R$ 126,082,118.35. Of this total, 53.5% were allocated to building works of units and 46.5% to encourage the hiring of a pharmaceutical professional[8-11].

The purpose of this study is to characterize the infrastructure of public pharmacies of Minas Gerais, comparing municipalities contemplated or not by the RFM, in order to verify if the strategies of the Program were reached and if the state expenditures with the program implied in improving the Municipalities PS.

Methods

It is a cross-sectional study of the assessment of PS of Minas Gerais, from the perspective of managers, health professionals and users of SUS, as well as direct observation of the structure of the PS.

Sampling plan considered the various study populations, composed of municipal secretaries of health, municipal coordinators of PS, professionals responsible for drug delivery (dispensers), medical and users of SUS, also, the different sample sizes for each of these populations was estimated. The *n* sample size of municipalities was calculated using the following algebraic expression:

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$n = N.p(1-p).z^2 / [(p(1-p).z^2 + (N-1).e^2]$,

On what:

N = 853 municipalities of the state of Minas Gerais,

p = 0.50 is the population value of the proportion that maximizes the variability,

z = 1.96 is the value in the reduced normal curve for the 95% confidence level of the

confidence intervals,

e = 0.10 is the margin of error of 10 percentage points.

The calculation led to 90 municipalities. Considering a possibility of loss of about 20%, the total sample size was established in 104 municipalities. The total sample (104 municipalities) was stratified as follows: all municipalities headquartered in an enlarged health region in the state of Minas Gerais (19) were selected; 50% of the municipalities headquartered in a health region (totaling 29 municipalities) were selected by random lottery; and 56 municipalities among the other municipalities of the State were selected by random lottery, excluding the first two strata. To obtain the sample of the health services, primary health care units were selected, including Health Posts, Health Centers or Basic Health Units and Mixed Units, according to National Register of Health Establishments (*Cadastro Nacional de Estabelecimentos de Saúde - CNES*), totalizing 253 services. The number of services sampled in each municipality was proportional to the population size.

This study used the same methodology and instruments adopted by the National Research on Access, Use and Promotion of Rational Use of Medicines (*Pesquisa Nacional sobre Acesso, Utilização e Promoção do Uso Racional de Medicamentos* - PNAUM)[12]. Face-to-face interviews were conducted with users of SUS, medicals and persons responsible for dispensing medications at the sample of health services. In addition, telephone interviews were conducted with the municipal secretaries of health andmunicipal coordinators of PS. Observation of the facilities of the pharmaceutical services and verification of the physical availability of the medicineswas also made, which were recorded through an observation roadmap[12].

This script, composed of photographic record and semi-structured questions, was filled, based on the verification of items considered indispensable for the operation of pharmacies, such as physical structure, equipment, furniture and human resources[12]. These scripts were filled in the dispensing units installed in the sampled of health services and in the RFM, when implanted in the municipality (Chart 1). Some municipalities with RFM had more than one pharmacy, and not necessarily 100% of them were units of RFM. Data were collected and interviewed by trained researchers. Data were collected from July 2014 to May 2015. Of the 104 municipalities selected, 43 (41.3%) had adopted RFM at the time of the survey. The average population size of municipalities with RFM was 11,159 inhabitants and that of municipalities without RFM was 133,284 inhabitants[12]. Approximately R$ 8,000,000.00 from the resource of the state of Minas Gerais was used for the construction of pharmacies and incentive for the establishment of pharmaceutical professionals in these 43 municipalities[8-11]. For the statistical analysis, absolute and relative frequencies (with 95% confidence intervals for the relative frequencies) were presented. The proportions were compared using the Pearson chi-square test. Data analysis was performed using SPSS® software version 22. The PNAUM and the present work were approved by the National Research Ethics Committee (CONEP). All participants signed a free and informed consent form.

Results

The present study achieved high response rates compared to the established sample (Chart 1).

With a statistically significant difference, pharmacies in municipalities with RFM had higher rates of legal documentation regularization, 53.1% had Sanitary Permit, 75.0% had Technical Responsibility Certificate from the Regional Council of Pharmacy (*Conselho Regional de Farmácia - CRF*) and 68, 8% license of operation and location. In pharmacies in municipalities without RFM, these percentages were 19.4%, 34.3% and 33.7%, respectively (Chart 2).

All the structural data related to comfort in the service area were significantly better in the pharmacies of municipalities with RFM than in those without RFM. The characteristic that most differentiated these pharmacies was the existence of individual booths for the attendance, with seats for the users to sit down (Chart 2). In municipalities with RFM, 93.8% had an area dedicated exclusively to wait for users, 96.8% of these areas had access to toilets and 90.3% to drinking fountains. In the pharmacies of municipalities without RFM, only 34.3% had an exclusive waiting area for the users. In 14.3% of these waiting areas, users were exposed to sun and rain,

Chart 1. Response rate obtained from the number of data collected versus calculated samples.

	Calculated Sample	Collected data		Collected data		Response rate (%)
		municipalities with RFM		municipalities without RFM		
Number of inhabitants (%)	--	< 100.000	> 100.001	< 100.000	> 100.001	--
		43(100,0)	0 (0)	44(86,3)	17(13,7)	
Sighting Road map	242 pharmacy 104 municipalities	32 pharmacy (100% RFM) 32 municipalities		175 pharmacy 53 municipalitiess		85,5 81,7
Questionnaire of Doctors	253 Basic Units of Health * 104 municipalities	33 Basic Units of Health 35 doctors 32 municipalities		190 263 doctors 50 municipalities		88,1 * 78,9
Questionnaire of responsible for dispensing of drugs	242 responsible for dispensing 104 municipalities	24 responsible for dispensing 24 municipalities		160 responsible for dispensing 44 municipalities		76,0 65,4
Questionnaire of users	104 municipalities 1,254users	34 municipalities 105 users		55 municipalities 1,054 users		85,6 92,4
Questionnaire of coordinator of PS	104 municipalities 104 coordinators of PS	38 coordinators of PS 38 municipalities		51 coordinators of PS 51 municipalities		85,6 85,6

* The questionnaire of doctors was applied to all doctors present at the Basic Units of Health on the day of the survey.

in 81.1% patients were attended standing in the attendance window, and in 28% of these waiting rooms there was a grid separating users from those in charge by the dispensation.

Regarding storage conditions, 90.6% of pharmacies in municipalities with RFM had air conditioner in the drug storage area, compared to 10.9% of those not included in the RFM (Chart 2). Among municipalities' pharmacies with RFM, 81.3% had an exclusive area for storage of medicines, 87.5% had a key cabinet for special control drugs[13] and 84.4% had a refrigerator exclusively for storage of thermolabile drugs. In municipalities' pharmacies without RFM, these percentages were lower, being 33.7%, 50.9% and 65.1%, respectively.

A total of 16.6% of municipalities' pharmacies without RFM showed signs of the presence of rodents and insects in the drug storage area, compared to 3.1% in RFM pharmacies (Chart 2).

Physical structure was the category that most differentiated between the compared municipalities. In general, municipalities' pharmacies without RFM were located within Basic Units of Health, with only 16.0% having their own physical structure and only 4.6% of them had an area exclusively for pharmaceutical consultation. Meanwhile,87.5% of the municipalities with RFM had their own physical structure and 53.1% had an area exclusively for pharmaceutical consultation (Chart 2).

The use of a computerized system to record PS activities and access to internet has not proven to be a reality in half of the pharmacies of municipalities without RFM.

In municipalities with RFM, 93.8% have access to the computerized system and 81.3% to the internet (Chart 2). In addition, all the pharmacies with RFM cited using SIGAF. Meanwhile, in the municipalities' pharmacies without RFM, a total of 23 different computerized systems were cited.

In relation to the human resources of the pharmacies of the municipalities compared, statistically significant differences were found in all characteristics analyzed (Chart 3). The most distinctive feature was the training of those responsible for the pharmacy and the presence of the pharmacist during all hours of operation. The pharmacist was responsible for 94.7% of RFM and 63.6% of the other municipalities, where nurses, nursing technicians, pharmacy technicians and social workers were found as technical managers.

A higher number of users of pharmacy from municipalities without RFM (89.2%) reported that the quality of care in pharmacies is good or very good, compared to 87.8% of users of pharmacy in municipalities with RFM. However, when the data is stratified, 40.5% of the users of the pharmacies of municipalities with RFM reported that the service is very good, while only 22.5% of the users of the pharmacies of munici-

Chart 2. Characteristics of pharmacies of municipalities with or without RFM.

Category	Featureevaluated	% (Confidence interval of 95%)	
		Municipalities with RFM	Municipalities without RFM
Legal documentation of pharmacies	Sanitary Permit visible and current	53,1 (52,6-53,6)	19,4 (19,0-19,8)
	Certificate of Technical Responsibility of the pharmacy council visible and current	75,0 (74,6-75,4)	34,3 (33,8-34,8)
	License of operation and location	68,8 (68,3-69,3)	33,7 (33,2-34,2)
Comfort in the service area	Area dedicated exclusively to the users waiting for service	93,8 (93,4-94,2)	34,3 (33,7-34,9)
	Access to the Drinking Trough, filter or air purifier in the user's waiting room	90,3 (90,0-90,6)	49,1 (48,6-49,6)
	Access to toilets in the user's waiting room	96,8 (96,6-97,0)	49,7 (49,2-50,2)
	Sun and rain protection in the user's waiting room	100,0	85,7 (85,5-85,9)
	Individual stands for attendance with chairs for to user	93,8 (93,6-94,0)	18,9 (18,5-19,3)
	Grids in the service desk, separating the user's attendant	3,1 (2,92-3,3)	28,0 (27,5-28,5)
Storage condition	Area reserved exclusively for the storage of medicines	81,3 (80,9-81,7)	33,7 (33,2-34,2)
	Cabinet with key for control medicines	87,5 (87,2-87,8)	50,9 (50,4-51,4)
	Refrigerator for exclusively for of medicines	84,4 (84,0-84,8)	65,1 (64,6-65,6)
	Air conditioner	90,6 (90,3-90,9)	10,9 (10,6-11,2)
	Temperature below 30 ° C at time of observation	100,0	97,1 (95,9-98,3)
	Absence of sunlight directly on medicines	96,9 (96,7-97,1)	85,7 (85,3-86,0)
	Absence of mold or infiltration	93,7 (93,5-93,9)	70,3 (69,8-70,8)
	Medications without direct contact with the floor or wall	87,5 (87,2-87,8)	65,7 (66,2-65,2)
	No evidence of rodents and insects	96,9 (96,7-97,1)	83,4 (83,8-83,0)
Management	Private pharmacy (own physical structure)	87,5 (86,8-88,2)	16 (15,1-16,9)
	Computerized system for recording activities of PS	93,8 (93,6-94,0)	49,7 (39,3-60,1)
	Internet Access in Dispensing Area	81,3 (80,9-81,7)	54,1 (53,6-54,6)
	Area exclusively for pharmaceutical consultation	53,1 (52,1-54,1)	4,6 (4,1-5,1)
	Existence of space reserved for snacks and meals (canopy) of employees	96,9 (96,7-97,1)	61,7 (54,3-69,1)
	Existence of space for the custody of employees' belongings	56,3 (55,8-56,8)	46,3 (45,8-46,8)
	Use of uniforms or coats by officials	59,4 (58,9-59,9)	47,4 (46,9-47,9)

* P value < 0,001.

Chart 3. Data on human resources and activities carried out in the pharmacies of municipalities with or without RFM.

Valuated data andactivities		Municipalities with RFM		Municipalities without RFM	
		N = 24	% (IC 95%)	N = 44	% (IC 95%)
Pharmacists responsible for the pharmacy		18	94,7 (94,5-94,9)	28	63,6 (63,1-64,1)
Participation of those responsible for dispensing medicines of some type of course and / or training in the last two years		8	33,3 (32,8-33,8)	17	38,6 (38,1-39,1)
Pharmacies that record technical complaint or adverse events		10	41,7 (41,2-42,2)	18	40,9 (40,4-41,4)
Responsible for dispensing medicines that perform some clinical activity		7	29,2 (28,7-29,7)	11	25 (24,6-25,4)
Frequency of providing information to users on how to use the medicine	Always / Repeatedly	23	95,8 (95,3-96,4)	40	90,9 (90,5-91,3)
	Sometimes	1	4,2 (3,7-4,7)	3	6,8 (6,4-7,2)
	Rarely / Never	0	0,0	1	2,3 (1,9-2,7)
Frequency of providing information to users on how to store the medicine at home	Always / Repeatedly	17	70,8 (69,7-71,9)	14	31,8 (31,2-32,4)
	Sometimes	6	25,0 (23,9-26,1)	26	59,1 (58,5-59,7)
	Rarely / Never	1	4,2 (3,1-5,3)	4	9,1 (8,5-9,7)

P value < 0,05.

palities without RFM reported that the service is very good. The waiting time and availability of the pharmacist were also better evaluated by the users of municipalities with RFM, when compared to the municipalities without RFM. There was a higher number of success of drug withdrawals by users of municipalities' pharmacies with RFM than in municipalities without RFM, 77.1% and 61.4%, respectively (Chart 4).

There were also statistically significant differences between the perceptions about the organization of PS by those responsible for the dispensation of medicines, doctors and those municipal coordinators of PS. In municipalities with RFM, 87.5%, 56.3% and 81.6% considered the organization of PS to be very good or good, whereas in municipalities without RFM these percentages decreased to 63.6%, 34.7% and 66.7%, respectively (Chart 5).

Discussion

The mean population size of municipalities with RFM was lower than that of municipalities without RFM, due to the program's own structuring, which initially included municipalities with smaller population sizes[14]. It is important to emphasize that the usual expectation would be for municipalities with larger population sizes to present better infrastructure conditions, a situation that was not found in this study. This may be due, in part, to the program *Qualifar-SUS*, created in 2012, with a specific budget line for the adequacy of the physical area, equipment, furniture and qualification human resources of the PS[15] of municipalities with up to 100,000 inhabitants and that were included in the program: Plan Brazil Without Misery[16]. However, the amounts allocated by the program may be considered insufficient, approximately 6.4 thousand Reais per participating municipality, when compared to the amount necessary to adjust the structure of public pharmacies.

One of the main objectives of RFM was to strengthen the recognition of the Community Pharmacies of the SUS as a health establishment, which provides for the full-time presence of the pharmaceutical professional. Thus, the higher rate of regularization of legal documentation of pharmacies of municipalities with RFM may be a reflection of the incentive of the fixation of this professional agreed by the State Program. However, it was expected to meet even higher values in relation to the legal documentation of municipalities' pharmacies with RFM. This deficit may

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Chart 4. Evaluation of users on the pharmacies of municipalities with or without RFM.

Criteria evaluated		Municipalities with RFM		Municipalities without RFM	
		N	% (IC 95%)	N	% (IC 95%)
Waiting time to take medicines away at pharmacies	Do not wait	49	66,2 (65,6-66,8)	397	58,4 (57,7-59,1)
	Wait a few minutes	22	29,7 (29,1-30,3)	219	32,2 (31,5-32,9)
	Wait a lot	3	4,1 (3,5-4,7)	64	9,4 (8,7-10,1)
Frequency of successful withdrawal of medications in the last 3 months	Always / Repeatedly	57	77,1 (76,1-78,1)	424	61,4 (61,2-61,6)
	Sometimes	13	17,6 (16,6-18,6)	193	28,0 (26,8-29,2)
	Rarely / Never	4	5,5 (4,5-6,5)	73	10,6 (10,4-10,8)
Availability of pharmacist	Always / Repeatedly	54	85,7 (84,6-86,8)	357	68,5 (66,9-70,1)
	Sometimes	3	4,8 (3,7-6,0)	50	9,6 (8,0-11,2)
	Rarely / Never	6	9,5 (8,4-10,6)	114	21,9 (20,3-23,5)
Quality of care of pharmacies	Very Good / Good	65	87,8 (87,1-88,5)	611	89,2 (88,6-90,4)
	Neither bad nor good	7	9,5 (8,8-10,2)	55	8,0 (7,4-8,6)
	Bad / Very bad	2	2,7 (2,0-3,4)	19	2,8 (2,2-3,4)

P value < 0,05.

Chart 5. Perception of the professionals of the primary health care services of SUS about the organization of PS in municipalities with and without RFM.

Evaluation of the organization of PS		Municipalities with RFM		Municipalities without RFM		P value
		N	% (IC 95%)	N	% (IC 95%)	
Responsible for dispensing medicines*	Very Good / Good	21	87,5 (87,0-88,0)	28	63,6 (62,9-64,3)	< 0,001
	Neither bad nor good	2	8,3 (7,8-8,8)	11	25,0 (24,3-25,7)	< 0,001
	Bad / Very bad	1	4,2 (3,7-4,7)	5	11,4 (10,7-12,1)	< 0,001
Doctors*	Very Good / Good	9	56,3 (55,4-57,1)	17	34,7 (33,9-35,5)	< 0,001
	Neither bad nor good	3	18,8 (17,9-19,7)	17	34,7 (33,9-35,5)	< 0,001
	Bad / Very bad	4	25,0 (24,1-25,9)	15	30,6 (29,8-31,4)	< 0,001
Coordinator of PS	Very Good / Good	31	81,6 (81,1-82,1)	34	66,7 (66,0-67,4)	< 0,001
	Neither bad nor good	7	18,4 (17,9-18,9)	11	21,6 (20,9-22,3)	< 0,001
	Bad / Very bad	0	0,0	4	7,8 (7,1-8,5)	< 0,001

* In order to evaluate the perceptions of doctors and responsible for dispensing medicines were made in each municipality of the sample.

have occurred due to RFM requiring of legal documentation to be regular only prior to the inauguration of the new units of the Program, and it is not mandatory to present these documents in subsequent years for the maintenance of the municipality as a participant in the RFM Program. Thus, the collection of renewal of these documents is required only by the health surveillance services and the Council of Pharmacy.

The financial incentive for municipalities to hire pharmacists may also be responsible for the greater presence of the pharmacist during the entire period of operation of the pharmacies in the municipalities with RFM (93.8%), compared to municipalities' pharmacies without RFM (65.1%).

As a result of the majority of municipalities' pharmacies without RFM being located within Basic Units of Health (*Unidades Básicas de Saúde - UBS*), they generally did not have an exclusive area to wait for users' attention. In some of these pharmacies, users were observed waiting for service standing, without sun and rain shelter, without access to toilets and drinking fountains, being attended at booths, without place to sit and

with grids separating users from responsible for dispensing of drugs. This scenario of discomfort in the waiting area of the users of pharmacies without RFM was similar to those found by other authors who investigated public pharmacies in Brazil[17-20]. In general, in these places, the physical space where the service is performed is reduced, and the dispensing occurs through grid windows or glass, without any kind of guidance to the user. The service through windows or bars, separating the users from those responsible for dispensing, is an organizational problem that may have important effects on therapy, since the humanization of the user service has been associated with adherence to the treatment[21].

Good infrastructure conditions can provide greater humanization of service. The municipalities with RFM presented exclusive waiting room, with fans, chairs, electronic password panel, television, easy access to water fountain and bathroom. In addition, they have individual booths, allowing a more reserved, individualized and close reception.

The RFM has established an architectural design with a standardized layout and physical area compatible with the services to be performed. The storeroom is in accordance with health regulations. In contrast, pharmacies from municipalities without RFM presented a scenario of inadequate drug storage conditions similar to those found in most public pharmacies in Brazil, where inadequate physical space, furniture shortages, lack of control and temperature recording of drug storage areas, including thermolabile[19-22].

The National Program for the Improvement of Access and Quality of Basic Care (*Programa Nacional de Melhoria do Acesso e da Qualidade da Atenção Básica - PMAQ-AB*), which evaluated about 30,000 pharmacies throughout Brazil, found areas destined exclusively for drugs storage in 20.0% and air conditioner in 17.3% of establishments[23]. These proportions were 81.3% and 90.6%, among pharmacies in municipalities with RFM, compared to 33.7% and 10.9% in establishments without RFM, respectively. The presence of a refrigerator for thermolabile drugs in PMAQ-AB[23] was observed in only 25.0% of pharmacies, while in municipalities with RFM this proportion was 84.4%.

Other sanitary nonconformities related to medicines storage area were related to the incidence of sunlight directly on the drugs, presence of mold and infiltration, drugs in direct contact with the floor or wall and signs of rodents, and these reasons would justify the prohibition of function of establishments. Although less frequently, these problems were also observed in some pharmacies in municipalities with RFM, suggesting that the planned maintenance in RFM, as the responsibility of municipalities, would not be occurring properly. This fact illustrates the complexity involved in the success of health decentralization, which occurs only when there is cooperation between federal, state and municipal spheres, and the permanent balance between their autonomy and their interdependence[24].

According to the National Registry of Health Establishment (*Cadastro Nacional de Estabelecimento de Saúde- CNES*)[25], the average time of operation in the municipalities' pharmacies with RFM was 5 years, whereas in the municipalities' pharmacies without RFM this time was 11 years.

As the allocation of financial resources for the maintenance of infrastructures of public health facilities is scarce in the country[26], part of the improvement of the infrastructures observed in municipalities' pharmacies with RFM may be due to the shorter operating times of these establishments and not to the existence of the Program in itself. Thus, future studies are necessary to verify if these differences between municipalities' pharmacies with or without RFM will be maintained, regardless of the time of operation of the same.

It was observed a greater use of computerized integrated systems in the management of PS by municipalities with RFM than in the others (93.8% versus 49.7%). The use of systems such as SIGAF increases the effectiveness in the management of logistics processes, comprised by the stages of programming, acquisition, inventory management, dispensing and pharmacotherapeutic monitoring of users[27]. In addition, it is interesting that computerized systems such as HORUS (distributed by the Ministry of Health of Brazil) and SIGAF (distributed by SES/MG) should be able to integrate the information in their area of coverage, as well as contribute with studies of the use of medicines in the Primary care in Brazil[19]. In this study, a total of 23 different computerized systems were cited, but it is not known if they allow the integration of data with the state or federal network. In any case, the utilization percentages observed in Minas Gerais were well above the verified 20.4% by Lacerda[28] in pharmacies in Brazil that use the Horus system.

Internet access is necessary for the integration of public pharmacies with other systems of SUS, such as the basis of the national card of health, for example. The difficulty in this access seems to have been reduced with the adoption of RFM,

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since 81.3% of the municipalities' pharmacies with RFM had internet access, compared to only 54.1% of municipalities without RFM. In a national study focusing on public pharmacies that use the Horus System, it was found that 49.8% of them had access to the internet[29].

The RFM encourages clinical and pharmacovigilance activities, through adequate infrastructure, bibliographical material and training for pharmacists. However, it was observed that only 41.7% of pharmacies in municipalities with RFM reported a technical complaint record and 29.2% performed clinical activities. The most cited reason for not performing clinical activities (52.9%) was lack of time, which seems to reflect the prioritization of technical-managerial activities to the detriment of clinical activities. The scenario was even less promising in the pharmacies of municipalities without RFM, where only 25.0% of those in charge of the dispensation performed some clinical activity. In this situation, the most cited reason for not doing these activities was the absence of adequate physical space. Only 4.6% of these pharmacies had an area exclusively for pharmaceutical consultation.

The RFM promoted training and continuing education activities for pharmacists. However, due to the high turnover of human resources in municipalities, especially in the small ones, and the lack of an attractive public career, only 33.3% of those responsible for dispensing medicines from municipalities with RFM, at the time of the interview, reported have participated in any class or qualification in the last two years. This indicates the need to encourage the establishment and investment in the promotion of continuous training of professionals responsible for dispensing medicines. From this, more significant advances in the quality of drug use can be achieved.

One of the expected results of RFM is to improve access to essential medicines. It was found a greater success in the withdrawal of drugs by the users of the municipalities' pharmacies with RFM, where 77.1% reported that they always succeed, while in municipalities' pharmacies without RFM, this percentage fell to 61.4%.

However, it is interesting to note that, considering the access concept of Thomas and Penchansky[30], the most successful drug withdrawal in the municipalities with RFM demonstrates the improvement of only one access dimension, which is the availability experienced. Thus, further studies should investigate the comparison of the real availability of drugs in stock, as well as other dimensions of access, in order to be able to infer if there was improvement or not in access to essential medicines with RFM.

In general, all pharmacies in municipalities of Minas Gerais, with or without RFM, had the quality of care and the waiting time to be well evaluated by users. However, it is still worth noting that the positive perception of health professionals regarding the organization of the PS of the municipalities with RFM was significantly higher than in the other municipalities, indicating that the program may be contributing to increase the credibility and effectiveness of the actions developed.

Because this was a cross-sectional study, the present study was susceptible to reverse temporality. In addition, other investments were not evaluated, only the RFM state in the infrastructure of the PS of the municipalities. Another important limitation refers to the fact that some municipalities with RFM had more than one pharmacy, and not necessarily 100% of them were RFM Units. Thus, in municipalities with RFM, the questionnaires of physicians and those responsible for PS could have reflected a reality of all municipal pharmacies, not just RFM units. In addition, results were not controlled by the existence or not of the pharmacist in the establishment.

Conclusion

The results obtained in this evaluation indicate a better performance of the public PS in the municipalities that adopted RFM. It was verified that the state´s financial volume invested and the higher standardization in the organization and services of PS in the municipalities with RFM generated better infrastructure conditions that were evaluated positively by health professionals and SUS users. Therefore, the present study highlights the importance of investing in infrastructure and human resources of the PS and corroborates with the need to implement projects that stimulate this investment such as RFM.

The presence of the pharmacist may have contributed to greater compliance with mandatory health requirements, as well as establishments have shown better storage conditions for medicines, especially controlled and thermolabile drugs. The integration of public municipalities' pharmacies with RFM with the network of SUS, through the Internet and the Integrated Management System of the PS, can result in greater agility and effectiveness in the manage-

ment of logistics processes. The greater adequacy of the infrastructure provided conditions more humane for attendance and follow-up for patient, as well as for pharmaceutical service, as recommended in the therapeutic guides.

All these improvements were perceived positively by the users when they noticed a shorter waiting time for the care, as well as better perceived availability of the medicines.

It is worth mentioning, however, that some evaluated indicators were unsatisfactory, regardless of whether the municipalities has or not the RFM.

Future studies should focus on whether improvements in infrastructure and perceived availability will result in greater access, better quality of drug use, and greater clinical effectiveness of treatments provided by SUS.

Collaborations

All authors read and approved the manuscript content. All authors contributed fundamentally to this study. MM Barbosa worked on the research, methodology and writing of the present study. RCRM Nascimento worked on research, methodology and final writing. AA Guerra Júnior worked on the design, methodology and final writing. FA Acurcio worked on the design and methodology of the research. J Alvares worked on conception, research, methodology and final writing.

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Article sumitted 26/10/2016
Approved 15/05/2017
Final version submitted 17/05/2017