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Doctors' Work in Primary Health Care in remote rural municipalities: where is the territory?

Cassiano Mendes Franco (https://orcid.org/0000-0003-1430-6951) [1]
Lígia Giovanella (https://orcid.org/0000-0002-6522-545X) [2]
Aylene Bousquat (https://orcid.org/0000-0003-2701-1570) [3]

Abstract *Resolute and comprehensive health care in remote rural municipalities (RRMs) requires Primary Health Care (PHC) with a strong community dimension anchored in the territory. This paper aims to analyze the performance profile of doctors in PHC, considering their work both in the territory and in PHC units. The perspective of doctors, critical agents in PHC, contributes to understanding whether there is an equitable and comprehensive availability of PHC. A qualitative study was carried out in 27 RRMs, with interviews with 46 Family Health doctors. Content analysis, structuring results in dimensions of arrangements in the performance of doctors in the territories and the organization of activities at the PHC units. Doctors concentrated their activities in the PHC units, primarily in municipal headquarters, with heterogeneous work agreements. Knowledge about the characteristics of the territory and the population was weak, especially those assigned at a considerable distance from municipal headquarters. In the rare work conducted within the territory, an itinerant and/or campaigning model was observed, with the mark of discontinuity. Walk-in patients were prioritized over care actions of follow-up and planning. The findings indicate the need to reinforce interaction with the territory in the provision of PHC services in RRMs.*
Key words *Rural Health, Primary Health Care, Territorialization in Primary Health Care*

[1] Faculdade de Medicina, Universidade Federal do Rio de Janeiro. Av. Carlos Chagas Filho 373, Cidade Universitária. 21044-020 Rio de Janeiro RJ Brasil. casmenfran@gmail.com
[2] Escola Nacional de Saúde Pública Sergio Arouca, Fundação Oswaldo Cruz. Rio de Janeiro RJ Brasil.
[3] Faculdade de Saúde Pública, Universidade de São Paulo. São Paulo SP Brasil.

Introduction

Populations in rural and remote areas worldwide suffer important inequities, highlighting the difficulties in access to health care, which is intertwined with the difficulty of securing a workforce[1]. These failures in the access and supply of healthcare services are associated with poor health conditions in rural populations, resulting from their marginalization in socioeconomic development[2,3].

A clear, customized policy is needed to reverse this situation and ensure the public provision of healthcare services, especially those of Primary Health Care (PHC), which must be constant and integrated into the healthcare networks. In fact, PHC is the main – and sometimes only – form of access to health care in these territories[1,4]. The National Health Policy for Rural, Forest, and Water Populations (*Política Nacional de Saúde das Populações do Campo, Floresta e Águas*, in Portuguese) sought to give visibility and a better response to the inequities of these peoples in Brazil[3]. However, its implementation encountered numerous barriers, including little specificity about the various rural scenarios in the country and insufficient integration with other social and health policies[3].

In the Brazilian Unified Health System (SUS, in Portuguese), the Family Health Strategy (FHS) is the preferred PHC model and is present in practically all Brazilian municipalities[4]. The FHS is guided by the relationship of a multidisciplinary team with the users enrolled in a defined territory, in which health care extends from individuals to the perspective of the territory itself[5]. Unlike the traditional PHC model, with fragmented actions and only in the PHC units, the community action of FHS professionals enables activities in and for the territory, inside and outside of the PHC units[6]. However, the Brazilian socio-spatial diversity demands alternative organizational arrangements for the different territories in such a way that the FHS principles can be achieved. Remote Rural Municipalities (RRMs), characterized by the distance from urban centers and a predominance of rural attributes, such as the rarefaction of households[7], can be considered as areas with important singularities that require a closer look at the organization of FHS activities.

Rural and remote areas around the world have inordinate difficulties in attracting and retaining a healthcare workforce, especially doctors[1]. The shortage of PHC doctors in Brazil is widely recognized, especially in the countryside, culminating in the creation of the Brazilian "More Doctors Program" (*Programa Mais Médicos* - PMM, in Portuguese) in 2013[8]. The PMM has contributed to discussions on inequalities in access to healthcare services, which strongly affect the RRMs, shedding light on the work of PHC doctors[8,9].

This article aims to understand the PHC doctors' work profile in the territory as well as in the PHC units in RRMs. Observing this from the doctors' perspective, as agents that are essential to the functioning of PHC, it is important to understand the obstacles they face in the equitable, comprehensive provision of health care in RRMs.

Method

A qualitative study was conducted based on interviews with PHC doctors in the research "Primary Health Care in Remote Rural Territories in Brazil". Of the 323 RRMs defined by the Geography and Statistics Brazilian Institute[7], six areas with distinct socio-spatial logics were considered for research purposes: the North region, subdivided into "North-waterways" and "North-roads", "Matopiba" (an agricultural frontier expansion region connecting Maranhão, Tocantins, Piauí and Bahia), Midwest Vector, Semiarid region, and the North of Minas Gerais[4].

Municipalities from each area, with both typical and atypical characteristics, were selected in nineteen socioeconomic and health indicators, as described by Bousquat *et al.*[4]. The intentional sample of municipalities for the research field, structured from these six areas, was used in this study. Two or more municipalities from each area were chosen that correspond to the municipalities with the most frequent socioeconomic, demographic, and healthcare characteristics in the set of RRMs in the respective area. One or more outliers were added to the municipalities with more unusual characteristics in the area, thus ensuring the inclusion of different RRM realities. A sample was obtained through this procedure, consisting of 27 RRMs distributed in the six defined areas. Figure 1 shows the research areas with some of the information selected for characterization.

Semi-structured interviews were conducted between May and November 2019 with PHC doctors in the 27 RRMs. The interview script included: profile of the interviewee, characteristics of the territory and population, access, structure of the availability of PHC, work process, medical

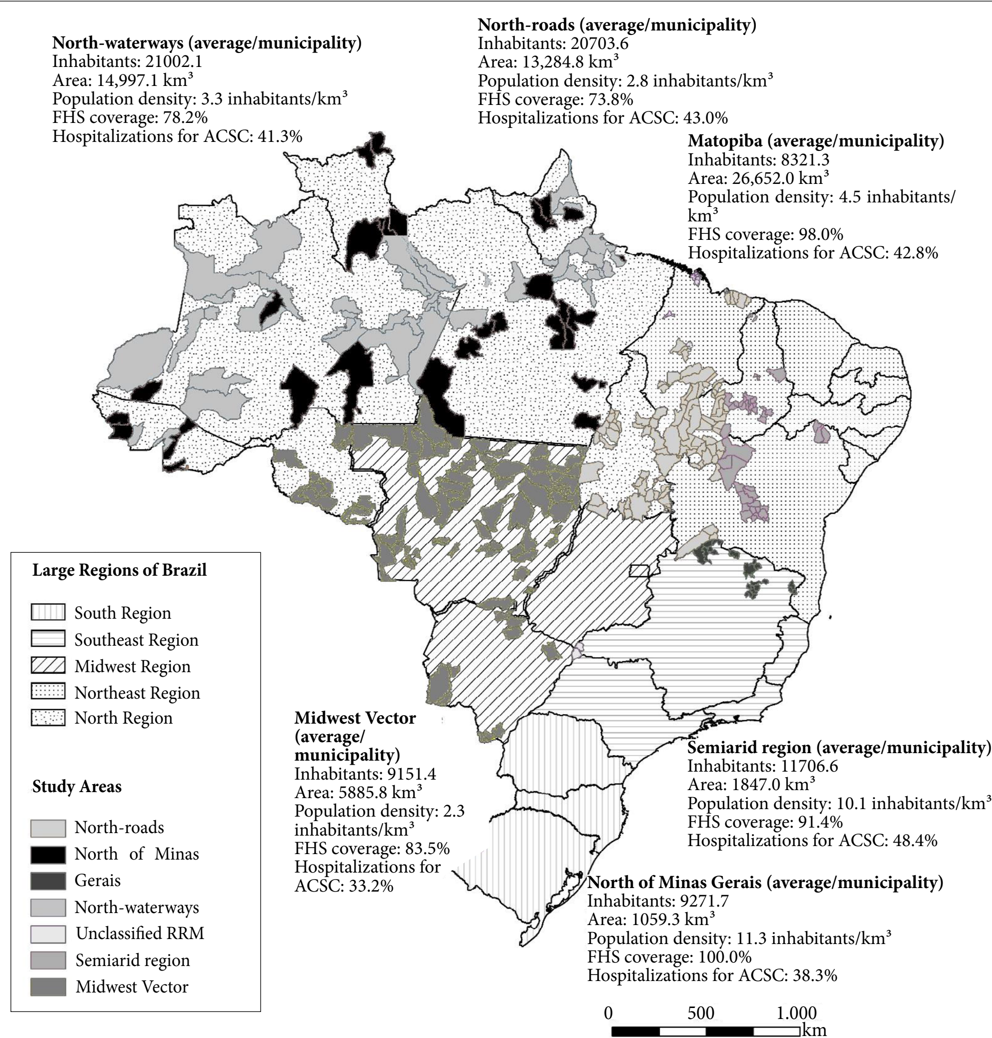

Figure 1. Remote rural municipalities grouped in the "Primary Health Care in Remote Rural Territories in Brazil" research areas and respective averages of inhabitants, geographic area, population density, FHS coverage, and hospitalizations for ambulatory care sensitive conditions (ACSC). Brazil, 2019.

Source: Adapted from Bousquat *et al.*[4].

transportation services and emergency network, healthcare workforce, and priority healthcare lines.

The municipal headquarters PHC units and those of areas far from them, called countryside offices, were visited. The interviews were recorded and transcribed. Forty-six PHC doctors were interviewed, 23 of whom worked at the municipal headquarters and 23 in the so-called "countryside offices". The interview codes consisted of: 1) a number (1 to 6) related to the research area; 2) status; 3) municipality number, according to the order in which the field research was conducted; and 4) MED1, for the municipal headquarters PHC unit, or MED2, for the PHC unit in the municipality's inner regions. The research was approved by the Research Ethics Committee, logged under opinion number 2,832,559/CAAE 92280918.3.0000.5240.

Content analysis of the interviews was performed as indicated by Minayo[10], with three stages: pre-analysis, exploration of the material, and interpretation of results. The dimensions of the analysis were defined based on the assump-

tions of a literature review on rural health[11]: 1) professional profile, 2) arrangements for working in the territory, and 3) organization of activities. Excerpts from the interviews in these dimensions were coded with Nvivo®, and the corresponding previous categories were prepared: 1) general characterization, team composition, scarcity of the healthcare workforce, and the PMM; 2) reference link and travels; and 3) workload and organization of the agenda.

After a horizontal and vertical reading of the coded excerpts, which were broken down by research areas and relationship with the municipal headquarters or countryside offices, the interpretation resulted in the previous categories being restructured into emerging categories, as follows: 1) interviewees' profile and team composition, 2) weak reference link with the PHC unit territory and limited travel in the territory of operation, and 3) flexibility and agreements on working hours and arrangement of actions with an emphasis on walk-in patients. The dimensions were also standardized in this step. Complementarily, counting and percentage of data compiled from the interviews were performed to define the interviewees' profile.

Consistent with the objectives of this study, the final structure of the analysis consisted of the context dimension, with the profile of the doctors and their placement in the PHC in RRMs, followed by the two primary dimensions: arrangements for the doctors' work in the territory and organization of their activities at PHC units. The following results are arranged according to these dimensions and their emerging categories.

Results

Doctors' profile and placement in the PHC

Interviewee profile

Table 1 shows the profile information of the interviewees. The 46 doctors were evenly distributed across the research areas, except for "North-waterways", which had the highest representation (30.4%) (Table 1). In general, the doctors were young, with almost half (45.7%) between 24 and 30 years of age, and the majority (65.2%) male (Table 1).

Almost all of them were Brazilians, except for one Cuban and one Peruvian doctor. Half of them had degrees in Bolivia, 17 in Brazil, and six in Cuba, Paraguay, and Peru (Table 1). Twenty-nine (63%) were from the PMM and half were not registered with the Regional Board of Medicine (*Conselho Regional de Medicina* - CRM, in Portuguese). Thirty-two doctors (69.6%) had been working quite recently, with less than one year on the team. Thirty-three (71.7%) had not accumulated additional links with the FHS (Table 1).

Team configuration

In general, the doctors worked in the PHC units with only one FHS team in its minimum composition. Some doctors mentioned there being more than one nursing technician on the team, mainly for reference and continuous assistance at support points in the territories. The doctors generally did not know how many community health workers (CHW) were on the team, which they attributed to the short amount of time they had worked together and the stronger relationship the CHWs had with the nurses and municipal managers. While the CHWs had a well-defined presence in the territories, the doctors were predominantly associated with the PHC units.

Most teams contained oral health professionals. The Expanded Nucleus of Family Health (*Núcleo Ampliado da Saúde da Família* - NASF, in Portuguese), with three or four professionals, was mentioned in 35 interviews. Difficulties were reported for the NASF in providing support to the entire territory, especially in the countryside. In addition, guards, doormen, and drivers also played a notable role in responding to emergencies in the communities out of hours. Drivers stood out even more for the time-consuming trips they made in the RRMs.

The departure of the Cuban doctors from the PMM provoked a crisis in the RRMs for four to six months until they could be replaced, which was still incomplete at the time of the interviews. A shortage of doctors on other teams was reported in almost all interviews. The biggest problems were related to medical professionals who are willing to stay, especially in the countryside. Respondents depicted a scenario characterized by an insufficient number of professionals to meet the volume of demands and access to the territory, both for doctors and nurses.

Doctors' posts were largely covered by the PMM, even though the numbers were still inadequate. The difficulties in finding doctors were not restricted to the municipalities, but extended beyond the municipal limits and became a regional issue. The shortage of doctors overvalued the profession and gave practitioners a certain power

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Table 1. Information on the profile and professional affiliation of FHS doctors in selected RRMs. Brazil.2019.

Profile	n	%
Research areas		
Midwet Vector	5	10.9
North of Minas	6	13.0
Matopiba	9	19.6
North-waterways	14	30.4
North-roads	4	8.7
Semiarid region	8	17.4
Age		
24 to 30 years	21	45.7
31 to 40 years	17	37.0
41 to 50 years	6	13.0
Over 50 years (71 to 76 years)	2	4.3
Sex		
Female	16	34.8
Male	30	65.2
Place of graduation		
Bolivia	23	50.0
Brazil	17	37.0
Cuba	3	6.5
Paraguay	2	4.3
Peru	1	2.2
Professional Link		
Time working on the team		
Less than 1year	32	69.6
1 to 3 years	9	19.6
More than 3 years (6 to 15 years)	5	10.9
Type of relationship		
More Doctors Program	29	63.0
Fixed term contract	8	17.4
Statutory	5	10.9
Self-employed	3	6.5
Cooperative	1	2.2
CLT (Consolidation of Labor Laws) member	0	0.0
Registration with the Regional Board of Medicine		
Yes	23	50.0
No	23	50.0
Various links*		
Without various links	33	71.7
Health care center or small municipal hospital	8	17.4
Regional hospital	3	6.5
Private office/clinic	3	6.5
Total	46	100.0

*Multiple responses, with a total greater than the number of respondents.

Source: Database from the study "Primary Health Care in remote rural territories in Brazil".

in the provision of healthcare services. Doctors commonly registered with the CRM, generally working for the municipality, accumulating other links. The possibility of an additional link helped attract doctors and responded to the demands for emergency care in healthcare centers and small

hospitals. At RRM headquarters, it was common to have a 24-hour unit for emergency care for the municipality's population, such as small hospitals and healthcare centers, which may or may not include FHS.

Working at different points of the health care network in the RRMs and region made it easier to coordinate health care when a user needed hospitalization. However, the longitudinality in the FHS and knowledge of the work process of their own PHC units were compromised. Users sought medical care at the small municipal hospital on weekends or for convenience instead of using the PHC units, thus weakening the link with the PHC.

The presence of doctors in the FHS in the RRMs was strongly associated with the provision through the PMM. Doctors distinguished the PMM mainly because of its professional regulation, which was enacted in several ways: requirement to comply with working hours, supervision, accountability for production, and mandatory distance specialization in Family Health, in addition to the exclusivity to the FHS for those with no CRM registration. This was the main means through which to ensure sustained medical care in the RRMs, especially in the countryside, and with greater dedication in the PHC.

Arrangements for doctors' work in the territory

Weak reference link with PHC unit territory

Most doctors did not precisely know the extent of the assigned territory. Most of them, even those working in the municipal headquarters, covered parts of the countryside where the territories were extensive and distances could reach the municipal limits, measured in tens or hundreds of kilometers. Territories referring to municipal headquarters or larger communities in the countryside where the PHC units were located were small and, in general, easy to access.

The team's geographical catchment areas were not always well defined, and most doctors did not know the distribution of micro areas, believing it to be the nurse's role. Likewise, most doctors were unaware of the number of users and families enrolled or gave inaccurate information, often indicating that this knowledge was also within the nurses' purview. The lack of user registrations and their outdated status, especially in hard-to-reach locations, also hampered this domain.

The link with the territory was further weakened by the fluid reference of users to the teams, especially in municipal headquarters, in addition to the recent time in the FHS, high demand for doctor's appointments, and with little participation in team planning. Nonetheless, some had conducted a situational diagnosis of the territory due to the specialization course offered in the PMM. A smaller number of the interviewees actually demonstrated some knowledge about the organization of the assigned area, describing the scope of the territory, number of micro-areas, the territory's association with the CHW, and the location of the covered communities.

In general, doctors served the population without differentiating the assigned territory. There was a need to provide universal access, as well as collaboration among colleagues, including coverage for teams without doctors, with insufficient medical care, or when other doctors traveled to communities. It was common for doctors who worked in the municipal headquarters to serve the population with reference to the FHS in the countryside or in other municipalities because of easier access or the users' intense search for varied services.

Some doctors attracted users from other teams due to the longer time they had worked in the municipality and because they had better qualifications and problem-solving skills. Municipalities in the Midwest Vector and North-roads regions reported frequent care provided to the indigenous population of healthcare districts and foreign users, as they were located on the border with Bolivia and Peru. This form of health care in the FHS in RRMs, with an undefined patient base and outside the territory of operation, made it difficult to know the profile of the population, health surveillance, and longitudinality, according to the interviewees.

Most respondents reported that PHC was the first contact service for most users. This happened more easily in the municipal headquarters or in areas close to the PHC units in the countryside. However, inadequate medication, infrastructure, recent replacement of professionals, inaccessible location, and the centralization of certain services hampered the registered users' link with the reference PHC unit. Better healthcare provisions in a neighboring town also led to dispersion from the team.

Many doctors perceived that the healthcare center or small municipal hospital for emergency care was widely preferred by many users, especially in rural areas without a PHC unit in

the community. This preference was also seen in users who took into consideration the better access to medication in the emergency care center or who were unable to easily access a PHC unit due to restricted appointments or who were unaware of a newly hired doctor after the Cubans had left the PMM. The population looked for a more accessible service, based on the travel route and available vehicle, regardless of the reference for their catchment area. Therefore, it was common for users to travel from the countryside using a free school bus. Transportation costs were high and public transportation was limited.

Only eleven interviewees worked exclusively and routinely at the PHC unit in the countryside, even though the research selected doctors working in municipal headquarters PHC units and those in the countryside. As a rule, they worked in larger communities, where smaller, more widely dispersed communities were also served. Populations in the countryside territories were largely covered by municipal headquarters units, sometimes with dedicated teams. The unequal distribution of the PHC units, which were concentrated in the center of the municipalities or nearby areas, made access unfeasible for people who lived farther away and, as such, did not provide real coverage, leading to a great deal of travel inside and outside the municipality.

Limited travel within the territory of operation

The need to keep the PHC units adequately teamed limited the ability and opportunity to travel to the countryside. In general, nurses and CHWs traveled more often than did the doctors. Travel to the countryside occurred when visits were made to communities and households up to a certain range, with variable frequency, and during occasional actions, such as health-related campaigns. Itinerant health care in these communities was based on points of support, such as outposts or locales owned by the communities. Travel was more commonly made to larger communities that had a healthcare unit, with visits scheduled a few times a week or month, but in those communities that were more difficult to access, return visits were more widely spaced apart.

Complicated access roads required a long period of travel time and special vehicles, and were subject to various problems along the way, arguing that better use could be made of the PHC units rather than long-distance visits. According to the interviewees, planning was necessary, considering the availability and type of vehicle, fuel, equipment, supplies, and meals, and it was not possible to offer more comprehensive medical care than that provided in the PHC units. Medical care in these communities was limited by improvised conditions, lack of materials, and travel time, although they did make it possible to identify cases for better care at the PHC units.

Itinerant medical care provided in the fluvial PHC mobile units required logistics planning for ten days onboard the boat. In the North-waterways region, the interviews revealed that few medical professionals reached communities in the countryside through infrequent trips involving the fluvial PHC mobile units. Some interviewees reported that it was common to cancel community visits or not be able to serve the needs of the entire territory due to a lack of transportation or fuel. A driver went along on the trips, forming another member of the medical team. An automobile was the primary vehicle used, but several others were mentioned ranging from ambulances and trucks to ferries in the North-waterways region.

Most doctors reported a weekly schedule for home visits. Visits to communities and, chiefly, to households, along with a CHW, were the primary way for doctors to become familiar with the territory and better understand the living conditions and travel difficulties the people faced, making it possible to develop more flexible standards of conduct.

Organization of the doctors' activities at the PHC unit

Flexibility and work schedule agreements

Agreements on working days and autonomy over time, in addition to differences between doctors and nurses, proved to be widespread, even though doctors formally had a 40-hour workload to work in PHC every day of the week. Nurses usually remained in the FHS every day, while it was relatively common for doctors to have only two days a week in the FHS and with an irregular attendance, in addition to the PMM doctors working four days a week, as they had a scheduled day off for studies.

Doctors who spent more time working in the municipality and had varied qualifications were given certain advantages with regard to their workload. In exchange for handling a heavier volume of appointments and helping those who would be referred to specialized care, they were allowed to take courses or offset extended hours with an additional day off to attend to personal and family matters.

One interviewee argued that the workload needed to be more flexible to allow for commuting difficulties on arrival at work and home visits, avoid harassment during break times, compensate for work overload, and adapt to an agenda geared to walk-in patients. Another interviewee reported variable arrival and departure times because of a shift worked at the municipality's small hospital.

PHC units set up in the countryside did not always have a permanent team throughout the week, resembling support points in these cases, working with a full team a few days a week, every two weeks, or according to a monthly schedule. Even when a PHC unit had daily working hours, two interviewees pointed out that the hours could be cut back to just one shift.

Arrangement of medical care with emphasis on walk-in patients

An agenda focused on walk-in patients predominated among the doctors, especially those who worked in the countryside. Few of them prioritized appointments at the PHC units for priority groups. They argued for the need to better organize walk-in care, guided by the possibilities of access with users from remote areas being given priority.

Travel difficulties due to time, wear and tear on the vehicles, and financial costs to the users resulted in a more open agenda. A more flexible organization for seeing patients was required because of an overcrowded waiting room that prevented the customary routine of scheduling appointments due to several factors, such as people traveling by boat or school bus schedules and low availability of doctors with periods when no doctors were on duty.

Doctors preferred to have scheduled appointments but users found it difficult to adapt, and there was a greater demand for medical care for acute illness rather than for chronic disease control. Other reasons cited were the lack of team planning, recommendations for an accessible agenda model in the PMM, and long breaks between healthcare visits in each community.

Although users were advised about the follow-up, the interviews suggested they were not monitored very closely, with the exception of pregnant women. Again, access problems in the countryside prevented follow-up appointments from occurring on a timely basis. There seemed to be a little more control over the follow-up of priority groups in the municipal headquarters, where it was easier to organize the agenda by care pathways.

Nurses played an important role in setting the agenda and often scheduled patients for other care pathways that were not treated by the doctors, such as women's health or childcare. Although some doctors offered support to nurses in planning healthcare actions, there were statements that the PMM contributed to increasing surveillance actions in the FHS.

There were reports of inequalities in knowledge about the health status of populations from more remote areas, especially those without the presence of a CHW, who played a crucial role in following up on users and home visits, which proved to be key strategies for health surveillance. Community activities, such as home visits, were part of most doctors' agendas but with little weight. Collective actions were irregular, with the exception of collective health care "great groups" for hypertension and diabetes and waiting room groups. Itinerant care in these communities was best defined with the organization of the agenda itself.

Despite being poorly incorporated into the work process, team meetings were important to the FHS, such as: planning the schedule, home visits, transportation needs, assessment of health surveillance in the territory, discussing territorialization, putting together unique therapeutic projects, and integrating FHS professionals, especially with a CHW.

Chart 1 provides a summary of the main findings and emerging categories on the arrangements for the work of FHS doctors in RRMs, in both dimensions. Illustrative comments of their emerging categories are presented in Charts 2 and 3.

Discussion

The perspective of doctors in the FHS in RRMs shows that work based on the territory was an evident challenge. Regardless of the reference link in the FHS territory, small, dispersed populations were provided with PHC services, mainly in the municipality, with doctors having limited reach to PHC units in RRMs. Due to geographic barriers and travel dynamics in the countryside, medical care was disconnected from the assigned territory, seeking to ensure access to the maximum number of users, even from more remote areas. At the same time, doctors had obscured the notion of the territories under their responsibility, thus hindering surveillance actions. Such a design is not common to other realities that have

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Chart 1. Synthesis of the main findings on arrangements for the activities of FHS doctors in the territory and organization of their activities in the PHC units in RRMs. Brazil, 2019.

Arrangements for doctors' work in the territory	
Weak reference link with PHC unit territory	Little precision in defining the team's territory and number of people and families covered, with very extensive areas.
	Doctors attended users without distinguishing the territory, although they were determined as a preferential link of medical care in the PHC unit and worked in the territory for specific populations in the countryside.
	The FHS was the primary reference service for users, although registered users mostly from more remote areas were frequently by-passed to other PHC units or municipal emergency care service.
	The PHC units were mainly located in the municipal headquarters, encroaching on the link with more remote areas.
Limited travel within the territory of operation	Travel within the territory of operation was limited by the priority given to helping at the PHC units, irregular availability of transportation, and the infeasibility of transit in certain locations and during the rainy season.
	Visits to the communities in the countryside took place at support points or satellite PHC units with variable intervals and occasional health-related campaigns.
	The professionals relied on transportation from the municipal management to work in the countryside, using a variety of vehicles, but not always according to the geographic or available conditions.
	Home visits, generally rare, were the main way of recognizing the territory in the countryside.
Organization of doctors' activities at the PHC unit	
Flexibility and work schedule agreements	Agreements, autonomy over work schedules, and differences between doctors and nurses in the formal schedule of 40 hours per week were widespread.
	Flexibility in working hours and days off were used as a strategy for attracting and retaining professionals as a way to compensate for the difficulties of commuting, excessive demands met, full-time work in remote areas, and removal from family life.
	The municipal FHS services had regular, full-time hours whereas they were generally limited and discontinuous in the countryside.
Arrangement of work with emphasis on walk-in patients	Agenda predominantly focused on walk-in patients to provide timely access to users from the countryside, and due to absenteeism in scheduled appointments and variable flow of demands, but at the expense of more in-depth doctor's appointments and diverting to the complainant-conduct model.
	Low supervision in the care pathways, except for pregnant women and exceptionally for hypertensive patients, without better follow-up in the PHC units related to municipal headquarters, which had hours dedicated to priority groups.
	Important role of CHWs and home visits for supervision of care pathways.
	Community activities, such as collective actions in groups, services in the communities, or campaigns, were rare.
	Few doctors participated in team meetings, which were sporadic, usually monthly when they occurred, despite the importance of team integration, especially with the CHWs, and for discussing specific cases, territorialization, planning community actions, and evaluating healthcare supervision.

Source: Database from the study "Primary Health Care in remote rural territories in Brazil".

to face the remoteness and rarefaction of a population, for example in Australia, where diseconomies of scale in rural health are addressed with different modes of organization, in which more remote territories tend to have more integrated and integral PHC configurations[12].

Other studies[13,14] have shown that, instead of territories contiguous to the PHC units, extensive territories are managed in the FHS in RRMs with populations that are geographically difficult to access, primarily dispersed in small communities inside the RRMs. Some interviews revealed that

Chart 2. Comments illustrating the dimension of the arrangements for the doctors' work in the territory in RRMs, according to emerging categories. Brazil, 2019.

Weak reference link to the PHC unit territory
I wouldn't be able to say no [the number of micro-areas]. [...] I don't have this data [CHW number]. The nurse is the one who has it. We started making a map of the territory in my second month, which is to make a situational diagnosis of the area. Because until then the data we had was outdated and not consistent with reality. (4PA12MED2 - North-waterways)
We use the universal SUS principle a lot. Even if the person comes and is not from my area, but needs help, we provide it. Here we don't say: "Oh, I'll only see people from my neighborhood" - no. […] There are patients who take three hours, five hours to get here. There are two health posts that were opened in the countryside, you know? But as they are new, the patient doesn't have the habit of going there, he prefers to come straight here because he already knows us; he's accustomed to coming here. (4AM16MED1 - North-waterways)
There is [a territorial division between the PHC units], but the patient is the one who travels. He'll be welcomed wherever he is. […] There are patients who, when I request tests, bring them to me. And if he finds a doctor who's closer, he'll take them there. Just as I've received several exams from here that I didn't request: "I was going to take them to the health center, but I was passing by and I came here to show you." So, because we're known, even in the middle of the street, they ask to see us. (5AC11MED1 - North-roads)
P: In your experience, when the user needs health care, what is the first health service they come to? A: Here! Undoubtedly! There's just this one [laughs]! (1MT26MED1 - Midwest Vector)
Because of this difficult access, the population takes advantage of some occasions to come here to the municipal headquarters. Sometimes, it's easier to come here for an appointment than to go where they're registered. There are school buses that they can take to get to an appointment, sometimes the family doesn't even have the means to drive. So, if he had to walk to the unit where he's registered, he would be very far away. Then, he takes a bus, and comes here, which is easier. Here, I only take care of those from the municipality, but there's a healthcare center where the doctor on duty takes care of those who come in from the rural area. (2MG6MED1 - North of Minas Gerais)
We have several small towns that are quite far from here. Some are as far as 80 kilometers away. Most users from these towns don't come here often. Our users are from our town itself, from Passagem, and from the town of Pedreiras, which is next door, five kilometers away. […] There are 3,500 people registered here. But of these 3,500, 1,000 are an active part of the post; 1,500 are distributed in these isolated interiors. [...] This is an old problem. [The municipality] has 40,000 inhabitants, yet it only has five healthcare posts, and of these five, two are in the municipality [at the municipal center]. So theoretically three, because Passagem is eight kilometers away. There are only two posts left in the rest of the countryside, which is the better part of the community. (6BA1MED2 - Semiarid region)
Limited travel in the territory of operation
The problem for us is to be able to get to these locations. First, because of the car problem. Access is really, really difficult, we need a tall car that has conditions and often the municipality doesn't have it. Home visits to these places end up being very difficult, because, for example, for me to go out to make this visit, I'm going to miss the whole day. So, when I go out there all day, there are about 40 patients who are left without medical care. And they feel it. When we make such a visit, the nurse is usually the one who goes and if they need me, then I go. The biggest problem is not for them, but the problem, I think, is how we can get to them. (6BA3MED1 - Semiarid region)
The percentage of nurses seeing patients in rural areas is higher than that of a doctor. Normally, the nurse goes in rural areas every day. For example, I go to S. [inland community] once, and the nurse goes there ten times a month. [...] Normally we go in a car only from here to there. And when it's that close, the driver goes there and picks someone up, but you can't pick everyone up, it's impossible. (2MG7MED2 - North of Minas Gerais)
There's no road, the only road is going up mountains. At the beginning, we carried out an action with the village of M.S., which is eighty kilometers from here. It took us four and a half hours to get there and five hours to get back. The car got stuck, it broke down, we got lost. […] They're often left unattended [users of small towns in the countryside]. So much so that, with regard to this action that we went there, for example: it's a big village and the last time a doctor went there was four years ago. (6BA1MED2 - Semiarid region)
We've been trying to organize a calendar that equitably supplies all the micro-areas that are in this village, that are part of that village. Here, for example, in the central region, which is the main PHC unit, we come once or twice a week. And then, in the other areas, we try to go, for example, this week here I go to another one, in the other two micro-areas. A week in them is the main one. And then next week I'll go to two others, but always trying to go at least once a month. (3MA25MED2 - Matopiba)

it continues

Chart 2. Comments illustrating the dimension of the arrangements for the doctors' work in the territory in RRMs, according to emerging categories. Brazil, 2019.

The rural area needs time, it needs to have more continuity. I think maybe because of the difficult access, in the availability of a healthcare center, of a place to receive medical attention. The team is more available to go. We have a lot of team transportation problems. Sometimes the team wants to go, but there's no available transportation to take them. The rural part needs to improve. Here, we have one thing or other to improve, but the rural area still has this major flaw: a problem with transportation, getting the team there too, and also how often they go there, so that's why the people end up coming here. (3MA25MED1 - Matopiba)
To carry out all this [the work carried out at the municipal headquarters PHC unit], you have to have a doctor living in the community and have a PHC unit and you don't have that. It only happens when we take the fluvial PHC mobile unit there, like now. Now we're going to be with the fluvial PHC mobile unit for ten days in the countryside, the entire multiprofessional team, all the work gets done inside the PHC unit and they do it for ten days. So, it exists, but it's not every day, like the schedule here at the PHC unit. It's done, but not in the right way. (4PA14MED1 - North-waterways)
We only do doctor's appointments and nursing care in the rural areas and that's it. Prenatal care is done here, preventive care is done here, any other appointment that needs a better evaluation I send them here. I go there, identify the problem, and ask them to come here. As I told you, sometimes I'm in the T. [inland community], seeing a patient while sitting on a bed and there's no way to examine very well. There's a place we go to where the table is the same place where people sit. If the person wants to say something that requires more privacy, there's no way to do it. I ask them to come here in the afternoon, because I can attend them better. […] In the places I go, that need visits, because after I see patients here, I'll make the visits and if I need to change a dressing, do something like that, I'll do it. But I can't do more than that because it's very limited in the rural areas. (6PI2MED2 - Semiarid region)
The CHW explains it to me [the territorialization of the catchment area]. I make house calls every Wednesday. So, I always go with a different CHW, and they show me the territory and tell me which patients we're going to see. (4PA14MED2 - North-waterways)

Source: Database from the study "Primary Health Care in remote rural territories in Brazil".

part of the users bypassed their medical teams, corroborating the results of international rural health studies on the bypass of local health services[2].

Work with team integration was found to be undervalued in this research. From the physician's perspective in the FHS teams in RRMs, a division of the work can be noted, assigning the role of understanding the territory, health surveillance, and community actions to nurses and CHWs, while the focus of medical work was on responding to walk-in patients. Medical teams based on walk-in care, often with a high work flow and without a distinction between territories, added to the difficulties of rural people traveling and of providing services and minimized preventive care by the FHS, prioritizing diagnostic actions, drug therapies, and acute illness, similar to the findings from Garnelo *et al.*[15].

This work's limitation, in a scenario with such a prominent social determination of health as the rural environment[3,15], refers to a complainant-conduct model, reducing the scope of actions and the need for an expanded clinical perspective[6]. The FHS work process developed with a marked dissociation from the PHC units and the catchment territory as expressed in the weak, distant link between doctors, who had greater control in the PHC units, and the CHWs, who worked in the territories. This split converges with threats to a territorialized model of PHC that is underway in the country, based on an inflection explicitly focused on a neoliberal agenda in place since the Temer government[16,17].

Territorialization is a guideline provided for in the National Primary Care Policy (PNAB, in Portuguese), which defines the structuring models of its services, considering specific principles, such as longitudinality, resolution, and network ordering, among others[5]. However, the PNAB lacks the affirmation of flexible, integrated models in healthcare networks, in which territorialization fits the movements, as is necessary in the RRMs[4,16]. It is not a matter of preventing the patient flows between the countryside and the municipal headquarters, and accepting walk-in appointments, but of reconciling the work in the office and in the territory so that health care needs can be seen beyond the demands of caring in the context of the community and of the extension of time, and not merely of the individual and the moment.

Chart 3. Comments illustrating the dimension of the doctors' work in the PHC unit in RRMs, according to emerging categories. Brazil, 2019.

Flexibility and work schedule agreements
I work eight hours, so it depends a lot on the day. The normal is until three or four in the afternoon. There are days when we leave early: I leave at two o'clock in the afternoon, three o'clock. That we have to make a house call or something like that, we leave, I leave here and I'm going to make house calls. [...] Personally, it depends a lot on the day. More commonly, I leave here and go to lunch in S. [regional municipality]. I finish seeing patients at 11 o'clock, come back at 1 o'clock, and so on. And when there's a schedule, for example, there's something, there are times when it doesn't stop, and we work straight through. (2MG6MED2 - North of Minas Gerais)
So, that's why I tell you, that's why the biggest demand we have in town comes to me, both because of the trust and the quality of care and because I can solve several things without referring patients to someone else. So, for this reason, even the manager, he has a disagreement with me. [...] It's been eight years, ten years, I said: "I'm leaving". I hadn't mentioned that I would. I had already told some friends that I was leaving. Look, people came in here crying... Then, can you explain to me, how could I leave? Then I got the mayor to give me a day off every fifteen days, so I could visit my family and I'd increase my workload: instead of eight hours, I'd work nine. I said: "it's good, for me it's perfect". (6BA3MED1 - Semiarid region)
They work with cattle, as I told you, they're cattle ranchers and small producers, they live on that, so they live on milk, most of them. They have to pay someone to bring them here to the unit, so they end up not coming, except in extreme cases, you know? So, if there was a place where they could go, a healthcare unit, even with the team assembled, I'm not talking about an emergency. And they came in at nine, nine-thirty, ten and were treated. They didn't have to wait until one o'clock, because sometimes it's like that, the people from town are seen in the morning and the people from the rural areas are seen in the afternoon: they prefer it that way because it isn't as busy in the afternoon. [...] But, for instance, he leaves there at nine-thirty, arrives here at the PHC unit at ten-thirty, eleven o'clock, when it will be closing for lunch. So, you'll have to wait, you'll have to eat. If it had a different schedule and a unit that served the entire rural population at a different time, it would be better for them. (1MT26MED2 -Midwest Vector)
But in case of adaptation, it's more like this, they have phones, they call and say: "I'm going with twenty people." So, the B. community calls and says: "We're going on a boat with forty people, can we go?". There was a day here where we worked straight through, we didn't even stop for lunch, there were more than fifty people. No, our record was over eighty. Me, the nurse, and the technicians. But it's very much "Bolsa Família", they have to register. They came in two, three boats. Wow, what a day that was... When it was over, I couldn't even think! (4AM16MED2 - North-waterways)
Let's talk about the doctor: he'll come, the car leaves to bring him, he arrives here at half past eight, depending on the road conditions, everything. Where is he going to have lunch here? Did you understand? Then he has to bring his lunch from home, then he'll stop here and have lunch here. He'll stay here at the unit, he'll arrive all the time and: "Oh, doctor, you've got an appointment and such." So, he doesn't have a break, he doesn't have time to rest every day. Then he'll come back at 1 pm and leave here at five in the afternoon. How are you going to charge a person, a professional, like that? You can't have everything on a "straight" line. Why? Because I get out of here, we're going to make a house call, it's one o'clock! These days I walked for almost an hour and a half. But that's what the need is like here. So, you get attached to the smallest details of "Oh, you have to stick to the schedule." There's no sticking to a schedule in rural areas, it's not the same service as in town. In town, you can measure hypertensive patients, measure diabetics, at four o'clock in the afternoon you have a group of patients waiting and everything you need to take care of them. That's not the case here, there are days when you have thirty patients in the morning! Am I going to tell them, "Sorry, folks, but I can only see ten of you?" (2MG6MED2 - North of Minas Gerais)

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The doctors' work was almost always disconnected from the team, and seeing walk-in patients for acute health conditions, "deterritorialized", was also accompanied by the overlapping of their duties with other points of care, such as responding to the municipalities' emergency care services. The profile of medical professionals was indicative of the problems in allocating doctors in the RRMs. As in other countries[1], RRMs in Brazil had weaknesses in maintaining the healthcare workforce. The work process in the FHS was thwarted by the intermittence of medical work. There was a structure of multiple jobs for doctors registered in the CRM, configuring medical pow-

Chart 3. Comments illustrating the dimension of the doctors' work in the PHC unit in RRMs, according to emerging categories. Brazil, 2019.

Arrangement of work with emphasis on walk-in patients
People here don't have the habit of making an appointment. I've tried, but it doesn't work. Because, according to them, it's a custom and it doesn't work. Right from the start, I was seeing twenty-eight patients, thirty in one morning. I decided on my own to slow down, because once it happened, I realized I was seeing patients too quickly. At the PHC unit, you listen, discuss their problem, hear things you don't need to hear. Given the kind of workload I was having, I couldn't do it. [...] As I told you, there are days when I see four extra patients. On peak days, which are Mondays, sometimes I even squeeze in twenty because the person comes here and says "I live in the countryside, I live far away, there's no way I can come back tomorrow" and we keep on seeing them. We make the schedule here. I've already tried scheduling an appointment and it doesn't work. (5AC11MED2 - North-roads)
We're more or less organized. It's just that we didn't have a doctor, just one doctor. Then the doctor from the rural area was covering the urban area. Then another doctor arrived, also from the [More Doctors] Program, who is from the urban area. It's still a little like that today, we treat everybody. But the scheduled [appointments], in this case, are mostly related to prenatal care and child care. [...] It is, at any time [service to people who live in the countryside]. There's no such thing as: "No, we'll give the file at eight o'clock in the morning." It doesn't work that way. Because like the people around here say: "I hopped in my boat and made it here by ten." (4AM17MED1 - North-waterways)
At first, I even wanted to stay at the downtown PHC unit, which is easier to organize. You work at one place and all. You can say: today is the day of "hyperdia" [hypertension and diabetes], today is the day of pregnant women. Here I can't do that, because if I did, then... there would be no access. So, my appointments are always walk-in. (3MA25MED2 - Matopiba)
These rural patients are very difficult. For example, usually, a 15-year-old girl is doing her second prenatal care check-up for her second child. When she gives birth, from the hospital, let's say, she has the baby today, and if she's discharged the following day, she goes straight back to the countryside. She'll only come back if she's got post-partum pain or the baby's sick. Even if she's told: "You have to come back and do the follow-up." Most of them will only come back if they feel bad or the baby feels bad, otherwise, they don't come back. (4AM17MED1 - North-waterways)
Well, here we deal with walk-in appointments. But I tell many of them, "Come back next week." I myself tell them next week, the hypertensive patients that I saw and treated, that took medicine: "I want to see you here next week, please. I want to see you here." They come. [...] Yes, a follow-up, but guided like this: "I want you to come back." The rest are walk-in appointments. I don't have a specific number of patients, it's all walk-in appointments. (3TO19MED2 - Matopiba)
The problem is we don't provide only the service that we're supposed to do, understand? Because we come here to work as a PHC unit and we're forced to work as a PHC unit and an emergency care service. It turns out we don't do either one right. In my opinion, it's like barking at the moon. We don't promote health care, but there's also no way we can be said to provide urgent and emergency support. The time I would have to provide health care, I'm worried about seeing emergency care patients, helping walk-in patients. (3TO19MED1 - Matopiba)
Primary care is touch and go because we have nowhere to send these things I'm telling you about. That daily rush of patients, you can't make an appointment or fail to see a group of hypertensive patients. […] The main advances? Look, I can't talk about advances, but it's not that difficult to work here. Everything we need, management provides. The main advance I'd like to see and doesn't happen is being able to work with primary care, which we can't. From my point of view, it's because there is no emergency service. (1MT26MED2 - Midwest Vector)

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er in the provision of health services and reinforcing the imaginary scenario of hospital-based practices.

Although it was pointed out that working in multiple locations favored the coordination of health care, a network of services was not created in which PHC was an organizer, causing its weakening instead of playing a central role. Ney and Rodrigues[18] revealed that the municipalities' constraints in expanding the FHS without healthcare workforce counterparts can lead to precarious working hours and various links that impair the quality of work, in addition to resulting from the expansion of PHC without a vision

Chart 3. Comments illustrating the dimension of the doctors' work in the PHC unit in RRMs, according to emerging categories. Brazil, 2019.

Arrangement of work with emphasis on walk-in patients
The communities around here get assistance in the form of visits and lectures for health promotion, we know what's going on. When diarrhea and viruses start to break out, we know what's happening in the nearest locations. I don't know what happens in the ones farther away. So, in the places close to us, the community health care center works, people have the habit of going there, where the team knows the people, knows the patients, the patients' families, which is how it should be. But it's only in the radius around here. (6BA1MED2 - Semiarid region)
Here in this unit, it's the one with the least adherence to this type of organization. They always want to see the doctor. They show up when they feel sick, otherwise they stay away. [...] This follow-up, we often have to do it at home, go to the patient's house to check their blood pressure, see the medicine, get the medicine, say: "You have to keep the medicine separated!". Even so we often hear: "Oh, she's not taking it." We go back again because if we wait for them to come here, adherence is difficult. (2MG6MED2 - North of Minas Gerais)

Source: Database from the study "Primary Health Care in remote rural territories in Brazil".

of a specific medical practice and the low regulation of the activity, strengthening the rise of medical corporations.

The large number of doctors who were trained abroad and assigned to RRMs, especially in Bolivia, touches on complex migratory phenomena related to doctors in Brazil and their job market. Restrictions on medical careers, which have led students to seek training in countries with lower educational costs[19], along with the dismantling of the PMM, weakened the countercurrent direction of supply policies to that of market forces in the healthcare workforce movements[8,19], which further exacerbated inequities between territories at both the global and local levels[1]. In Brazil, where medical corporations have strict control over the labor market, favoring private-liberal practice[18,19], RRMs are placed on the fringes of the medical ethos and become a place for medical practitioners who have been trained abroad, through the PMM.

In turn, the PMM in the RRMs that were studied showed consequences in line with research that indicate an expansion of access and a strengthening of PHC attributes[8]. However, even if the PMM had been successful in providing doctors to the RRMs, there is a need to more fully understand the need to work in the territory and with a better balance between meeting the demand and longitudinal comprehensive care by the doctors' own profile, in general beginning practical work in both rural health and PHC. Cubans doctors, who were prominently included in the PMM, had specialized training in PHC, had more experience, and were widely recognized in community work[8].

The loss of connection with the territory contrasts with one of the most essential characteristics of the FHS[5,16,17]. What can be seen is that the lack of a territorialized arrangement of work practices in the FHS proper to rural scenarios, and the obstacles to healthcare workforce serve as a justification for outlining a work process in PHC according to a hospital-centered model. There is no understanding of a health concept requiring continuous, supply-based services, but rather prompt, demand-based services determined by the disease.

Strategies for overcoming the dilemmas in the FHS work process in RRMs can be extracted from the results. Instead of concentrating services in the municipal headquarters, assigning large territories, the interviews showed that users have easy access to PHC units and teams located in their communities or close to them. It is not enough to set up PHC units inside the RRMs, but territorialization must also be established that considers accessibility with effective participation. Other studies affirm distinctions of spaces in the RRMs and the need for a more equitable distribution of health services in favor of the countryside[13,14].

The enormous difficulties in transportation indicate that it needs to be provided on a regular, accessible basis for travel to the PHC unit, as well as school buses for access to basic education. Transportation guarantees are required for both the population and the FHS team. The interviews underscored the importance of improving conditions for the territorialized practice by healthcare professionals, allocating more resources to the transportation fleet, support points, and access

routes. Alternative FHS arrangements, such as riverside and fluvial FHSs, although hardly ever implemented[3], are good examples of work processes that adapt to the reality of their territories, maintaining PHC from the perspective of the FHS model and providing for different conditions[3,15].

Walk-ins need to be associated with the agenda for scheduled health surveillance actions and the prevention of specific problems in the territory. Home visits were denoted as a prominent means of following the care pathways, recognizing the territory, and integrating with CHWs. Close contact with CHWs in the work process provides a way to overcome the split between the PCH unit and the territory. National and international studies highlight the relevance of integrated action of CHWs with PHC teams, offering an important expansion of the scope of practices in rural areas[11,14].

Itinerant care may be a relevant strategy in PHC in RRMs. Some forms for this itinerary have already been observed in rural and remote parts of Australia, such as hub-and-spoke models – harkening back to aviation standards, with air travel distribution from a hub – and fly-in-fly-out – similar to operations in oil and mining fields, with periods of full-time work compensated afterward by free time[12]. The need to maintain health care at the PHC units leads to the possibility of expanded teams with professionals sometimes in permanent work, sometimes in itinerant work, highlighting close liaison and joint responsibility for comprehensive health care within the territory.

Flexibility in working hours and compensation for travel needs to be formalized in working conditions in order to avoid losing sight of their purpose. The presence of nursing technicians at support points in the countryside was a relevant strategy, in addition to attending to users' acute health problems. Boat drivers and pilots need to be incorporated as FHS team members. A greater participation of the NASF beyond the RRM headquarters was another verified need.

Research corroborates the importance of federal programs in providing professionals in the FHS. The PMM proved to be a broad, successful strategy that ought to be reinforced and developed, rather than dismantled, as in the Bolsonaro government with the Doctors for Brazil Program, which provides for a privatization mechanism in PHC and a restricted number of doctors (only those registered in the CRM), and indicates setbacks to the universality of SUS/FHS[9]. Proposing a distinctive arrangement of the FHS for RRMs requires increasing the availability of doctors, ensuring a supply for PHC without competing with small hospitals and emergency care centers, and maintaining regulations for good practices, including nurses and dentists, reducing turnover, and sustaining itinerant work by the medical teams. Considering an appropriate care model necessarily implies observing the healthcare workforce management[18]. The World Health Organization (WHO)[1] recommends instituting policies based on education, regulation, incentives, and support as a way to attract and implement healthcare workforce in rural remote areas, emphasizing that interventions must be interconnected, aggregated, and adjusted to the local context.

This study has some limitations in terms of analyzing the role of doctors in the FHS in RRMs. The focus of this article was on the doctors' work at the national level without differentiating by research areas. The considerable diversity of RRMs and different rural realities were highlighted, requiring specific models among the municipalities and regions. The doctors' perspective on their own work process was only partial, with little time of work, and different analysis angles could be formed with other research subjects, such as managers, users, nurses, and CHWs.

Contributing with information and discussions on regions that have not been the priority field of investigations in Public Health, the interpretation of the results brought to light challenges of the role of doctors in the FHS in RRMs and a glimpse into the organizational arrangements from which they derive. Work disconnected from the territory and organized based on walk-ins also occurs in urban populations, but for rarefied rural populations, they pose additional challenges without their own policies to guide them in these realities. Possibilities for new models arise, consistent with the FHS's objective of a community-based, territorialized PHC.

Collaborations

CM Franco contributed with protagonism in the conception of the article, organization, analysis and interpretation of the collected information, methodology and writing of the manuscript. L Giovanella contributed with guidance on the article's conception, organization, analysis and interpretation of the collected information and methodology, in addition to contributing with a leading role in the critical review and editing of the manuscript and its validation. A Bousquat contributed to the critical review and editing of the manuscript and its validation.

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