Primary Health Care in remote rural municipalities: context, organization, and access to integral care in the Brazilian National Health System

Atenção Primária à Saúde em municípios rurais remotos brasileiros: contexto, organização e acesso à atenção integral no Sistema Único de Saúde

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Abstract

Despite the socio-spatial diversity, remote rural locations have in common small villages dispersed over a vast territory, isolated populations, and long distances from urban centers. The objective of the study is to analyze the specificities of the organization and access to primary health care (PHC) in the Brazilian National Health System (SUS) in remote rural municipalities (MRR). To that end a study with a qualitative approach, based on a multiple case study in 27 MRR was carried out. Thematic content analysis of 211 semi-structured interviews with managers and health professionals and a triangulation of information to explore and recognize the forms of organization, strategies, and challenges for the access to health were performed. The results indicate that: the characteristics of remote rural contexts condition the provision of PHC; there are differences in the ways of offering health actions and greater gaps in care coverage in the most rarefied and remote areas of the municipalities; there are contradictions between national PHC funding and the characteristics of territories marked by sparcely populated areas and long distances; and the shortage of the workforce is a common challenge among the cities studied. It is, thus, necessary to consider the territorial, social, and access characteristics to health services to propose public policies that meet the needs of the MRR.

Keywords: Primary Health Care; Health Services Organization; Rural Health; Access to Health Care.

Resumo

A despeito da diversidade socioespacial, localidades rurais remotas têm em comum pequenos povoados dispersos em um vasto território, populações isoladas e longas distâncias em relação aos centros urbanos. O objetivo do estudo é analisar as especificidades da organização e do acesso à atenção primária à saúde (APS) no Sistema Único de Saúde (SUS) em municípios rurais remotos (MRR) brasileiros. Para tanto, realizou-se um estudo de abordagem qualitativa, com base em estudo de casos múltiplos em 27 MRR. Foi feita uma análise de conteúdo temática de 211 entrevistas semiestruturadas com gestores e profissionais de saúde, e uma triangulação de informações para explorar e reconhecer as formas de organização, estratégias e desafios para o acesso à saúde. Os resultados indicam que: as características dos contextos rurais remotos condicionam a provisão da APS; há diferenças nas formas de ofertar ações de saúde e maiores falhas de cobertura assistencial nas áreas mais rarefeitas e remotas dos municípios; existem contradições entre o financiamento da APS nacional e as características dos territórios marcado por rarefação populacional e longas distâncias; e a escassez da força de trabalho é um desafio comum nos municípios estudados. É necessário, portanto, considerar as características territoriais, sociais e de acesso aos serviços de saúde para a proposição de políticas públicas que atendam às necessidades dos MRR.
Palavras-chave: Atenção Primária à Saúde; Organização de Serviços de Saúde; Saúde Rural; Acesso aos Serviços de Saúde.

Introduction

The historical concentration of goods and services in more economically developed urban centers poses enormous access difficulties for populations living in remote rural areas (Carneiro; Sandroni, 2019; Castilho; Gonçalves, 2018; Garnelo et al., 2020; ILO, 2015). Making health services accessible and opportune in small communities dispersed over a vast territory implies facing difficulties in attracting and maintaining the workforce, high transportation costs, and lack of service provision, given the challenges of meeting the scale economy criteria (Almeida et al., 2021; Carneiro; Pessoa; Teixeira, 2017; ILO, 2015; Pessoa; Almeida; Carneiro, 2018; Savassi et al., 2018; Wakerman et al., 2008). One of the consequences of this method of organizing the health service provision is that users residing in typically remote rural areas need to travel long distances to reference centers (AIHW, 2005; Almeida et al., 2021; Strasser; Kam; Regalado, 2016) or depend on an itinerant visit – with irregular follow-ups and not always in a timely manner – to solve their health needs (Franco; Lima; Giovanella, 2021; Wakerman; Humphreys, 2011).

Despite the differences between central and peripheral countries, access has been considered one of the main issues to be faced in health care in remote rural areas. Rural populations have less access to health care, besides worse health conditions and indicators, and at the same time use fewer health care services when compared to urban populations (Reid et al., 2014).

In Brazil, the large territorial extension and inequalities in living conditions cause differentiated exposure to risks and health issues, more unfavorable to rural populations, whose cultural, social, and environmental particularities remain little known. There are few public policy initiatives that consider the specificities of contexts of this nature. In the field of health, the expansion of Primary Health Care (PHC) services over the last 20 years has favored access to health, even in the smallest and most remote Brazilian municipalities. Between 2013 and 2019, there was an increase

in the number of people covered by the Family Health Strategy (ESF), with a greater increase in households located in rural areas and in regions where the poorest population portion lives (Giovanella et al., 2021)

It is important to emphasize that, over the 30 years of existence of the Unified Health System (SUS), in addition to expanding coverage, a set of actions was undertaken to qualify and improve access to PHC, including the National Program for Access and Quality Improvement in Primary Care (PMAQ-AB), *Mais Médicos* Program (PMM), and *Requalifica UBS*. The convergence of these initiatives contributed to the PHC improvement throughout the country (Giovanella et al., 2016). The PMM effects resulted in an increased supply of physicians in PHC, a reduced shortage and a decrease in inequalities and in the distribution of this professional (Girardi et al., 2016; Medina et al., 2018). In 2019, the PMM was extinguished and replaced by the *Médicos pelo Brasil* Program (PMB), focused on the emergency physician provision (Giovanella et al., 2019).

However, in the country's rural areas, social inequalities and lack of justice persist to a large extent, resulting from the weaknesses of public action in recognizing community alterity and including rural social actors in the formulation of policies aimed at themselves and their territory (Carneiro; Sandroni, 2019). The singularities of rural contexts are often interpreted and justified as obstacles to local development, rather than assumed as a power for the elaboration of strategies that correspond to the particularities in the ways of organizing social life (Garnelo, 2019).

The objective of this study is to analyze the specificities of the organization and access to SUS PHC services in Brazilian remote rural municipalities (MRRs). The ways of organization and the challenges faced in the management and performance of health actions are discussed considering the National Primary Care Policy (PNAB) guidelines, before the singularities of contexts with a large territorial extension, population dispersion, isolation, and long distances traveled to access goods and services.

Method

This article discusses part of the results of the study "Atenção Primária à Saúde em territórios rurais e remotos no Brasil" [Primary Health care in remote rural municipalities in Brazil], whose objective was to analyze the singularities of the organization and use of PHC services in the country's remote rural areas. The study started with the characterization of the 323 MRRs according to the classification of the Brazilian Institute of Geography and Statistics (IBGE), which were divided into six clusters with peculiar socio-spatial dynamics: "Semiárido," "Matopiba," "Vetor Centro-Oeste," "Norte de Minas," "Norte Águas," and "Norte Estradas." Only 10 MRRs were not included for not corresponding to the proposed groupings, aspects presented in depth by Bousquat et al. (2022).

For the qualitative study, an intentional MRR sample was established, structured from the six clusters typified in the study, including municipalities with common and uncommon socioeconomic, demographic, and health characteristics in each area. One sought to ensure the inclusion of different municipal realities to provide an in-depth analysis of the difficulties encountered by the health system and also of the local management's several strategies to face those realities. With this procedure, 27 MRRs in six clusters were selected:

(1) Norte Águas: cluster made up of Amazonian municipalities whose rivers are the main form of intra-municipal and regional interconnection and locomotion. The selected municipalities were: Aveiro (PA), Prainha (PA), Curuá (PA), Melgaço (PA), Boa Vista do Ramos (AM), Maués (AM), and Vitória do Jari (AP);

(2) Norte Estrada: cluster made up of Amazonian municipalities that have expanded highways in the middle of the forest as their main means of transportation. The MRRs studied were: Jacareacanga (PA), Rurópolis (PA), and Assis Brasil (AC);

(3) Semiárido: cluster marked by water scarcity, a space of many contradictions and high social

inequality. The MRRs studied were: Pilão Arcado (BA), Morpará (BA), Ipupiara (BA), and Rio Grande do Piauí (PI);

(4) Matopiba: brings together municipalities that have in common the recent agribusiness growth and consequent changes in the territory use and occupation. The selected municipalities were: Avelino Lopes (PI), Júlio Borges (PI), Monte Alegre do Piauí (PI) e Redenção da Gurguéia (PI), Campos Lindos (TO), Formosa da Serra Negra (MA), and Tasso Fragoso (MA);

(5) Norte de Minas: covers municipalities with the lowest economic development level within the state of Minas Gerais, southeastern Brazil. The MRRs studied were: Rubelita, Indaiabira, and Bonito de Minas;

(6) Vetor Centro-Oeste: composed of territories with a historic agricultural vocation, intertwined in modern globalized production processes. The MRRs studied were: Vila Bela da Santíssima Trindade (MT), Nova Lacerda (MT), and Tabaporã (MT).

Although the differences and distinct forms of socio-spatial MRRs insertion are recognized, in this study it is interesting to emphasize the similarities in terms of organization, challenges, and strategies adopted to favor access to PHC services in remote rural locations. The analysis is guided by the following questions: Is the organization of PHC services in line with the territories' characteristics? What are the challenges faced by municipal management to guarantee access to PHC in dispersed, rarefied, and distant areas? The study hypothesis is that the characteristics of population dispersion and low density and long distances condition the way of organization and access to health services, not always met by the guidelines and funding of national PHC policies.

The results presented here are part of the study of multiple cases performed in the 27 MRRs located in the six clusters, having as the main source of information interviews carried out in loco and guided by multidimensional scripts in order to understand the way the PHC services are organized and provided. There was analysis of 211 individual interviews conducted with key actors: municipal health secretaries (26); primary care coordinators; physicians (51); nurses (50), and community health agents (58). Table 1 presents the interviewees' profile. In each MRR, interviews were conducted with health professionals from a Basic Health Unit (UBS) located at the municipal seat and also from another one in the countryside. In the absence of UBS in the countryside, the interview was carried out with reference professionals serving the countryside population at UBS in the municipal seat. The interviews lasted 120 minutes on average. The semi-structured scripts, available on the research website (https://apsmrr.ensp.fiocruz.br/), served as support for the interviewer, with interviewees being encouraged to respond spontaneously to the topics addressed. Fieldwork took place between May and October 2019. Interviews were recorded and transcribed in full.

Table 1 – Interviewees' profile in the study "Atenção Primária à Saúde em municípios rurais remotos no Brasil," 2019

Interviewees' profile	Physician	Nurse	Municipal Health Secretary	Primary Care Coordinator	Community health agent	Total	%
	51	50	26	26	58	211	
STUDY AREAS							
Matopiba	14	12	7	7	14	54	25.59%
Norte Águas	16	13	6	7	17	59	27.96%
Norte de Minas	6	6	3	3	7	25	11.85%
Norte Estradas	4	7	3	3	7	24	11.37%
Semiárido	6	6	4	4	7	27	12.80%
Vetor Centro-Oeste	5	6	3	2	6	22	10.43%

continues...

Table 1 – Continuation

Interviewees' profile	Physician	Nurse	Municipal Health Secretary	Primary Care Coordinator	Community health agent	Total	%
	51	50	26	26	58	211	
AGE							
19 to 30 years	24	20	3	6	6	59	27.96%
31 to 40 years	19	19	10	17	22	87	41.23%
41 to 50 years	6	10	11	1	21	49	23.22%
50+	2	1	2	2	9	16	7.58%
SEX							
Female	18	46	12	22	38	136	64.45%
Male	33	4	14	4	20	75	35.55%
SCHOOLING							
Degree							
Medicine	51	-	-	-	-	51	24.17%
Nursing	-	50	10	23	-	83	39,34%
Business administration	-	-	3	1	-	4	1.90%
Nursing technician	-	-	3	1	6	10	4.74%
Pharmacy	-	-	3	-	-	3	1.42%
High School diploma	-	-	3	-	45	48	22,75%
Primary Education (complete/incomplete)	-	-	-	-	7	7	3,32%
Others[1]	-	-	4	1	-	5	2.37%
TRAINING PLACE							
Brazil	18	49	26	26	58	177	83.89%
Bolivia	26	1	-	-	-	27	12.80%
Cuba	3	-	-	-	-	3	1.42%
Paraguay	3	-	-	-	-	3	1.42%
Peru	1	-	-	-	-	1	0.47%
PROFESSIONAL BOND							
Activity time							
Less than 1 year	36	11	5	13	3	68	32.23%
1 to 3 years	9	28	17	7	8	69	32.70%
3+	6	11	4	6	47	74	35.07%
Bond type*							
Mais Médicos Program	33	-	-	-	-	33	15.64%
Fixed-term contract	9	31	-	13	17	70	33.18%
Temporary civil service (at-will employment)	-	-	21	4	1	26	12.32%
Statutory civil service	5	13	5	6	40	69	32.70%
Self-employed	3	-	-	1	-	4	1.90%
Contracted by cooperative	1	-	-	1	-	2	0.95%
CLT employed	-	6	-	1	-	7	3.32%

continues...

Table 1 – Continuation

Interviewees' profile	Physician	Nurse	Municipal Health Secretary	Primary Care Coordinator	Community health agent	Total	%
	51	50	26	26	58	211	
Bond Accumulation*							
No bond accumulation	40	45	22	17	58	182	86.26%
Health Unit	3	1	1	3	-	8	3.79%
Small -sized hospital in the city	4	1	1	2	-	8	3.79%
Regional hospital	2	2	1	2	-	7	3.32%
Mixed Unity	-	1	1	1	-	3	1.42%
Private office/clinic	2	-	-	1	-	3	1.42%

Legend: [1] Other degrees: Social Service (1); Literature and Languages (2); Physical Education (1); Pedagogy (1); and Psychology (1) * Situation in which the interviewee had another role, in addition to that related to the interview.
Source: Collection of the study "Atenção Primária à Saúde em municípios rurais remotos no Brasil", 2019.

The stages of the thematic content analysis (Minayo, 1998) were: (1) in-depth reading of the 211 interviews; (2) selection, grouping, and classification of excerpts with relevant structures and central ideas (thematic nuclei) in an analytical framework, based on categories previously defined in the interview scripts; (3) production of the different corpus of communication, since the set of information was heterogeneous and emerged from different groups representing subjects (PHC managers and professionals) and clusters, and (4) comparison between the different study participants in the confrontation of ideas and positions, having as reference the central objective of the study.

The material explored is wide, and it is possible to analyze it by multiple and varied thematic spectra. This article analyzes two themes – remote rural context and ways of organizing PHC services to favor access – which, from the in-depth material reading, showed regularity and transversality in relation to the set of emerging themes and the various realities studied.

The study "Atenção Primária à Saúde em municípios rurais remotos no Brasil," of which this study is part, was approved by the Research Ethics Committee for Human Beings of the Sergio Arouca National School of Public Health of the Oswaldo Cruz Foundation, identified by CAAE 92280918.3.0000.5240 and approval number 2.832.559, with the municipalities' consent.

Results

Remote rural context

The MRRs are concentrated in the North, Northeast, and Central-West regions of the country, distributed in six clusters with unique socio-spatial characteristics (Table 2). The municipalities with the largest population are found in Norte Águas and Norte Estradas, located in the Amazon region. The lowest averages for demographic density are found in Vetor Centro-Oeste and Norte Águas. The MRR, in general, have a low Municipal Human Development Index (HDI-M), except in Vetor Centro-Oeste and Norte de Minas, where the HDI-M is medium. During the period in which the fieldwork was carried out, it was observed that the beneficiary population of the *Bolsa Família* Program was significant among the MRRs. In November 2021, this program was replaced by the *Auxílio Brasil* Program.

Table 2 – Remote rural municipalities' socioeconomic characteristics according to areas defined in the study, 2018/2019

Study area	Number of municipalities	Inhab. mean*	Mean area (km²)	Density (inhab./km²)	Mean GDP (R$)	HDI-M range	% pop. receiving PBF**
Vetor Centro-Oeste	84	9,151	5,885	2.27	34,084	Medium	21.4
Norte de Minas	22	9,271	1,059	11.26	7,475	Medium	45.6
Matopiba	92	8,321	2,652	4.47	11,860	Low	50.3
Norte Estrada	28	20,703	13,284	2.7	12,791	Low	48.3
Norte Água	45	21,002	14,997	3.32	8,539	Low	54.9
Semiárido	42	11,706	1,847	10.06	6,626	Low	63.6

HDI-M: Municipal Human Development Index; GDP: Gross Domestic Product; PBF: *Bolsa Família* Program.
* Population estimate, 2019; ** Percentage of population covered calculated considering the national average of 3.4 people per family, 2018.
Source: Elaboration by authors from data from IBGE *Bolsa Família* Program (PBF) Dashboard, 2018, and Caixa Econômica Federal Single Registry, 2018.

Among the many similarities, the MRRs have particularities regarding the means of access, population characteristics, and the ways of using the territories. In most of them, half of the population lives inland, outside the municipal seat. The household dispersion and low density in the country interior is a common phenomenon. In general, they are municipalities that are more vulnerable than the national average, almost all classified with very low or low HDI-M, which expresses a greater socioeconomic vulnerability.

There were marked differences in living conditions between those residing in the MRR "seats" (concentrated population area) and those residing in interior areas (rarefied population area). The interviewees pointed out worse conditions for inland areas: irregularities in the supply of potable water, lack of a sewage system, lack of bathrooms in most houses, insufficient collection and lack of an adequate place to dispose of garbage. In general, the population's main sources of income are related to family farming, animal (hunting/fishing) and mineral (mining) activities, social benefits (*Bolsa Família* Program), and employment in public administration. A oferta de empregos insuficiente e a baixa escolaridade foram consideradas uma constante pelos gestores.

Organization and access to Primary Health Care in the Municipal Unified Health System

Among the MRRs, singularities were identified in the form of organization and access to PHC, given the territories' geographic and demographic characteristics, management and funding capacity, availability of health professionals, and UBS infrastructure. PHC services were the main source of access to health. Managers emphasized challenges to comply with some of the guidelines provided for in the current PNAB with regard to the ESF. Complete teams were more present in the main UBS, but in the rarefied population areas the teams' performance faced infrastructure failures, high UBS maintenance costs and difficulties in moving and retaining professionals, especially physicians.

> *And we could at least bring the team closer to the population, it worked very well, the idea of that health care, of what it would be like, where the doctor goes to the* [patient's] *house, that's utopia. In bigger cities it may be easy, because there is enough population for that, people are right next to each other, but for us, where you have to walk for an hour...We try to maximize things, and we always understand, at least in my view, I saw that*

the PSF [Family Health Program] *was not made for the rural population.* (2MG6GM1)

There was a tendency of service concentration in the municipal seats, which caused large population displacements from the interior in search for health care. On the other hand, aiming to mitigate access failures in the most dispersed areas, in almost all municipalities there were unconventional health units, from units with only one nursing technician, in some cases being on call 24 hours, or just one support point without any infrastructure to house the Family Health teams (EqSF) or itinerant teams that worked periodically in these locations.

I think the biggest barrier, first the distances to some regions, and the other, as I said, it is a region where the majority of the population is concentrated in the rural area, it is precisely the villages which we try to take access [...]*. We cannot open units for this population, so we take itinerant ones.* (3MA24GM1)

The Riverside Family Health teams (EqSFR) tended to operate more permanently in the interior, however not always fixed in locations with enrolled populations, as provided for in the PNAB.

The community health agent (ACS) was the most present and accessible professional in rural areas and, in many cases, the only state representative in the most remote locations, playing a crucial role in bringing the health service closer to citizens.

I'm the resource [...] *here in the community I'm a police chief, I'm a psychologist, I'm a teacher and I'm a doctor, you know? If the boy has a toothache, they call me. If it's a family fight, they call me* [...]*. I'm their bridge to the UBS.* (4AM30ACS2)

The incompleteness of the EqSF, mainly with a shortage of physicians, stimulated managers to organize teams with only ACSs in more rarefied locations. It is worth mentioning the employment bond of the ACS, mostly statutory public servants, with positive implications for the exercise of their practice, however, with challenges related to insufficient supervision, low integration with the team and support needs (material, transportation and training) to qualification of their work process. Inland, the ACSs tended to carry out broader practices than those in the municipal seats.

They [the ACSs] *check if there is medication, if the prescription is close to expiring or not. If the prescription is close to expiration, they advise* [the patient] *to come to the appointment to renew it. The agents here have a very important role, because they take the medication to the patient's home.* [...] *In the countryside too. And they also check the blood pressure, there are agents who are nursing technicians, then they also check the blood pressure in the rural area.* (2MG5MED1)

There was a strong presence of PMM physicians among the 27 MRRs. At the time the study was carried out, only three municipalities did not have PMM professionals. It was observed that the PMM termination led to an increase in the lack of physicians in the teams. Sometimes, there was no other physician in the municipality. In these cases, nurses commonly performed the first consultations at the UBS.

Most of the physicians interviewed had been working on the team for less than a year and had an employment bond with the PMM. Among the nurses, up to three years of experience in the team and temporary and statutory contract prevailed. Salaries varied and were discrepant among physicians and nurses. In one of the municipalities, physicians' salaries could reach R$ 40,000.00 for combined work in small hospitals in continuous 15-day periods. Managers were unanimous in recognizing that the impossibility of remunerating physicians according to market values was mitigated by the PMM.

Mais Médicos helped a lot. Because it could bring a doctor to an area where no doctor remained, it was able to make a Cuban stay for three years in a location where other doctors would not stay, except for an exorbitant salary that the municipality would not be able to pay. So, it helped municipalities in that sense, because it took health care to remote places. (2MG7RGM1)

The high turnover of PHC professionals related to different factors. Among nurses, it was associated with temporary contracts, highly subjugated to the local politics interference. However, managers mentioned greater availability of nurses, born or residing in the municipality or region, and less resistant to local characteristics. Among physicians, turnover was attributed to weak or no ties with the place. Physicians mentioned the following as the main problems to stay at the location: limited leisure options and municipal infrastructure, distance from the family and the state capital, and difficulties in accessing rural areas.

Managers recognized that the PMM favored the expansion of care coverage, improvements in work processes, increased supply of health practices, consolidation of UBS as a regular search service and reduced demand for emergency care services. Nevertheless, even with PMM physicians, obstacles for care in the interior remained, where the unavailability of health professionals generated restriction and intermittency of services offered.

Territorialization and binding criteria, as established in the 2017 PNAB, were considered conflicting with the contexts of sparse population. In order to adapt the assumptions of care coverage to the local reality, the EqSF had different modes of action: physicians worked at the UBS in consecutive shifts in conjunction with small hospitals or mixed units; ACS with more fluid territorialization, sometimes in non-contiguous areas depending on the population dispersion in the territory; Community Health Agent Strategy (EACS) teams and EqSFR without a physician and working on an itinerant basis.

> *The units should be closer* [to the community] *but we have a problem in our region, which is distance. I cannot open a UBS in each community, it's not possible to have 114 UBS and I will not be able to maintain 114 units. So our big problem is territorial dispersion.* (4PA12GM2)

The multiple and combined organizational arrangements for the provision of PHC were a reflection of the inverse relationship between territorial dispersion and health service availability. Such characteristics amplified the challenges to establish open-door PHC services, a source of regular, continuous, and comprehensive care. Thus, managers sought organizational alternatives not foreseen in the PNAB to mitigate access obstacles: support points with nursing technicians; EqSF acting on call 24 hours; small hospitals or structured emergency care services in health centers serving 24 hours; and expanded practices carried out by nursing workers and ACSs.

Teams that had some type of transportation (cars, speedboats, river basic units, motorcycles) were able to offer health actions to populations residing in isolated areas. Nonetheless, the transportation cost was high and generated an undeniable financial burden for municipal management. Sometimes, the maintenance of means of transportation, so necessary to facilitate access within the municipality and in the reference region, became unsustainable and the provision of services was interrupted.

> *The logistics of our municipality are very complicated,* [...] *setting up a vaccination campaign means expenses. In order to go, you need a boat, no one will vaccinate* [the population] *and come back. The team will spend five to seven days there. For the colony you have to have a car or motorcycle, and with that you spend ice, food, employee daily payroll, which needs to be paid.* (4PA13GM2)

Although in most municipalities the countryside population frequently traveled long distances to the municipal seats to access the services, there was no type of structure to accommodate users in transit in the municipal seats, which could favor access to PHC. This type of resource was verified only in one municipality.

The use of information and communication technology (ICT) tools was restricted, although their potential to expand the PHC resolving capacity was recognized. The use of resources from the *Telessaúde* [Telehealth] Program, implemented for decades in the country, was incipient, justified by the connectivity difficulties and little use of technology at UBSs.

[...] *yes* [the team uses the e-SUS AB]. *But, you know, don't ya? In that UBS stick scheme [...] we type here and once a month the person comes, collects it and takes it to transmit [data], to send [data].* [...] *but we are waiting for the PEC* [Electronic Citizen Record] *and we cannot use Telessaúde because the Internet is not good here.* (5AC11ENF1)

Difficulties in accessing specialized care (AE) multiplied. Most of the public and private supply of AE was found outside the MRRs, often external to the health region itself. In this perspective, the issues of care fragmentation, shortage of specialized services and the long distances covered by users worked in synergy.

We send it to the Secretariat of Health, they make a report specifying what they want, then they [users] *go to the appointment in Juazeiro and come back. When it's something even more specialized, they go to Salvador.* [...] *that would be around more than 700 km.* (6BA1MED2)

In all municipalities there was some type of service for emergency care – and sometimes deliveries – open 24 hours a day, generally with precarious infrastructure, evidencing the need for these services in areas of difficult access and, at the same time, for specific national policies.

Faced with the weaknesses of the regionalization process and systemic organization of the health care network, intermunicipal consortia financed by municipalities, in some cases, were described by managers as strategic for the provision of specialty services. It was possible to avoid long journeys by users and reduce the direct purchase of more expensive private services. On the other hand, the absence of communication and coordination mechanisms between AE providers and PHC services implied care fragmentation and discontinuity.

Managers gave strong indication that there was no compatibility between health funding and the remote rural territories' characteristics. With the exception of river UBS and riverside teams, there are no funding elements or specific organizational model for remote and rarefied areas. As an example, funding mechanisms do not take into account logistical elements (transportation, support points) that are fundamental for offering services in these locations.

First of them [challenges] *is the health underfunding.* [...] *and all those matters I've pointed out during the interview: professionals' commitment to primary care, geographic barriers. It* [underfunding] *prevents us from carrying out work the way we want.* [...] *no matter how much the municipality does its part, it is still not enough.* [...] *So, the financial part says a lot about how health will behave.* (4AM16GM2)

Faced with the inadequacy and insufficiency of funding mechanisms, the lack of health professionals and the high cost of UBS and means of transportation maintenance were at the heart of the problems faced for the provision of PHC in remote and rarefied areas.

Discussion

Study findings reinforce what the literature has reported for decades on the absence of public policies in isolated and rarefied areas of Brazil, socio-spatial regions historically marked by care gaps (Castilho; Gonçalves, 2018; Leite; Bruno, 2019), at the same time that point out local strategies to face access difficulties. In fact, although rural health is an old topic, it is still current (Coimbra Jr., 2018), as it remains among the issues that occupy a marginal position in Brazilian development projects, being a challenge to be overcome (Wanderley; Favareto, 2013). Not by chance, most of the MRRs remain opaque territories to comprehensive social policies (Bousquat et al., 2022), gathered in areas of low economic density and presence of vulnerable populations, which reveal unacceptable and persistent social inequalities. The generation of concentrated wealth and the low capacity for social inclusion join the difficulties in implementing universal and equitable public policies, making rural territories hostage to selective and welfare programs, perpetuators of coercive and clientelism mechanisms (Leite; Bruno, 2019).

Context proved to be a key dimension for analyzing the specificities of organization and access in MRRs. Population dispersion and the long distances that separate small towns from the municipal seats and the reference urban center are circumstances that condition access and the way of offering PHC services.

Although Brazilian remote rural contexts are diverse in their socio-spatial aspects, there are a number of matters that present similarities when it comes to the organization and provision of health services in locations far from urban centers. The technical and financial limitations that restrict access to PHC in more distant and rarefied areas of the MRRs are strong arguments for defining policies aimed at such unique contexts. The characteristics of geographic access cannot justify any access to health.

Considering the particularities of the Brazilian MRRs involves expanding investments in infrastructure, inputs and adequate equipment in the UBS, in addition to the use of communication technologies that encourage a greater articulation between levels of care to promote access to timely and quality PHC. An aspect reinforced in this study is the link between guaranteed transportation and access to health. It is argued that, especially for the populations that inhabit the MRRs, the absence of policies for sufficient, continuous, and timely provision of health transportation feeds the cycle of inequities and compromises the assumption of the universal right to health.

It is worth discussing the issue of workforce provision in PHC, in particular the PMM success for physician provision. The recent PMM experience has shown that complex national policies involving provision, fixation, and training for PHC are able to face the historical and persistent lack of assistance in vulnerable areas. Despite the deliberate dismantling that occurred with its replacement by the PMB, the PMM still proves to be an important intervention in the management of the health workforce, with significant weight for health care in remote rural areas. As in the review study by Medina et al. (2018), the PMM contributed to greater health equity in the coverage and distribution of physicians, access to health services, and exemption from MRRs regarding provision expenses.

In other countries, facing the lack of services available to populations living in these locations has motivated the proposition of specific care models (Wakerman; Humphreys, 2011). What is known from international experience is that the more dispersed the population and the greater the distances, the greater the need to develop integrated and comprehensive PHC services in order to maximize economies of scale, use of manpower health work, and adaptation of practices to local particularities (Wakerman et al., 2008). For this, the characteristics of remote rural contexts need to be expressed in funding, in care models, in the logic of organization of PHC services, and in the regionalized health care network.

Models of itinerant services for remote communities are frequent in different countries, with different configurations, aiming at better health outcomes and lower care costs (Carey et al., 2018; Wakerman et al., 2008). However, in the experiences analyzed here, the frequency of these services was sporadic with discontinuities. Furthermore, to achieve greater continuity and coordination of health practices, itinerant models need to be associated with other forms of intervention.

The use of ICT strategies is also recommended to expand access and offer integrated and continuous care in rural areas (D'Ambruoso et al., 2019; Wakerman et al., 2008). Telehealth resources can be potent to provide health services and training in remote rural areas, where transportation resources, health structures, and health professionals are limited. Studies carried out in similar contexts point in the same direction and emphasize that stakeholders aware of this potential have implemented initiatives to improve technological infrastructure and provide educational and clinical services in difficult-to-access locations (Strasser; Kam; Regalado, 2016). These mechanisms should be incorporated into the organization of health services, without sacrificing care comprehensiveness and continuity, essential attributes for guaranteeing the right to health in universal public systems.

Finally, it should be noted that, since 2017, the ESF has been losing centrality in the national

health policy (Giovanella; Franco; Almeida, 2020; Mendes; Melo; Carnut, 2022). One highlights the flexibility in relation to the presence of the ACS and the physicians' workload, the disruption of the priority given to the ESF as a PHC organization model and the defunding process produced by the new model of intergovernmental allocation/transfers (Previne Brasil). It is worth asking whether the propositions underway in the PNAB and the consequent distortion of the ESF model will have repercussions on greater autonomy for municipalities to expand the right to comprehensive health, or will further deepen the inequalities present in remote rural contexts.

Final considerations

Study results demonstrate that the theme of organization and access to PHC is permeated by a set of inseparable issues that need to be compared when discussing policies for strengthening PHC and comprehensive care in the SUS, in contexts marked by a large territorial extension, population dispersion, long distances, and multiculturalism.

The results also indicate that, under remote rural municipalities, there are inequalities that affect the organization and access to PHC, requiring the adoption of differentiated patterns of organization of services, in order not to increase social inequalities in these territories. Health services should be designed to reflect the realities of the populations for which they are intended.

The need to maintain and improve federal policies for the provision and training of the workforce for PHC in these territories is undeniable. The example of the PMM evidenced this, since it changed the capacity of municipalities to maintain complete teams, even in rarefied and remote areas. However, the provision of the PHC workforce requires more than the presence of medical professionals in health services; it demands the strengthening of multidisciplinary, shared, highly qualified work with expanded functions, given the uniqueness of these contexts. It also requires the adoption of organizational strategies supported by remote solutions that make it possible to expand resources and promote timely, resolute and quality care in areas of difficult access. Precisely because it is MRR, telehealth strategies are so necessary and indispensable to favor this access.

In contexts with so many singularities, geographic, environmental, social, and cultural specificities cannot be treated as obstacles to guaranteeing the right to health. On the contrary, they should be the basis for the analysis and planning of public policies, especially in a country marked by a pattern of extreme socio-spatial inequality. This meticulous look at the characteristics of the territories should lead to elaboration of public policies, at the micro and macro levels, which revert to better living and health conditions for citizens.

In order to face the multiple challenges, combined and articulated actions between the three levels of government are necessary. One should consider the dependency ratio of most Brazilian municipalities, including many MRRs, in relation to federal financial transfers, with regard to the SUS and other public policies. However, it is unreasonable to expect that municipalities alone fulfill the task of guaranteeing comprehensive and continuous care – whose access starts with PHC, but is not restricted to it –, as it requires a larger set of health resources.

Finally, there is a need to deepen studies on the implementation of PHC policies based on the particularities of remote rural territories, with community comprehensive orientation, and integrated into the SUS.

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Authors' contribution:

Fausto, Almeida, Bousquat and Giovanella participated in the design, analysis and interpretation of data, writing and final revision of the article. Santos, Lima, Cabral, Seidl and Mendonça participated in the writing and final revision of the article.

Acknowledgments

We thank the support from the *Programa de Políticas Públicas, Modelos de Atenção e Gestão de Saúde* – PMA/VPPCB/Fiocruz in the interview analysis stage, and the support from Deputy Directorate for Research and Innovation at Ensp/Fiocruz for the article translation.

PF Almeida, AM Santos, A Bousquat and L Giovanella thank the National Council for Scientific and Technological Development (CNPq) for its support through the Research Productivity Grant (PQ).

Received: 12/12/2022
Re-submitted: 7/12/2022; 11/11/2022; 12/12/2022
Approved: 12/21/2022