

Participation of small municipalities in the *Mais Médicos para o Brasil* (More Doctors to Brazil) Program in the macro-region of Northern Paraná

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Abstract *Doctor shortage is a constant problem in smaller cities and towns, which tend to be more vulnerable from a social and economic point of view, and located in geographically isolated areas. The goal of this study was to establish the share and characteristics of the small cities and towns in the macro-region of northern Paraná that subscribed to the Mais Médicos para o Brasil (PMMB) program. This is a quantitative study of 82 cities and towns using primary and secondary data. Results show that only a few of them (6.1%) had any adherence criteria, which was not an impediment for other cities and towns (75%) to adhere to the project. Cities and towns with over five thousand inhabitants, lower municipal HDI (Human Development Index), some adherence criteria and more geographically isolated, either from the main city in the region or the closest large or mid-sized city, tended to adhere to the PMMB. It is undeniable that the PMMB significantly reduced the uneven distribution of doctors in Brazil and the study region. However, the sustainability of this policy is linked to addressing other remaining challenges in the SUS system.*

Key words *Health management, Small cities and towns, Doctors, Healthcare policy*

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Introduction

Geographically uneven distribution of doctors is an issue in several regions and countries. In Australia for example, the ratio of doctors per thousand inhabitants is only 0.9 in rural areas. The same is found in the United States, where 25% of doctors are foreign-born¹. If we look at economically distressed regions, this shortage becomes even more critical, such as in certain countries in Africa and Southeast Asia².

The shortage of doctors in Brazil is not a new problem. In the 1970s, the country had one doctor per 2,040 inhabitants and 1,895 municipalities had no doctor at all³. The situation improved over the years, and by 2009 there was one doctor per 676 inhabitants⁴. However, over 20% of the municipalities in Brazil have some sort of doctor shortage⁵. In Brazil, the problem is associated with uneven geographic distribution. In 2015, the doctor : inhabitant ratio in Brazil was 1.9:1,000⁶. This is lower than in the UK (2.7), Portugal (3.8), Spain (3.9) and Argentina (3.2)⁷.

Strategies to get healthcare professionals to settle in remote areas date back to 1976, with the program known as PIASS (Program to Take Healthcare and Sanitation to the Interior), followed in 1993 by the PISUS (Program to take the Unified Healthcare System to the Interior), and in 2001 by PITS (Program to take Healthcare Efforts to the Interior). The latest in this series of programs is PROVAB (Program to Value Basic Care Professionals)^{1,7-8}.

In 2013, the National Mayor Front (FNP) launched a program entitled “Where’s the Doctor?” They issued a petition demanding that foreign doctors be hired to work in locations where there was a shortage of doctors⁹. This petition, together with the WHO recommendations, resulted in the signing of law 12,871/2013, which created the *Mais Médicos* Program (PMM). *Mais Médicos para o Brasil* (PMMB) is the area of the program that manages the provision of such professionals.

Compared to previous strategies, PMM did not focus merely on providing doctors, but is actually comprised of three different spheres of action. In addition to creating new curricular guidelines for medical schools, it also seeks to increase the number of positions in medical school and residence, and enable contracting Brazilian and foreign doctors to work especially in municipalities with a lower than recommended ratio of

doctors: inhabitants¹⁰. Where this program truly innovated in terms of providing doctors, was hiring foreign-trained doctors, as in addition to 1,846 Brazilian doctors, it included 12,616 doctors from 49 other countries, the majority of whom were from Cuba¹.

All municipalities may subscribe to the program, so long as they meet the following criteria: Low/very low HDI, with 20% of the population living in extreme poverty, part of the semi-arid region of the nation, northern regions where there is a shortage, municipalities in the Jequitinhonha, Mucuri or Ribeira river valleys, highly vulnerable areas of state capitals, metropolitan regions and G100; Municipalities that subscribed to Provab, Special Native Indian Health Districts (DSEI), and municipalities with Basic Care coverage below the levels deemed necessary¹¹.

The shortage is even greater in basic care, as the inserting doctors within overall family health is a major challenge, as these professionals are generally concentrated in major urban centers and hospitals^{9,12}. In the smaller or more isolated municipalities, which are often in a situation of greater social and economic vulnerability, and where healthcare services are primarily constituted of basic care, this shortage is even more concerning⁵. Of the 1304 municipalities in Brazil with some degree of physician shortage in basic care, 875 (67.1%) are small, with fewer than 20 thousand inhabitants⁵. Doctor demographics show that the ratio of doctors to inhabitants in these smaller municipalities is quite a bit below what they are in large and mid-sized cities⁶.

In the macro region of northern Paraná, which is where this study was conducted, 82 of the 97 municipalities (84.5%) are small¹³. In light of this, and given the specificities of small municipalities in terms of doctors, it is essential to look into how they subscribed to PMMB to check the extent to which the program has achieved the goals proposed by the PMM. It is worth mentioning that quantitative studies of doctors in municipalities are required, as merely checking for the existence of such professionals in a given region or state does not demonstrate their true shortage in the smaller, more distant municipalities where it is harder to hire and retain professionals. Therefore, goal of this study was to establish the share and characteristics of the small cities and towns in the macro-region of northern Paraná that subscribed to the *Mais Médico para o Brasil* (PMMB) program.

Methodology

This study is a section of a larger study entitled “Managing SUS in Small Municipalities in Paraná, as viewed from the Managing Team”. This study had financial support from Fundação Araucária – Unified Healthcare System Study Program: Shared Healthcare Management/PPSUS. The idea was to use a quantitative approach in a segment of the small municipalities that adhered to the PMMB.

The macro-region of northern Paraná has 82 small municipalities (20,000 inhabitants or less)¹³, a characteristic that does not favor doctor retention, either because of the distance to larger urban centers, or for reasons related to increased social and economic vulnerability. These municipalities are grouped into five Healthcare Regions (Figure 1).

Chart 1 shows the small municipalities in these regions.

The adherence criteria used for the study were IDH, registration in PROVAB, or being a DSEI, as other criteria are not consistent with the reality of the study region.

The secondary sources of data used in this study were data from DSEI, obtained from the Ministry of Health State Department of Indigenous Health (SESI), population data and Human Development Index (IDH) from the IBGE (Brazilian Institute for Geography and Statistics) website, and data on PROVAB membership, taken from the Ministry of Health PROVAB website. Primary data was obtained by interviewing the

administrators of all 82 municipalities, regarding adherence to PMMB and the number of doctors in the project.

Thus, the study variables were: population, IDHM, being part of DSEI, being a PROVAB member, adherence to the PMM, number of professionals in the program and distance (km) to the municipal seat and distance (km) to the closest large city. The data was collected between November 2014 and June 2015, and placed in an Excel database. The data was analyzed with the support of Epi-Info for Windows, version 3.5.4.

The technical aspects governing this survey are described in Resolution 466/12¹⁴. This study was approved by the Ethics Committee for Research Involving Human beings of Universidade Estadual de Londrina.

Results

We analyzed 82 MPP in the macro-region of northern Paraná, only 5 of which (6.1%) fulfilled the criteria for priority adherence to PMMB. Five of them fulfilled two criteria: part of DSEI and registered with PROVAB. Despite the fact that most of the municipalities do not meet the criteria in the law, over half of the small municipalities (62 or 75.6%) in the region adhered to PMMB (Figure 2).

On a regional basis, over half the regions adhered to the PMMB. The largest rate of adherence, or 83.3% of the small municipalities, was found in the 19th HR, and the lowest, or 59% was found in the 17th HR (Graph 1).

Regarding the number of physicians, most of the municipalities (49 or 79%) received a single doctor, and 8 (12.9%) received two. Five (8.1%) received between three and four doctors.

In terms of the small municipalities adhering to PMMB (Table 1), those with average IDHs had the highest rates of adherence.

The largest rate of adherence to the PMMB was found in municipalities with 10 to 20 thousand inhabitants. Similar rates were found in municipalities with 5 to 10 thousand inhabitants, but the rate of adherence was far lower in municipalities with fewer than 5,000 inhabitants.

All of the municipalities that fulfilled the PROVAB and DSEI criteria in law 12.871/2013 adhered to PMMB (Table 1). In other words, in northern Paraná, the project met its goals in terms of adherence of municipalities meeting these criteria. It is worth reiterating that municipalities fulfilling the adherence criteria in the



Figure 1. Map of the Healthcare Regions (16th HR, 17th HR, 18th HR, 19th HR and 22nd HR) in the macro-region of northern Paraná, 2015.

Chart 1. Location of the small municipalities in these healthcare regions (16th HR, 17th HR, 18th HR, 19th HR and 22nd HR) in the macro-region of northern Paraná, 2015.

16 th HR	17 th HR	18 th HR	19 th HR	22 nd HR
Bom Sucesso	Alvorada do Sul	Abatiá	Barra do Jacaré	Arapuã
Borrazópolis	Assaí	Congonhinhas	Carlópolis	Ariranha do Ivaí
Califórnia	Bela Vista do Paraíso	Itambaracá	Conselheiro Mairinck	Cândido de Abreu
Cambira	Cafeara	Leópolis	Figueira	Cruzmaltina
Faxinal	Centenário do Sul	Nova Anéfrica da Colina	Guapirama	Godoy Moreira
Grandes Rios	Florestópolis	Nova Fátima	Jaboti	Jardim Alegre
Kaloré	Guaraci	Nova Santa Bárbara	Japira	Lidianópolis
Marilândia do Sul	Jaguapitã	Rancho Alegre	Joaquim Távora	Lunardelli
Marumbi	Jataizinho	Ribeirão do Pinhal	Jundiá do Sul	Manoel Ribas
Mauá da Serra	Lupionópolis	Santa Amélia	Pinhalão	Mato Rico
Novo Itacolomi	Miraselva	Santa Cecília do Pavão	Quatiguá	Nova Tebas
Rio Bom	Pitangueiras	Santa Mariana	Ribeirão Claro	Rio Branco do Ivaí
Sabáudia	Porecatu	Santo Antônio do Paraíso	Salto do Itararé	Rosário do Ivaí
São Pedro do Ivaí	Prado Ferreira	São Jerônimo da Serra	Santana do Itararé	Santa Maria do Oeste
	Primeiro de Maio	São Sebastião da Amoreira	São José da Boa Vista	São João do Ivaí
	Sertanópolis	Sapopema	Siqueira Campos	
	Tamarana	Sertaneja	Tomazina	
		Uraí	Wenceslau Braz	
Total: 14 MPP(82,3%)	Total: 17 MPP(80%)	Total:18 MPP(86%)	Total: 18 MPP(78%)	Total: 15 MPP(94%)

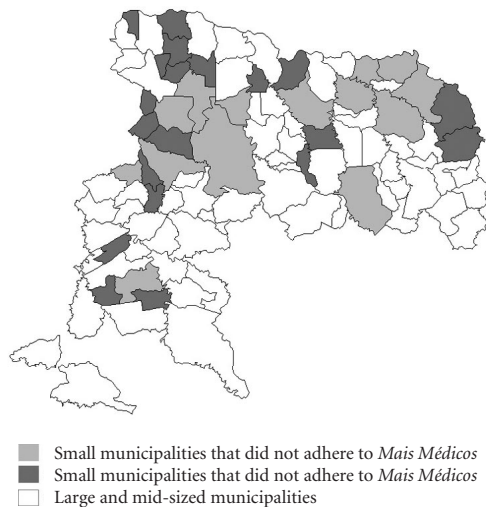
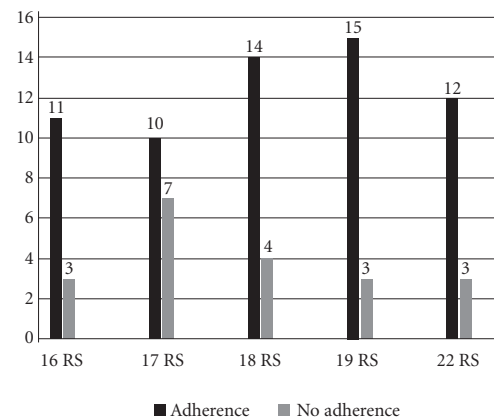


Figure 2. Municipalities in the macro-region based on adherence to the *Mais Médicos* Program, Paraná, 2015.



Graph 1. Number of municipalities adhering to the *Mais Médicos* Program in northern Paraná, by region.

policy were located in remote regions and were socially and economically vulnerable.

Another characteristic of the municipalities with higher adherence rates were distance, either to the municipal seat or to the closest large or mid-sized city.

Concerning the municipalities that did not adhere to the PMMB, this may be related to political reasons, high IDH, or proximity to large urban centers.

Discussion

It is important to point out that although this is a region where the adherence criteria are not very present, this was not an impediment for major adherence to the program. This leads us to infer that doctor shortage is not a problem only in areas where adherence criteria are more prevalent, but in other regions as well. The SNEPPAS Seminar (National Seminar on the Shortage, Provision and Retention of Healthcare Professions in Remote and Vulnerable Areas) showed that doctor shortage and uneven distribution was not only

a problem only of municipalities that fulfill the adherence criteria¹². A study by the EPSM (Market Signal Survey Station) of the Observatory of Healthcare Human Resources shows that in the state of Paraná, 89% of the municipalities have fewer than 0.66 primary care doctors per 1,000 inhabitants. In the study macro-region, 80.4% of the municipalities were below this. If we look at small municipalities, 78% had fewer than 0.65 doctors per 1,000 inhabitants⁵. This data confirms the shortage of doctors in small municipalities. Corroborating the results of this survey, a study in metropolitan Recife shows that most of the problem retaining doctors in the Family Health System is related to the small number of inhabitants¹⁵.

Around the world, nations are seeking mechanisms to ensure universal healthcare and strengthen systems to provide the healthcare needs of their population. This goal is perfectly aligned with providing healthcare personnel, including doctors¹. Santos et al.⁹ found that healthcare teams that do not include a doctor have limitations, as doctors play a unique role, as do other professionals, all of which are essential to

Table 1. Characteristics of the small municipalities in the macro-region of northern Paraná that adhered to the *Mais Médicos para o Brasil* Program, 2015.

Characteristics	Adhered to the PMM			
	Yes		No	
	n	%	n	%
IDHM				
High	26	63.4	15	36.6
Average	36	87.8	5	12.2
Population				
5,000 or less	19	65.5	10	34.5
5,001-10,000	21	80.8	5	19.2
10,001-20,000	22	81.5	5	18.5
DSEI				
Yes	5	100	-	-
No	57	74	20	26
PROVAB				
Yes	5	100	-	-
No	57	74	20	26
Distance to the Healthcare Region seat				
30 km or less	7	53.8	6	46.2
31-60 km	20	74.1	7	25.9
Over 61 km	35	83.3	7	16.7
Distance to the nearest large city				
30 km or less	10	58.8	7	41.2
31-60 km	27	79.4	7	20.6
Over 61 km	25	80.6	6	19.4

provide care based on the principle of comprehensive care.

However, one must bear in mind that the lack of attractions in the regions with the lower social indicators and inadequate working conditions, including too many hours and poor compensation, make it hard to retain doctors. Ney and Rodrigues¹⁶ stress that this difficulty is found primarily with basic care doctors, and mentions a number of reasons, such as inadequate human resources, precarious employment bonds, overload, high turnover, dissatisfaction with the working condition and environment, and the absence of city career and compensation programs.

There is a study that shows that greater compensation may not be sufficient to offset the hardship of more isolated areas, where the professionals and their families will have a poorer quality of life. In light of this, a possible appeal is to formulate public and macroeconomic management policies to promote the development of regions that are more isolated and/or more socially and economically vulnerable, thus contributing to correct some of the elements that are at the cause of the poor doctor distribution in this country⁶.

Regarding adherence by region, the lowest rate was in the 17th HR, which also has the largest number of people living in small municipalities (18.6%). Furthermore, it has a high level of socioeconomic development and service offerings¹⁷. Of the five regions, the 17th has the largest number of healthcare establishments and the largest concentration of medium and high complexity services^{18,19}. It makes sense that this region had the lowest adherence to the PMMB, as has more of the characteristics that attract doctors, without the need for a specific policy, as it is fair to assume that doctors would rather remain in areas with a higher GDP, where there are more opportunities for continued education and better infrastructure and working conditions^{8,20-21}. However, even in this region, over half of the municipalities adhered to the PMMB. This is consistent with the SNEFPAS report, which describes doctor shortage even in municipalities that have the financial resources to hire such professionals¹².

On the other hand, in the 19th HR, 51.6% of the population lives in small municipalities of only moderate socioeconomic development. In general, compared to the other regions the 19th HR had the highest infant mortality rates (until 2006), or 20.4 per 1,000 live births¹⁸. Locations with high levels of social vulnerability and infant

mortality tend to have poorer socioeconomic conditions and a greater shortage of doctors. Thus the policy to provide more such professionals is an interesting option for these towns, allowing them to meet a significant need²⁰.

One of the realities of these towns, especially the smaller ones, is that they are not considered independent managers, despite the fact that the State has not been able to provide them with the minimal amount of social and economic infrastructure to ensure its inhabitants the right to healthcare. This is directly related with retaining professionals, as it affects the location's ability to pay wages and offer good working conditions⁸.

For most small municipalities, only a single doctor registered with the PMMB. In light of this, one gathers that for this region the project was important, complementing family health teams that lacked doctors. According to Santos *et al.*⁹, in hard to reach municipalities, Family Health (ESF) did not have doctors, limiting their ability to provide comprehensive care. A significant contributor to the non-sustainability of these teams is the high turnover of healthcare professionals, in particular doctors, who normally remain in these teams for just one year^{12,22,23}. According to Capozzolo²⁴, work overload in family health teams, structural issues such as a shortage of drugs and materials, as well as no support from other levels of care, contributes to the insecurity resulting from professionals who are poorly qualified to be general practitioners, leading to high turnover in Family Health Strategy (ESF) teams.

The PMMB is more prevalent in the municipalities with lower IDH, which is important in terms of providing doctors as regions with poorer socioeconomic conditions tend to experience a larger shortage of professionals²⁰.

It is interesting to note that the municipalities with the smallest numbers of population levels were also more reluctant to adhere to the PMMB, even though Scheffer *et al.*⁶ claim these locations have the lowest doctor to inhabitant ratios. However, given the difficulty in retaining doctors in smaller municipalities, those that have only a single ESF team have an advantage, as the city administrator need only provide a single professional, which is not the case in municipalities with 5 to 20 thousand inhabitants. Given the average number of teams per population stipulated in the National Basic Care Policy, these would need up to seven doctors to cover all of the population²⁵. It is assumed that this is the reason for the higher adherence of these municipalities to the PMMB.

All of the small municipalities that met the priority criteria for adherence did in fact join the PMMB. It is worth pointing out that it is expected that municipalities that meet any of the criteria will adhere to the program. Among other advantages, it allows them to transfer the not inconsiderable financial burden associated with hiring doctors to the federal government. This is especially important as the autonomy that decentralization granted to municipalities did not bring with it any increased ability in public administration⁸. According to Mendes²⁶ and Silva²⁷, over 50% of the municipalities in Brazil did not collect enough in taxes to cover their administrative and legislative expenses.

Those furthest from larger urban centers tend to be more in favor of adhering to the PMMB. According to Scheffer et al.⁶, regions that are further from major urban centers tend to have more problem attracting medical professionals. For Póvoa and Andrade²¹, this is because they generally offer limited jobs and little outlook for professional growth for the professional or his/her spouse. Furthermore, doctors tend to remain in cities that offer medical schools and residence programs, or at least in locations close to such centers²⁸. The program had a positive impact on the region, reducing inequalities, particularly in terms of providing medical professionals in locations further from major urban centers.

Finally, it will not be a mere policy that will resolve such a complex and chronic problem that extends beyond medical professionals. There is no single or isolated solution. Interventions that articulate federal, state and municipal administrations, funding, changes to the professional training of healthcare professionals and regularization of labor and employment in healthcare are also required¹².

Final Considerations

It is undeniable that the PMMB significantly reduced the uneven distribution of doctors in Brazil and the study region. Doctor deficit is a problem

even in regions lacking any of the adherence criteria, meaning it is a problem even in municipalities in good socioeconomic conditions that are not located in remote regions. From this, we infer that in the smaller municipalities, regardless of their location or social situation, are not favored when doctors choose where to work. In light of this, the PMMB mobilized municipal leaders to address the shortage of doctors in their locations, even if they do not meet the adherence criteria.

In the case of Brazil, where healthcare is the right of every citizen and the duty of the state, and where there is a unified system that proposes universal, comprehensive and equal care, reducing the uneven distribution of doctors, especially in the more isolated regions, is essential. Because of this, the urgent need to effectively grant citizens the right to universal and comprehensive healthcare justifies the creation of a public policy in the form of a Provisional Measure. This policy is consistent with SUS, to the extent that increased population access to doctors as a professional category, but also to a number of healthcare services and measures that depend on a doctor, helping these professionals settle in locations where there were none, or where turnover is high, so that they may become more deeply involved with local healthcare needs and create a bond to the community.

However, one must bear in mind the insufficient funding of SUS and poor working conditions remain a reality, so one must think beyond providing professionals on an emergency basis, and formulate policies to ensure that SUS is sustainable, and offer good working conditions for all of the professionals involved. Furthermore, policies to provide professionals will only be effective if they bring with them a commitment to changing the working process. This requires mutual learning between schools and services, trying to transform the local healthcare reality and the outlook for continued education. It is also important to continue to articulate across federative units, to implement state regulatory policies and constantly monitor and improve the *Mais Médicos* program.

Collaborations

FF Mendonça helped draft the article, write the methodology, gather data and come up with results and discussions. LFA de Mattos worked on data collection and analysis, and was involved in drafting this article. EBD de Oliveira worked on data collection and analysis, and was involved in drafting this article. CM Domingos gathered data and helped with results and discussions. CT Okamura helped draft the article and worked on the results and discussions. BG Carvalho helped draft the article and worked on the results and discussions. EFPA Nunes helped draft the article and worked on the results and discussions.

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