

Characteristics of the distribution of doctors in the *Mais Médicos* (More Doctors) Program in the states of Brazil's Northeast

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Abstract *Inequalities in access to health, reflecting shortages and inadequate geographical distribution of health professionals, have been indicated as a challenge for Brazil. This paper analyzes the geographical distribution of professionals of the Mais Médicos Program allocated in the Northeastern Region of Brazil, through a descriptive cross-sectional study. Secondary data provided by the Health Ministry were used, and thematic maps of distribution of doctors in the Region were prepared. Data on 4,716 doctors who became members of health teams in 1,294 municipalities in six Indigenous Health Districts in the years 2013 and 2014 were analyzed. The greater part of the municipalities of the Region received between one and five doctors. The municipalities most benefited had, at least, 20% of their population in extreme poverty. 99.9% of the doctors were allocated in a Health Center or Primary Healthcare Unit. The majority were women (57%), predominantly of the 45-49 age group (24%). In spite of the advances achieved by the Program – such as distribution of the doctors in locations with greater vulnerability – some States continue to have significant shortages of healthcare.*

Key words *Brazilian Single Health System, Mais Médicos Program, Primary Healthcare*

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Introduction

The inequalities in access to the health services arising from the shortage and inadequate geographical distribution of health professionals, especially doctors, has been pointed out to be a serious problem, persistent over time and resistant to the most varied strategies adopted to face it in the majority of countries¹. The problem of provision of professionals in the various areas of public health is prior to the creation of the SUS², but when the need is for doctors the problems become more difficult to overcome.

In 1997, a study by Machado et al.³ classified medicine as a predominantly urban occupation, indicating that 80% of doctors were situated in only seven states of Brazil (Rio de Janeiro, São Paulo, Minas Gerais, Bahia, Paraná, Pernambuco and Rio Grande do Sul) – which are those that have the highest economic production in the country. The authors further noted that these doctors were concentrated in the state capitals, and that in the cities and towns that were more distant from the state capitals and major urban centers there was still scarcity or absence of doctors.

In spite of the quantitative expansion of doctors in recent decades, with an increase of more than 500% in the number of doctors from the 1970s to 2012, Brazil has disparities in their distribution when one takes the population into account. The number of doctors per 1,000 population (doctors/1,000 pop) increased from 1.5 in 1980 to approximately 2.0 in 2012⁴.

The ratio of doctors to population in primary healthcare shows the greatest shortage in the municipalities of the Northeastern Region, where 49.3% of the population live in areas with scarcity of doctors¹.

Various strategies have been put in place for provision of doctors in the public health services, such as the Program for Interiorization of Health and Water Services (*Programa de Interiorização das Ações de Saúde e Saneamento – Pias*); the Program for Interiorization of the Single Health Service (*Programa de Interiorização do Sistema Único de Saúde – Pissus*), and the Program for Interiorization of Health Work (*Programa de Interiorização do Trabalho em Saúde*)⁵.

As well as these strategies, interns were put in place in undergraduate faculties in the health area in rural situations¹ and, more recently, the Program to Value Basic Healthcare Professionals (*Programa de Valorização do Profissional da Atenção Básica* (Provab)⁶. The Family Health Strategy (*Estratégia de Saúde da Família*), even

not having this objective, is also an attempt to improve coverage of doctors in the country¹.

The most recent strategy for dealing with the inadequate distribution of doctors has been the *Mais Médicos* Program (PMM), which was structured with three axes: (i) investment in improvement of the infrastructure of the health network, particularly in the basic health units; (ii) expansion and educational reforms in medicine degree courses and medical residency in the country; and (iii) the *Mais Médicos para o Brasil* Project (PMMB). The PMMB aimed to provide an emergency supply of doctors in vulnerable areas⁶, its intention being to expand the supply of medical attention to primary healthcare in the SUS⁷.

Until December 2014, the PMM had attracted approximately 14,000 doctors to operate in primary healthcare. According to information published in a Health Ministry bulletin⁸, the regions most benefitted by the program were the North and Northeast. Since it is a recent program, little is known about how this geographical distribution has taken place. This study aims to analyze the geographical distribution of the doctors participating in the PMM in the Northeast, to provide a picture of the geographic and social-demographic characteristics of this provision, and contribute to the discussion about strengthening of primary healthcare.

Method

This is a descriptive, cross-sectional study, with a quantitative approach, of the profile of professionals of the PMM in Brazil's Northeast Region.

The data collected came from the secondary data sources made available by the Health Ministry, obtained through the Health Work and Education Management Department (*Secretaria de Gestão do Trabalho e Educação na Saúde – Segtes*), from the national coordinating office of the *Mais Médicos* Program. For distribution by scale of population, estimates of social-demographic and population figures from the TCU (Federal Audit Court)⁹ were extracted from the site of Datasus.

To characterize the profile of doctors of the PMM in the Northeast the following variables were used: age; gender; which cycle of the program they joined in; state and municipality in which they worked for the program; type of health establishment to which they are allocated – as classified by the National Health Establishments Register (*Cadastro Nacional de Estabelecimentos de Saúde – CNES*) of the Health Ministry;

vulnerability profile of the municipality; and the nationality and medical profile of each medical professional of the PMM.

In accordance with criteria adopted by the Health Ministry, the professional profile of the doctors participating in the PMM is divided into: *Cooperation* – this refers to the Cuban doctors brought to Brazil under an agreement made with the Pan-American Health Organization (PAHO) of the WHO (*Organização Panamericana de Saúde*, or *OPAS*, in Portuguese); *CRM* (initials of the *Brazilian Regional Medical Council – Conselho Regional de Medicina*) – these are doctors trained in Brazil or approved by the *Revalida* program; and *Exchange doctors* – foreign or Brazilian doctors trained outside Brazil and joining the program by spontaneous demand¹⁰.

The classifications relating to the vulnerability profile of the municipalities were: *Semi-arid Region*, *Quilombo* settlement, *Low or Very Low HDI* (Human Development Index), *Indigenous*, *Jequitinhonha/Mucuri Valley*; and *Other* – those that did not fit into any of these profiles. These classifications reflect the social, economic and cultural conditions of the inhabitants of these municipalities.

The *Semi-arid region* includes municipalities that have a more than 60% risk of drought, based on the period between 1970 and 1990¹¹. The regions of *Quilombo communities* comprise groups with a cultural identity of their own formed through historic progress that began in the times of slavery in Brazil¹².

The Municipal Human Development Index (*IDHM*) being *Low or Very Low* is an indicator of social/economic vulnerability that takes into account the conditions of life in relation to longevity (health), education and income, and var-

ies from 0 to 1. The categorization of *IDHM* is as follows: 0–0.499 = *Very low*; 0.5–0.599 = *Low*; 0.6–0.699 = *Average*; 0.7–0.799 = *High*; and 0.8–1 = *Very high*¹³.

First the locations were identified that received doctors from the program, and the distribution of the professionals by location recorded. The profile of these professionals was then described. The data were organized and tabulated with the help of the program *BROffice Calc.* and, subsequently imported to *Terraview*, version 4.2.2, for construction of thematic maps of distribution of frequencies.

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The municipalities were classified as follows: *State Capitals*; *Metropolitan Regions*; *G100* (municipalities with low per capita income and population of more than 80,000); *Poverty* (municipalities with at least 20% of the population living in extreme poverty); *Indigenous Health Districts (Distritos Sanitários Indígenas – DSEIs)*; and *Others* (areas referring to the 40% of the census sectors of other municipalities with the highest percentages of population in extreme poverty, according to the IBGE) – Table 1.

Results

Data were analyzed for 4,716 doctors who entered health teams in 1,294 municipalities and 6 Indigenous Health Districts (DSEIs) of all the 9

Table 1. Profile of municipalities of the Northeastern Region of Brazil, by areas' priority classification criteria for emergency provision from the Mais Médicos Program, by number of doctors allocated. December 2014.

Profile of municipality	Nº of municipalities	Nº of doctors allocated	Proportion of doctors (%)
Poverty*	963	2974	63
Other**	250	732	16
G100***	36	442	9
State Capital	8	321	7
Metropolitan Region	37	193	4
DSEI (Indigenous Health District)	6	54	1
Total	1294	4716	100

* This value (*Poverty*) is the total of municipalities with at least 20% of their population living below the poverty level. ** This value (*Others*) is for the areas referring to the 40% of census sectors with the largest percentages of population in extreme poverty according to the IBGE. *** G100: Municipalities with low per capita income and population over 80,000.

states of Brazil's Northeastern Region, in the period from August 2013 through December 2014.

The greater part of the municipalities of the Region received between one and five doctors, followed by the distribution between five and ten doctors. Of the state capital cities that received doctors from the PMM, only Maceió and Aracaju received less than 20 (Figure 1).

The state that received the highest number of doctors in the Northeast Region was Bahia (28%), followed by Ceará (20%), Pernambuco and Maranhão (14%, each), Piauí (7%), Paraíba and Rio Grande do Norte (5%). Those that received the least doctors were Alagoas and Sergipe, with 4% and 3%, respectively. Six capital cities received more doctors than the other municipalities of the state (Salvador 6%, Fortaleza 13%, Recife 5%, São Luiz 3%, João Pessoa 8% and Natal 12%).

Of the nine states of the Northeast, in only two did the state capital not receive a larger number of doctors than the other municipalities of the state (Sergipe and Alagoas); one state capital (Teresina, state of Piauí) did not receive any doctors from the PMM. However, overall the state capitals received only 7% (321) of the total of doctors allocated in the Region.

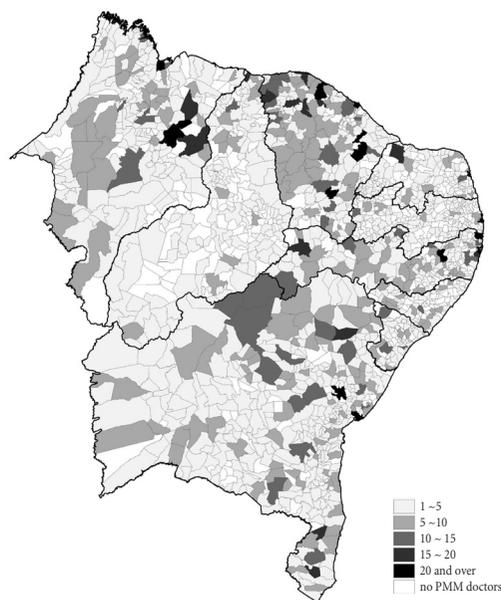


Figure 1. Distribution of doctors of the *Mais Médicos* Program by municipality and by number of doctors. Brazilian Northeast, December 2014.

Source: Authors, from Health Ministry data.

With the PMM, the ratio of doctors to each 1,000 population in the Northeastern Region increased from 1.23 in 2012, to 1.34 in December 2014. By state, there was an increase in all the states: from 0.58 to 0.67 for *Maranhão*; from 0.92 to 1.02 for *Piauí*; from 1.05 to 1.15 for *Ceará*; from 1.09 to 1.17 for *Bahia*; from 1.12 to 1.18 for *Alagoas*; from 1.17 to 1.23 for *Paraíba*; from 1.23 to 1.30 for *Rio Grande do Norte*; from 1.30 to 1.37 for *Sergipe*, and from 1.39 to 1.47 for *Pernambuco*. Although there was an increase in the number of doctors in all the states, the changes in the number of doctors per 1,000 population was small.

According to the data analyzed, the municipalities most benefited by the PMM were those classified by the Health Ministry as below the *Poverty* level. These received 63% of all the professionals allocated in the Region (Table 1). Of the states in this classification, the most benefited were *Bahia* (27%), *Ceará* (19%), and *Maranhão* (16%). Six municipalities classified as belonging to the G100 received more than 20 doctors: *Caruaru* and *Paulista* (in Pernambuco), *Itapipoca* and *Iguatu* (in Ceará), *Codó* (in Maranhão) and *Feira de Santana* (in Bahia).

The six Indigenous Health Districts (DSEIs) received a total of 54 doctors: seven went to the Alagoas/Sergipe DSEI, 18 to the Bahia DSEI, 2 to the Ceará DSEI; 13 each to Maranhão and Pernambuco; and the Paraíba DSEI received only one.

The category *Indigenous* does not appear on the maps, since all the doctors registered in an Indigenous Health Unit were allocated to the central establishments of the DSEI located in the state capitals – so that it was not possible to identify in which municipalities, specifically, these doctors were working.

As to the vulnerability profile, it is seen in Figure 2 that the municipalities most benefited with doctors belonged to the *Northeastern Semi-Arid* region, which as a whole, received 2,500 doctors (53%), followed by the municipalities with *Low or Very Low IDH*, 879 doctors (18%). Those that *fitted none of the profiles* specified, identified in Figure 2 with the label *not applicable*, received 780 doctors (17%). However, they belong to the areas referring to the 40% of the census sectors with the highest percentages of population in extreme poverty, according to the IBGE.

The *Quilombo* communities received 413 doctors (9%), the *Jequitinhonha/Mucuri Valley* 90 (2%), and *Indigenous* areas 54 (1%). However severe shortage persisted in the Semi-arid re-

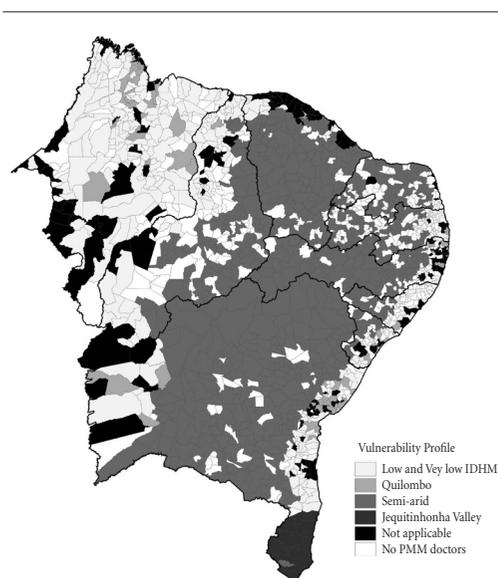


Figure 2. Distribution of doctors of the *Mais Médicos* Program, by Vulnerability Profile of the municipalities that received doctors under the program. Brazilian Northeast, 2014.

Source: Authors, from Health Ministry data.

regions of the States of Alagoas, Sergipe, Piauí, Rio Grande do Norte and Paraíba, with the highest level in the area characterizing shortage in Piauí (Figure 2).

The municipalities with population of up to 50,000 received 88% of the total of doctors allocated in the Region (Table 2). Predominantly in this group, between 1 and 5 doctors were inserted per locality, the lowest values of IDHM mainly being found in those with populations of up to 20,000. Municipalities with population between 50,001 and 100,000 received 8% of the total of doctors allocated in the Northeast, distributed between municipalities with *Low* and *Medium* IDHM.

In relation to distribution of doctors in the region, 2,689 (57%) were female and 2,027 (43%) male. In terms of age group, the largest number (24%) was aged 45–49. Women were the majority in almost all the age groups, except the over-60s.

Doctors entered the *Mais Médicos* Program (PMM) in five separate cycles, and were divided as to profile into categories: doctors from the *Cooperation* with the PAHO (Cuban nationality), doctors registered in a Brazilian *Regional Medical Council* (CRM); and *Exchange doctors*.

In the first cycle, 415 doctors entered. Of these, 197 entered the program through the *Cooperation* with PAHO, 164 were registered with a Brazilian CRM, and 54 were exchange doctors. In the second cycle, a total of 2,369 entered: 2,225 as *Cooperation*, 79 with CRM and 35 exchange doctors. In the third cycle the total was 721, of which 564 were under the *Cooperation*, 91 had local CRM and 66 were exchange doctors. In the fourth cycle a further 1,117 entered, 663 under the PAHO *Cooperation*, 429 with CRM and 25 exchange doctors. And in the last cycle the total was 42, of which 35 had CRM affiliation and 7 were exchange doctors. 52 from the *Cooperation* group were held in a Reserve category.

Nationality: 896 were Brazilian, 3,735 were Cuban, and 85 were of other nationalities. These other countries of nationality were: Argentina (19), Spain (18), Venezuela (9), Portugal (7), Bolivia (6), Uruguay (5), Mexico (4), Colombia (3), Italy (3), Honduras (2), Germany (1), USA (1), Haiti (1), Holland (1), Hungary (1), Paraguay (1), Peru (1), Switzerland (1) and Ukraine (1).

Figure 3 shows the distribution of doctors by nationality, dividing the municipalities into those that received: (i) only Cuban doctors, (ii) only Brazilian doctors, (iii) only exchange doctors, (iv) Cubans and exchange doctors, (v) Brazilian and exchange doctors, and (vi) those that received all three.

Prior to working in the program, 794 of the Brazilian doctors were working in Brazil, 52 in Cuba and 50 in other countries. Of the Cubans, 3,733 had been working in Cuba and two in other countries. Among doctors who were classified in the exchange category, 78 had been working in other countries, 2 in Brazil and 5 in Cuba.

The doctors were allocated to five types of unit, classified by the National Health Establishments Registry (CNES): 3,877 were in a primary healthcare unit or center; 532 were allocated to Health Posts; 54 to Indigenous Units; and 14 to a Mixed Unit. Each of the following categories received one doctor each: Specialty Clinics/Centers, General Hospitals, and Mobile Units. Figures were not given by the CNES of 172 doctors. A CNES number was not found for 49 units, which received 63 doctors. Data was not given for the allocation of only one doctor.

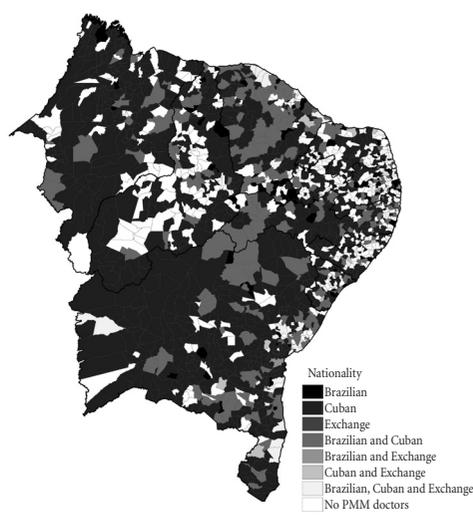
Discussion

According to the Federal Medical Council⁴, in 2010, there were 388,015 doctors in Brazil and

Table 2. Distribution of doctors of the *Mais Médicos* Program by population scale and Municipal Human Development Index (IDHM). Brazilian Northeast, December 2014.

Scale of municipality and IDHM	Number of doctors allocated											
	1-5		5-10		10-15		15-20		20 and over		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Under 10,000	348	100.0	-	-	-	-	-	-	-	-	348	26.9
0.400 to 0.499	6	1.7	-	-	-	-	-	-	-	-	6	1.7
0.500 to 0.599	257	73.9	-	-	-	-	-	-	-	-	257	73.9
0.600 to 0.699	85	24.4	-	-	-	-	-	-	-	-	85	24.4
10,000 to 20,000	414	92.2	35	7.8	-	-	-	-	-	-	449	34.7
0.400 to 0.499	5	1.2	-	0.0	-	-	-	-	-	-	5	1.1
0.500 to 0.599	293	70.8	30	85.7	-	-	-	-	-	-	323	71.9
0.600 to 0.699	115	27.8	5	14.3	-	-	-	-	-	-	120	26.7
0.700 to 0.799	1	0.2	-	0.0	-	-	-	-	-	-	1	0.2
20,001 to 50,000	207	60.5	123	36.0	11	3.2	1	0.3	-	-	342	26.4
0.400 to 0.499	1	0.5	1	0.8	-	0.0	-	0.0	-	-	2	0.6
0.500 to 0.599	111	53.6	66	53.7	4	36.4	-	0.0	-	-	181	52.9
0.600 to 0.699	95	45.9	56	45.5	7	63.6	1	100.0	-	-	159	46.5
50,001 to 100,000	31	30.1	42	40.8	22	21.4	5	4.9	3	2.9	103	8.0
0.500 to 0.599	5	16.1	10	23.8	6	27.3	3	60.0	-	0.0	24	23.3
0.600 to 0.699	25	80.6	29	69.0	16	72.7	2	40.0	3	100.0	75	72.8
0.700 to 0.799	1	3.2	3	7.1	-	-	-	0.0	-	-	4	3.9
100,001 to 500,000	4	9.5	12	28.6	16	38.1	6	14.3	4	9.5	42	3.2
0.500 to 0.599	-	0.0	-	-	-	0.0	-	0.0	1	25.0	1	2.4
0.600 to 0.699	2	50.0	9	75.0	13	81.3	4	66.7	2	50.0	30	71.4
0.700 to 0.799	2	50.0	3	25.0	3	18.8	2	33.3	1	25.0	11	26.2
Population over 500,000	1	10.0	1	10.0	-	-	1	10.0	7	70.0	10	0.8
0.700 to 0.799	1	100.0	1	100.0	-	-	1	100.0	7	100.0	10	100.0
Overall total	1005		213		49		13		14		1294	100.0

Source: Authors, based on data provided by SGTES (Health Ministry) and data from DATASUS / TCU Estimates.

**Figure 3.** Distribution of doctors of the *Mais Médicos* Program by nationality. Brazilian Northeast, December 2014.

Source: Authors, from Health Ministry data.

a population of 193,867,971 (a ratio of 2.00 doctors per 1,000 population). Of these, 66,532 (17%) were registered in the Northeast, with a ratio of 1.18 doctors/1,000 population.

According to the Health Ministry¹⁰, the four states with the worst indicators for distribution of doctors before the PMM in the Northeast, in terms of doctors/1,000 population, were: *Bahia* (1.09), *Ceará* (1.05), *Piauí* (0.92) and *Maranhão* (0.58). The state of *Pernambuco* had the highest indicator in the Northeast (1.39).

Although the insertion of 4,716 doctors into the Northeast points to an important initiative to overcome this historic deficit, there was not a significant variation in the general rate of distribution of doctors in the region: the increase overall in the Northeast was 0.11.

Overcoming the difficulty of distribution and fixing of doctors in regions of difficult access is not an easy task¹⁴, since even when the country has an adequate number of doctors per 1,000

population, their distribution tends to be concentrated in certain regions, generating a socially undesirable result¹⁵. This paradox can be seen also in the findings of this present study: although the attempt to give priority to the more vulnerable regions and those with the worst social indicators is clear and evident, the distribution of doctors in the region maintains a strong concentration in the state capital cities. These results suggest that even in the state capitals the poorer (peripheral) areas are short of medical professionals.

Although the actual numbers of doctors have increased persistently since the 1970s, this has not been enough to benefit, in a homogenous manner, all Brazilian citizens, since a series of factors results in the flow of doctors within the territory of Brazil being heterogeneous⁴.

On this aspect, the PMM has made progress in the supply of doctors, but does not correct certain inequalities, such as the fact of Pernambuco receiving more doctors than Maranhão – even though, before the PMM, Pernambuco had a higher proportion of doctors than Maranhão. Although it is clear that criteria for priority were adopted to serve the more needy areas, it has been possible to see that Maranhão still has the lowest ratio of doctors per 1,000 population in the Northeast. These results could contribute to improving the program, to the extent that how the needs of these states were served is identified over the course of the implementation.

The fact of there being a greater allocation of doctors in municipalities with lower IDHM and populations below 20,000 in the Northeast shows that the criteria for joining the PMM has made progress in correcting the historical inequality of distribution of doctors in the region in terms of socio-economic development. Further, the wide acceptance and subscription of the program by municipalities of the Northeast, including those that are most developed, indicates that the shortage of doctors is not restricted to the small and least developed municipalities.

Adoption of primary healthcare as the principal entry door to the SUS made the shortage of doctors a more dramatic scenario, in that it demanded that municipalities should have the conditions to enable them to universalize access to the health professionals of primary healthcare. Although there is the expectation of remedying this situation based on the advance of implementation of the *Mais Médicos* Program, the results presented suggest that the significant predominance of municipalities that received between 1 and 5 doctors demands a need for further con-

tracting that would more significantly increase the absolute number of doctors and the doctor-population ratio.

Historically the Northeastern Region has had the highest rates of poverty, and the state of Bahia has been the state with the largest number of municipalities below the poverty line in the region².

It is seen that Piauí, in spite of appearing as the state of the Northeast with the lowest ratio of doctors to 1,000 population (0.92) – higher only than Maranhão (0.58)⁴, received only 319 doctors. It is clear, as shown in Figure 1, that there is a gap in coverage of the PMM and almost absolute predominance of the distribution of 1 to 5 doctors in the municipalities that received doctors from the PMM.

The criterion for receiving doctors from the PMM is restricted to the fact of the municipality stating the need, and the demand, and inscribing itself in the program, to receive the doctor¹¹. A precedent is opened for the possibility that municipalities whose management is opposed to the federal government might decide not to join, for reasons of political opposition – rather than because of a lack of medical professionals – which may have caused the paradox of Pernambuco receiving more doctors than Piauí, when clearly the latter has a greater need (which has persisted even with the implementation of the PMM).

In Brazil, 17% of municipalities report distribution of annual income per capita below R\$1,000. Bahia and Pernambuco are among the states that have the highest number of municipalities with low per capita income – 39% and 52%, respectively. Of the municipalities with income below R\$ 1,000 per year, 100 have population greater than 80,000, classified as belonging to the G100, and 40 of these municipalities are in the Northeastern Region¹⁶. Of those, 36 receive doctors from the PMM – giving an indication of the use of criteria for allocation of doctors according to need.

Another important aspect seen in the findings of this present study was the fact of the municipalities in the situation of *extreme poverty* being the most benefited, receiving the largest number of doctors. According to Girardi et al.¹, the number of municipalities qualified as having *scarcity* in doctors in Primary Healthcare increases when indicators of social and health needs are high.

However the *Others* classification (municipalities with areas referring to the 40% of the census sectors with the highest percentages of the population in extreme poverty, according to the IBGE) was in second place in the distribution of munic-

ipalities by profile. Analyzing these municipalities more closely, it was seen that 61% qualify in the *profile of vulnerability*, and are situated in the *Semi-arid* region. The majority of them belong to the state of Bahia, and also have at least 20% of their population living below the poverty line.

Cross-referencing the data for municipalities belonging to the classification *Poverty* (municipalities with at least 20% of the population living below the poverty line) and those located in the *Semi-arid* region, it is seen that 1,793 of these are classified in both profiles. That is to say, 71% of the municipalities of the *Semi-arid* region have at least 20% of the population in a situation of *extreme poverty*. Thus, the PMM has been coherent with the proposal of benefitting the neediest municipalities, as well as showing that the most needy areas are exposed to various situations of vulnerability.

The Region that comprises the Northeastern Semi-arid area has as a characteristic the scarcity of water resources, and weak distribution of rains during the year. These municipalities face conditions of vulnerability that have adversely affected the population's health conditions¹⁷, pointing to a need for implementation of public policies also directed to overcoming the difficulties in providing health professionals in these municipalities.

Although this study indicates that the larger number of professionals was directed to the *Semi-arid* region, Figure 2 shows that there is a persistent lack of coverage of doctors in the semi-arid regions of the states of *Piauí*, *Rio Grande do Norte*, *Paraíba* and *Alagoas*. This finding suggests the need to move forward in implementation of the PMM and increase the contracting of professional doctors to cover areas that continue to have this lack.

By profile of municipality, it is seen that 83% of the total doctors of the PMM in the Northeast were allocated into municipalities that face some situation of vulnerability. Although the PMM is an important initiative for assisting the more vulnerable municipalities and supplying the need for doctors, it is not sufficient to resolve the problems to which these populations are submitted due to the social-economic and historic inequalities that they face. The need for implementation of policies that are not restricted to supplying a specific demand (such as that for doctors) but which help such municipalities to overcome those inequalities, which affect a significant part of the Brazilian population, is evident.

Almost 80% of the professionals operating in the PMM in the Northeast are Cuban. This shows

the importance of the cooperation with the Pan American Health Organization in getting these professionals into primary healthcare, as well as showing the historic role that Cuban doctors have played in helping peoples of various countries around the world face health difficulties.

In the study by Medeiros¹⁸, who held interviews with Cuban doctors on why they take part in missions to help face health problems, it is clear that these missions are understood to be natural and are part of the solidarity of the Cuban people with the various peoples of the world.

The number of Brazilian professionals allocated in municipalities with difficulties of retaining doctors is up to 57% of the total of Brazilian doctors in the program. However, even those allocated to locations with greater socio-economic vulnerabilities are in the municipalities with lower distances from state capitals, indicating the predominance of choice, by the Brazilian doctors, of cities close to the major urban centers.

In terms of age group, this present study is in line with the age group pyramid profile of doctors registered in the Brazilian Federal Medical Council⁴, where 41% are aged 39 or less.

Gender: in line with a world trend of more females in the medical profession, 57% are women. This result is in line with the overall trend in Brazil: since 2009, women have been in the majority among new registrations in the Federal Medical Council; in 2011 became the majority in the age group 29 years or less¹⁹.

The number of registries of women in higher education worldwide has increased by a factor of seven since 1970, while the number of men has increased by a factor of four⁴. This transformation may influence the evolution of a profession, with consequences in medical practices, in the quality of care and in the organization of health services¹⁹.

It is extremely important to identify the geographical areas in populations that suffer from shortage, or severe scarcity, of health professionals, especially primary healthcare, so that public policies can be implemented aiming to achieve care security in the ambit of the SUS¹.

Campos et al.¹⁴ asked questions about what conditions were given to the municipalities when they assumed the provision of the whole technical and personnel structure at the moment of creation of the SUS – a moment when municipalization assumed a strategic role in the decentralization of health. However, even considering the importance of municipalization for ensuring the autonomy of municipalities, many of these

still do not have sufficient resources of their own to provide the conditions necessary for putting primary healthcare in place. Thus, we highlight the importance of the PMM as a mechanism of support enabling the more vulnerable municipalities to have a doctor, since those with registry in the CNES, informing the location where the professionals were allocated, belong to the primary healthcare network (99.9%).

According to Lampert²⁰, the PMM emerged as one of the federal government's responses to the public demonstrations in June and July 2013, in which the population demanded improvements in quality of life – improvements in the health service being one of the banners in this struggle.

Although the PMM aims to confront the problems of shortage of doctors in the long term, it is necessary to evaluate the manner in which the municipalities adhered to the Program. Leaving it up to the municipal management to request PMM doctors, or not, even when the need for these professionals is evident, is also to submit the population of these municipalities to the political intrigues of local management. This study points to the need for intervention of the State to require that the municipalities that have lack or shortages of doctors and do not opt to receive a doctor from the PMM should be given a period in which to allocate these doctors to the health services and if they do not, compulsory allocation of PMM doctors will be considered.

We also highlight that increasing the ratio of doctors/1,000 population does not mean reducing inequalities between the regions and between the public and private health sectors. As shown by *Demografia Médica*⁴, if new policies for attracting and retaining doctors are not adopted

and structural changes are not implemented in the functioning of the Brazilian health system, it will be difficult for any state intervention to guarantee adequate provision of doctors as the years go by.

For this, Scheffer²¹ points to three possible interventions as long-term measures to minimize the difficulties of provision of doctors related to medical training: the first group of doctors with focus on future doctors, increasing, from graduation, the number and the qualification of those disposed to work in the less attractive regions; the second, directed to doctors already working, including financial and regulatory incentives for them to move from where they are to certain regions and activities; and alternatives that involve other health professionals combined with technologies of 'tele-medicine' and care at a distance.

Based on the above, it can be concluded that, in quantitative terms, the PMM has been important in supplying the shortage of medical professionals in the most vulnerable regions of the Brazilian Northeast, characterizing it as the most mature government initiative implemented in recent years in the SUS, in view of the fact that it aims not only to provide doctors in remote areas, but also to ensure universalization of graduation in medicine and medical specialties for the company years.

However, it is important that other studies should be carried out that can go more deeply into the findings of this investigation, identifying the effectiveness of the Program in resolving Brazilians' health problems, analyzing the change in health indicators, and the possibility of transformation of the process of work in the health services.

Collaborations

PTA Nogueira and KSB Silva contributed outlining, analysis, interpretation of the data, drafting and discussion. AFB Bezerra contributed definition and outlining. AFB Leite contributed analysis, interpretation of the data and construction of tables and maps. IMC Souza contributed definition, outlining and writing of the paper. RF Gonçalves contributed analysis and interpretation of the data.

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