

## Assessment of the scope of practice of physicians participating in the *Mais Médicos* (More Doctors) Program, and associated factors

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**Abstract** *The purpose of this study was to characterize the scope of practice of physicians working in primary healthcare participating in the Mais Médicos (More Doctors) Program ('PMM') and investigate the factors associated with execution of a larger number of clinical activities. It is an exploratory study carried over January to March 2016, through a self-applied questionnaire containing a list of 49 procedures, activities and actions carried out in primary healthcare. A total of 1,241 physicians took part in the study, most of them female, between age 40 and 49, and of Cuban nationality. The physicians carried out an average of  $22.8 \pm 8.2$  procedures; they reported knowing how to carry out a larger number of procedures. Factors associated with executing a larger number of procedures were: being male, having graduated more recently, two years or less practicing in their primary healthcare unit, practicing in the North or South geographical regions, in small towns and more distant from the regional health headquarters. The main reason for not carrying out the procedures and activities that they reported knowing how to do was the lack of materials and inadequate infrastructure. The results show that the scope of practice of the physicians of the PMM is lower than their capacities, and that interventions with the intention of widening their scope are necessary.*

**Key words** *Mais Médicos Program, Human resources, Primary healthcare*

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## Introduction

The process of institutionalization of Brazil's Unified Health System (SUS) has now been going on for more than twenty years, and one of the measures of its organization and implementation is the strengthening of Primary Healthcare, seeking to serve the population in accordance with the local realities. In this context, the scope of practice of doctors who work in primary healthcare is crucial for ensuring capacity to provide solutions in meeting the various health demands for the population, because these are the professionals who operate at the frontline of the SUS<sup>1,2</sup>.

The term 'scope of practice' is used to describe the group of activities, functions and actions that a professional can exercise with security, according to his training, education and professional competence<sup>3</sup>. The following key elements are considered for the definition of scope of practice: (i) activities authorized by law; (ii) activities actually realized in the professional practice; (iii) the training and education required; (iv) criteria for exercising the profession; and (v) professional responsibility<sup>4</sup>.

In the area of health, a professional with limited scope of practice can increase the rates of referral to secondary networks and, consequently, increase the costs of health, as well as restricting users' access to the services<sup>5</sup>. At the same time, a widened scope of practice can help improve access to health services<sup>6</sup>. Thus, the way in which the scope of practice is established directly impacts the composition and productivity of the workforce and, thus, the quality and the cost of health services.

Studies point to a wider scope of practice of health professionals principally in rural areas, remote areas and other locations with low availability of doctors and specialists<sup>7-9</sup>. Among medical professionals, the amplified scope has been associated with factors such as gender, age, time of education, experience, location and access to the secondary network<sup>5</sup>.

The processes of regulation and qualification of the workforce in health, at the same time as the reforms in the models for provision of health services, principally in primary healthcare, have been indicated as essential to provide equity and quality in the health system<sup>6,10</sup>, when seeking to face a problem that is chronic for the various countries, including Brazil, which is the scarcity of health professionals, with a highlight for doctors<sup>11-13</sup>.

Countries that are benchmarks for investigating this problem and proposing strategies for

its solution, such as the United States, Canada and Australia, have increasingly been using: (i) widening of the scope of practice of health professionals in primary healthcare; (ii) new professions such as *Physician assistants*, and nurses with advanced education (*Nurse Practitioners*); and (iii) transfer of responsibilities to other professional categories or to technical categories – 'task shifting'<sup>14-16</sup>.

Recently, based on various evidences that indicated a situation of profound scarcities and unsatisfactory geographical distribution<sup>11,17-20</sup>, the Brazilian government launched the *Mais Médicos* (*More Doctors*) Program, which has as one of its central objectives the reduction of the shortage of doctors in the priority regions of the SUS, so as to reduce inequalities in access to the health services. For this, one of its main thrusts has been emergency provision of Brazilian and/or non-Brazilian doctors at these locations, named the *Mais Médicos para o Brasil* ('more doctors for Brazil') Program, or PMMB<sup>21</sup>.

According to data from the Health Professionals Provision Planning and Regulation Department (DEPREPS), in February 2016 there were 14,913 doctors of the Program operating in Brazil, of which 85% were of foreign origin, the great majority (75%) Cuban, arising from cooperation between Brazil and Cuba. The presence of these doctors in the health teams has been contributing to increase in the supply of services and the capacity of diagnosis in the territory, as well as reducing the user's waiting time for scheduling of consultations<sup>22</sup>.

In spite of the importance of the doctors of the PMM, little is known about the activities that they have been carrying out, these activities being essential for resolving the population's health problems. In this context, an effort has been made to characterize the scope of practice of doctors working in primary healthcare that are participants of the PMM, and the factors associated with execution of a larger number of clinical activities.

## Methods

This study presents prior results of the survey 'Regulation of Work and the Professions in Health', carried out by the Market Signals Research Station (EPSM), of the Collective Health Education Center (NESCON), of the Federal University of Minas Gerais (UFMG), which are part of the Health Human Resources Observa-

tory Network. The project was approved by the Ethics Research Committee of UERJ.

It is an exploratory, cross-sectional study, carried out over the period January-March 2016, through its self-applied questionnaire, sent by email to a sample of doctors participating in the *Mais Médicos* Program.

The questionnaire, prepared on the basis of the *Survey Monkey*® tool, covered the following dimensions: socio-demographic profile of the doctors, characteristics of the work, and questions to establish the scope of practice of the professionals, according to a previously prepared list of procedures, activities and actions carried out by doctors in primary healthcare. The construction of the questionnaire involved various stages, including consultation of the Basic Healthcare Protocols of the Health Ministry, interviews with key informants and specialists, and review of international literature on the scope of practice of doctors in primary healthcare<sup>5,23-29</sup>.

The questionnaire was submitted to a pre-test, carried out on ten doctors who work in Primary Healthcare Units of different geographical regions of Brazil. It was then sent to a prepared list comprising 17,536 records of medical professionals who participated in courses offered by the Open University System of the SUS (UNA-SUS). These included both Specialization in Family Healthcare, which is mandatory for participation in the Primary Healthcare Professional Improvement Program (PROVAB) and the PMM, and also the open online courses of short duration which mostly cover subjects relating to primary healthcare.

A total of 3,568 doctors responded to the questionnaire, of which 1,241 were considered to be eligible to make the sample. The criteria for inclusion used was: all doctors who have operated or who operate in the PMM, and who have responded to the questions relating to procedures, activities and actions carried out in basic healthcare units.

In relation to the socio-demographic profile, data were collected on gender, age, nationality, country and year of conclusion of graduation, specialist qualifications, time of experience in primary healthcare and time of activity in the primary healthcare unit in which the person worked at the time of the application of the questionnaire. As well as these data, questions were asked on the municipality where the unit was located, classified by its geographical region, scale of population and distance, in terms of time, from the headquarter municipality of the health

region<sup>30</sup>. The distance in terms of time was measured from the headquarter municipalities (using the address of the prefectures), by highway, to the location of the prefecture of the municipality in which the doctor worked<sup>31</sup>.

The socio-demographic data and the data on scopes of practice (procedures, activities and actions in health practiced by the doctors) were described according to the distribution of frequencies and measures of central tendency. For comparison of continuous variables the Mann Whitney non-parametric test was used, since the number of procedures, activities and actions carried out did not show a normal distribution. The level of significance adopted was 5%. The statistical analyses were made using the SPSS 19 software (SPSS Inc., Chicago, United States).

## Results

The majority of respondents were female (52.3%), aged 40 to 49 (39.8%), of Cuban nationality (73.8%), with graduation outside Brazil (87.5%), time since graduation greater than 15 years (60.8%) and more than 8 years' experience in primary healthcare (52.9%) (Table 1). Considering only the Brazilians, this profile was different, with younger participants (aged 30-39; 54.0%), shorter time since graduation ( $\leq 5$  years; 47.3%), less time working in primary healthcare ( $\leq 8$  years; 79.6%) and lower proportion of people graduating outside Brazil (35.4%).

As to work location, the majority worked in the primary health unit at the time of filling out the questionnaire for two years or less (58.4%), these being allocated in the Northeast (43.5%) and in state capitals and metropolitan regions (23.5%), with distance from the headquarters of the health region of up to 15 minutes (36.1%) (Table 1).

The majority of the participants stated that they had specialist qualification (86.6%), obtained by medical residency, specialization course, recognition of a society of specialists and masters' degree or doctorate (Table 1). These specialties related to primary care – Clinical Practice and Family and Community Medicine, or equivalent – corresponded to more than 90%.

With regard to the population served, a great majority of the doctors ( $\geq 95\%$ ) received demand ranging from nursing mothers to the elderly, and 87% reported also serving newborns. In relation to the conditions and health problems of patients, at least 95% of the interviewees reported receiv-

**Table 1.** Sociodemographic characteristics of survey participants. Brazil, 2016. N = 1,241.

Characteristic	n*	%
Gender		
Female	643	52.3
Male	586	47.7
Age group (years)		
20–29	38	3.1
30–39	379	30.9
40–49	488	39.8
50–59	281	22.9
60 or over	39	3.3
Nationality		
Brazilian	227	18.5
Cuban	906	73.8
Other	94	7.7
Country of training		
Brazil	153	12.5
Outside Brazil	1071	87.5
Years since graduation		
0–5	139	11.5
6–10	186	15.3
11–15	150	12.4
16–20	170	14.0
21–25	309	25.5
26 or more	258	21.3
Specialist qualification?		
Yes	1075	86.6
No	166	13.4
Time in primary health care		
≤ 8 years	582	47.1
> 8 years	653	52.9
Time in this primary health unit		
≤ 2 years	719	58.4
> 2 years	513	41.6
Location of unit: Region of Brazil		
North	137	11.0
Northeast	540	43.5
Southeast	304	24.5
South	183	14.8
Center-West	76	6.1
Scale of municipality where you work		
State capital or metropolitan region	292	23.5
Population: Over 100,000	166	13.4
Population: 50,000 – 100,000	140	11.3
Population: 20,000 – 50,000	272	21.9
Population: 10,000 – 20,000	221	17.8
Population: Up to 10,000	150	12.1
Road journey time to health region HQ		
Up to 15 minutes	448	36.1
16–30 minutes	126	10.2
31–45 minutes	186	15.0
45–60 minutes	118	9.5
61–120 minutes	253	20.4
Over 120 minutes	110	8.9

\* Excluding missing data.

Source: Authors, from 2016 Health Professions Regulation survey.

ing demand from patients with diabetes, hypertension, cardiopathies, pregnant women, patients with hypothyroid condition, obesity, cancer, problems with mobility, bedridden or physically disabled, patients with mental suffering and with respiratory problems. More than 75% of the doctors interviewed stated that they also receive demand from patients with chronic kidney deficiency, need to stop smoking, endemic diseases, chemical dependencies and living with HIV/AIDS.

Among situations of vulnerability of the patients served, the situation which the doctors cited most frequently was having among the population of their primary healthcare unit people who live in a situation of poverty (75.5%) – followed by homeless/people living in the street (23.7%), as well as immigrants (20.6%), seasonal populations (10.6%), people deprived of liberty (10.3%), indigenous people (9.8%), residents of river banks (9.2%) and residents of *quilombo* (former slave) settlements (7.1%).

In relation to the procedures, activities and actions, the average of realization by the doctors of the PMM in the primary healthcare units was  $22.8 \pm 8.2$ , of a total of 49, lower than the average of procedures that the doctors reported knowing how to do ( $39.0 \pm 9.1$ ;  $p < 0.001$ ).

Table 2 presents the list of these procedures, activities and health actions; the percentage of doctors who indicated that they had executed them in the primary healthcare units; and the figures for doctors who reported being able to carry them out. Among those listed, 18 procedures stand out in which replies reporting their realization was greater than 50%, and 12 are cited by more than 90% of the professionals.

The procedures, activities and actions which less than 50% of the doctors reported knowing how to do were ‘cryotherapy of skin lesions’ and ‘acupuncture’.

Highlights among the procedures which had the highest percentage of positive response on knowing how to do them (> 90%), were ten which had frequency of realization lower than 50% (emphasized in Table 2).

The number of procedures carried out was greater among male individuals, those with less time since graduation, and those with more than two years activity in the primary health unit. Doctors who operated in the North and South geographical regions, in municipalities of smaller scale and remote municipalities, and also in those that are more distant from the regional health headquarters, also presented, on average, a higher number of procedures carried out (Table 3).

**Table 2.** Distribution procedures, activities and health actions carried out in UBS and procedures that participants declare to know whether the workplace. Brazil. N = 1,241.

Health procedures, activities and actions	Have executed in the unit		Know how to execute	
	n*	%	n*	%
Treatment of anemia	1,215	99.6	1,219	99.9
Treatment of skin mycoses	1,219	99.5	1,223	99.8
Treatment of dermatitis	1,214	99.3	1,219	99.8
Treatment of back pain	1,203	98.8	1,213	99.7
Treatment of epigastralgia / peptic ulcer	1,205	98.8	1,215	99.6
Treatment of recurrent urinary infection	1,206	98.7	1,217	99.6
Treatment of asthma	1,196	98.7	1,209	99.8
Treatment of recurrent sinusitis	1,178	97.0	1,200	98.8
Low-risk prenatal treatment	1,174	96.2	1,217	99.7
Treatment of allergic kidney conditions	1,163	95.5	1,186	97.4
Order fecal occult blood test	1,152	95.1	1,204	99.4
Treatment of recurrent otitis	1,148	94.9	1,187	98.1
Complaints of red eyes	1,045	87.9	1,139	95.8
Treatment of superficial wounds	936	79.5	1,168	99.2
High-risk prenatal treatment	707	59.9	1,076	91.2
Removal of earwax	660	57.7	1,096	95.9
Intramuscular injection	654	56.7	1,139	98.7
Subcutaneous injection	617	54.0	1,128	98.8
Loss of sharp vision (refraction, glaucoma, retinopathy, cataract)	566	49.1	791	68.7
<b>Oxygen therapy</b>	<b>566</b>	<b>49.1</b>	<b>1,116</b>	<b>96.8</b>
Visual acuity screening	530	46.3	895	78.2
<b>Papanicolau test</b>	<b>528</b>	<b>45.3</b>	<b>1,121</b>	<b>96.2</b>
<b>Infiltration of local anesthetic</b>	<b>506</b>	<b>44.8</b>	<b>1,096</b>	<b>97.1</b>
<b>Sutures</b>	<b>502</b>	<b>43.5</b>	<b>1,147</b>	<b>99.5</b>
<b>Removal of unwanted body from the ear</b>	<b>478</b>	<b>42.3</b>	<b>1,042</b>	<b>92.2</b>
<b>Incision and drainage of abscess</b>	<b>464</b>	<b>40.7</b>	<b>1,112</b>	<b>97.6</b>
<b>Vein puncture</b>	<b>443</b>	<b>39.5</b>	<b>1,048</b>	<b>93.5</b>
Removal of unwanted body from legs, arms and extremities	368	32.9	992	88.7
<b>Immobilization of wounded extremities</b>	<b>361</b>	<b>32.2</b>	<b>1,054</b>	<b>93.9</b>
Drainage of paronychia	346	31.1	964	86.5
<b>Insertion of urethral catheter</b>	<b>337</b>	<b>29.7</b>	<b>1,028</b>	<b>90.7</b>
Immobilization of fractures	317	28.3	975	87.1
Removal of skin lesions	314	28.2	935	84.0
Removal of unwanted body from cornea or conjunctiva	313	27.9	851	75.9
Removal of unwanted body from air passages	311	27.9	961	86.2
Removal of ingrown nail	310	27.8	954	85.6
Treatment of subungual bruise	262	23.7	832	75.4
Cauterisation of nosebleed	219	19.9	694	63.0
Insertion of nasogastric tube / gastric lavage	224	19.6	1,010	88.3
Removal of molluscum contagiosum	202	18.3	743	67.3
Electrocardiogram	177	15.5	943	82.7
<b>Low risk normal birth</b>	<b>151</b>	<b>13.3</b>	<b>1,084</b>	<b>95.2</b>
Removal of painful callus	126	11.5	657	59.9
Cryotherapy or chemical therapy for genital wart	121	11.0	686	62.4
Removal of cysts, lipoma, nevi	111	10.1	694	63.2
Acupuncture	84	7.5	528	46.9
Scraping for determination of fungi	58	5.3	573	52.2
High risk normal birth	46	4.1	609	54.1
Cryotherapy for skin lesions	42	3.8	468	42.4

Highlight procedures: more than 90% of the doctors reported knowing how to do them, but less than 50% do them in their primary health unit. \* Excluding missing data.

Source: Authors, from 2016 Health Professions Regulation survey.

**Table 3.** Distribution of procedures, activities and health actions carried out in UBS and procedures that participants declare know-how, according to sociodemographic characteristics. Brazil, 2016. N = 1,241.

Characteristic	Number of procedures, activities and health actions executed			Number of procedures, activities and health actions that doctor knows how to execute		
	Average $\pm$ SD	Median	p-value <sup>*</sup>	Average $\pm$ SD	Median	p-value <sup>*</sup>
Gender						
Female	22.0 $\pm$ 7.5	21.0	0.001	38.4 $\pm$ 9.3	41.0	<0.001
Male	23.8 $\pm$ 8.8	22.0		40.6 $\pm$ 8.5	43.0	
Age <sup>§</sup> , years						
$\leq$ 43	23.0 $\pm$ 7.8	22.0	0.139	39.6 $\pm$ 8.4	42.0	0.495
> 43 years	22.7 $\pm$ 8.5	21.0		39.3 $\pm$ 9.5	42.0	
Nationality						
Brazilian	22.4 $\pm$ 8.1	21.0	REF	37.3 $\pm$ 8	39.0	REF
Cuban	22.9 $\pm$ 8.2	21.0	0.800	40 $\pm$ 9.3	43.0	<0.001
Other	22.9 $\pm$ 7.9	22.0	0.768	39.4 $\pm$ 7.9	41.0	0.005
Country of training						
Brazil	21.7 $\pm$ 8.5	20.0	0.061	35.9 $\pm$ 8.8	38.0	<0.001
Outside Brazil	23.0 $\pm$ 8.1	21.0		40 $\pm$ 8.9	43.0	
Years since graduation						
$\leq$ 17	23.5 $\pm$ 8.0	22.0	0.005	39.8 $\pm$ 8.1	42.0	0.498
> 17 years	22.4 $\pm$ 8.3	20.0		39.3 $\pm$ 9.6	42.5	
Specialist qualification?						
Yes	22.9 $\pm$ 8.4	21.0	0.625	39.6 $\pm$ 9.3	43.0	<0.001
No	22.2 $\pm$ 7.4	21.0		37.8 $\pm$ 7.8	39.0	
Time working in primary care <sup>§</sup>						
$\leq$ 8 years	22.5 $\pm$ 8.3	21.0	0.349	38.2 $\pm$ 9.6	41.0	<0.001
> 8 years	23.0 $\pm$ 8.2	21.0		40.3 $\pm$ 8.6	43.0	
Time in this primary health unit						
$\leq$ 2 years	22.3 $\pm$ 7.9	21.0	0.026	39.3 $\pm$ 9	42.0	0.165
> 2 years	23.5 $\pm$ 8.6	22.0		39.6 $\pm$ 9.2	42.0	
Location of unit: Region						
North	24.6 $\pm$ 8.1	24.0	<0.001	42.4 $\pm$ 6.6	44.0	<0.001
Northeast	22 $\pm$ 8.3	20.0	REF	39.5 $\pm$ 9.1	42.0	REF
Southeast	22.3 $\pm$ 8.4	20.0	0.666	37.8 $\pm$ 9.9	41.0	0.005
South	24.6 $\pm$ 7.8	24.0	<0.001	39.3 $\pm$ 8.9	42.0	0.632
Center-West	22.6 $\pm$ 7.2	21.0	0.196	39.6 $\pm$ 8.7	41.0	0.728
Scale of municipality						
State capital or metropolitan region	20.7 $\pm$ 8.0	19.0	REF	37.6 $\pm$ 9.8	40.0	REF
Population: Over 100,000	21.0 $\pm$ 7.1	20.0	0.440	37.6 $\pm$ 9.3	40.0	0.835
Population: 50,000 – 100,000	21.0 $\pm$ 6.4	20.0	0.452	39.5 $\pm$ 7.3	40.0	0.256
Population: 20,000 – 50,000	23.0 $\pm$ 8.3	21.0	0.002	39.6 $\pm$ 9.4	42.5	0.001
Population: 10,000 – 20,000	25.2 $\pm$ 8.7	25.0	<0.001	40.8 $\pm$ 9.0	44.0	<0.001
Population: up to 10,000	26.6 $\pm$ 8.3	27.5	<0.001	42 $\pm$ 7.6	44.0	<0.001
Journey time to health region HQ						
Up to 15 minutes	21.2 $\pm$ 7.6	20.0	REF	38.5 $\pm$ 9.0	41.0	REF
16–30 minutes	22.5 $\pm$ 8.6	20.0	0.090	38.1 $\pm$ 10.5	41.0	0.551
31–45 minutes	22.6 $\pm$ 8.2	21.0	0.154	39.3 $\pm$ 8.7	41.0	0.187
45–60 minutes	23.1 $\pm$ 7.9	22.5	0.012	39.4 $\pm$ 9.9	43.0	0.023
61–120 minutes	24.3 $\pm$ 8.8	23.0	<0.001	40 $\pm$ 9.0	43.0	0.001
Over 120 minutes	26.1 $\pm$ 7.8	25.0	<0.001	43 $\pm$ 7.0	45.0	<0.001

<sup>\*</sup> Calculated by Mann Whitney test. <sup>§</sup> Data dichotomized by the median. REF = Reference group.  
Source: Authors, from 2016 Health Professions Regulation survey.

In relation to the procedures that the doctors stated they knew how to do, the pattern observed as to gender, scale and distance of the municipi-

pality was similar to that observed for the procedures carried out. However, a larger number of procedures that doctors knew how to do was

reported by: doctors of Cuban and other nationalities; those trained outside Brazil; those holding special qualifications; those who had spent more time working in primary healthcare; and those that worked in the North and Southeast regions. There was no difference between them in terms of graduation and time of activity in the Primary Healthcare Unit (Table 3).

Among the reasons presented by the doctors for not carrying out the procedures and activities that they reported that they knew how to do, the outstanding ones were lack of materials and inadequate infrastructure, cited by 87.3% of the participants. In a lower quantity others were cited, including: factors associated with the normative rules of the practice, such as: clinical protocols (34.7%); lack of demand for realization of the procedures (24.5%); and excessive workload (21.7%).

## Discussion

This exploratory study sought to analyze the activities carried out by doctors of the PMM and the distribution of those activities by professional profile and municipality of the activity. In this sample it was also possible to study the factors that influenced the scope of practice of these professionals.

In relation to the social-demographic profile of the participants, it was found that there was a predominance of doctors over the age of 40, of Cuban nationality and of the female gender. This profile is compatible with the data of the DEPREPS of February 2016, in which 75% of the doctors participating in the PMM are of Cuban nationality and the majority are over the age of 40. The participation of Brazilian professionals – predominantly recently qualified and younger, in this sample – increased in the recent tenders, filling up the greater part<sup>32</sup> or the totality<sup>33</sup> of the vacancies offered by the Program. In spite of this, the number of these professionals is still small to change the overall profile of the doctors who are currently in the PMM. Also, the trend to a higher number of female doctors, observed in this study, is an international trend in the area of health, as shown in a systematic review study by Hedden et al., in 2014<sup>34</sup>.

The doctors of the PMM reported receiving a diversified demand in their health units, both in relation to age group and also in relation to the health problems and conditions, which include chronic diseases, mainly hypertension and dia-

betes – infectious diseases and endemic diseases. The authors consider that there are elements that affect this profile of demand, such as the availability of a doctor in another health team of the same Unit and the availability of attendance by specialists. It can be noted that a majority of the doctors have worked for two years or less in the Units, which could also influence the perception of the profile of the demand received.

The relationship between an amplified scope of practice and activity in rural and remote areas has been indicated in several international studies<sup>8,9,35,36</sup>. In this study, doctors who worked in remote municipalities, distant from their regional headquarters, and those of smaller scale, carried out a larger number of procedures compared to those who operated in municipalities up to 15 minutes distant, and in state capitals and metropolitan regions. According to the Primary Health Care Doctors Scarcity Index<sup>19</sup>, the majority of the municipalities with scarcity were those of smaller scale and, the greater the distance to the regional health headquarters, the greater the degree of scarcity attributed. The Index also reveals that the region with the largest number of municipalities with scarcity is the Northern Region (31%), and in this study this was one of the regions where the doctors carried out a larger number of procedures, activities and actions.

In spite of there being a larger female than male contingent in this study, the results indicate that male doctors carry out and know how to carry out a larger number of procedures, activities and actions. Other studies show a similar influence of gender in the scope of practice of doctors<sup>5,37,38</sup>. However, the reasons why these scopes differ are not clear, and specific studies are needed on this subject for better comprehension of the findings.

Less time since graduation was associated with the realization of a number of procedures, activities and actions in this study. Recently-graduated doctors tend to seek work locations where they feel challenged and can gain experience<sup>9</sup>. A recent US study compared the intended scope of practice of family medicine residents to that of doctors already working in this area, at the moment of obtaining professional certification/recertification; these authors observed that the residents interviewed stated a greater intention of practicing with amplified scope, including care in obstetrics, prenatal care, and care for chronic and acute diseases, among others<sup>39</sup>.

The results show that, in general, respondents reported knowing how to do more procedures, activities and actions than they in fact carried

out in the units where they operate, which characterizes a possible reduction of their scope of practice. The phenomenon has been identified in other international studies<sup>35,40,41</sup>. In the US, for example, low indices of realization of pre-natal and birth care were reported by doctors recently concluding residencies in family medicine who consider themselves to have a high capacity to carry out these activities<sup>40</sup>.

Among the reasons found in the literature for a reduced scope of practice of primary healthcare doctors the following can be cited: personal factors, such as lifestyle and individual preference; factors related to work, such as lack of training, excessive workload, complexity of the clinical cases, contractual restrictions; and external factors, such as lack of support from the institution and from the community, restriction on reimbursement of procedures executed and the high cost of insurance against malpractice claims<sup>39-42</sup>.

The main barrier to execution of activities and actions pointed to by the doctors in this study was the lack of materials and the inadequate infrastructure of the primary healthcare units. This limiting factor is likely to be attenuated by 2018, since the *Mais Médicos* Program Law establishes a period of up to five years for the SUS to provide basic healthcare units with quality of equipment and infrastructure<sup>21</sup>. To make investment in infrastructure and (re)construction of basic healthcare units even more viable, the Program has made it mandatory for municipalities to join the *Requalifica UBS* – a program of improvement of infrastructure of the primary healthcare units. This program was launched in 2011 by the federal government and, connected with the PMM, is making it possible for 26,000 basic healthcare units to be refurbished, built and expanded, with an investment of more than R\$ 5 billion<sup>43</sup>.

As well as having an effect on access to health services, the amplified scope of practice is considered an important factor for the choice of working location by the doctor and for the doctor's permanence in the services<sup>44,45</sup>. It can thus be affirmed that expansion of the scope of practice of primary healthcare helps to attract and fix doctors in the health teams. Although this was not the objective of this paper, mainly in view of the increase of joining of the PMM by Brazilian doctors with medical registry in the country, it becomes essential to study the expansion of scopes of practice as a possible strategy for attracting and fixing doctors in unassisted areas in Brazil.

The process of expansion of scopes of practice of health professionals involves, in countries

such as Canada and the United States, among other various stages, research and consultation on public policies, standards of professional regulation and jurisprudence on the subject. The carrying out of public consultations also becomes necessary for there to be alterations in the regulation and the professional legislation that exists at present, further taking into account the competencies necessary for carrying out acts and the establishment of standards of practice<sup>4,15,46</sup>.

It is also important to recognize and incorporate the superimposition of scopes of practice of different health professionals, as well as proposing mechanisms for carrying out of activities by non-medical professionals<sup>6,10,46</sup>. On this aspect, a National Committee could be formed to monitor, evaluate and update the standards and patterns of scope of practice of professionals<sup>46</sup>. These strategies could be applied in professional regulation, with a focus on primary healthcare, for the purpose of maximizing the use of the competencies of the health team.

In Brazil, scales were not found for evaluating the scope of practice of doctors; and the use of international scales is inappropriate to the local health context. Added to this is the scarcity of publications on the subject, which makes comparison of the findings difficult. The study is exploratory and the associations reported need to be studied in future investigations to validate the results. The low level of response found affected its representativeness. However, it was possible to help in the characterization of the clinical practice of the professionals participating in the PMM, and to identify the principal associated factors. Based on the results of the study, construction and validation of a national scale could be proposed.

## Conclusion

The study identified various different factors that are associated with a broadened scope of practice of the participants, such as male gender, and lower time since graduation, as well as geographical factors such as location, distance and the scale of the municipalities where the doctors work. It was further highlighted that the doctors working in the *Mais Médicos* Program carry out a lower number of procedures, activities and actions than they report themselves as knowing how to carry out, mainly due to the lack of materials and the inadequate infrastructure of the basic



health units. Thus, the use of the competencies of the professionals could be optimized by structuring of the health units and making materials available. The review of the scopes of practice of health professionals has been highlighted as a tool for expansion of the potential of primary healthcare.

## Collaborations

SN Girardi, CL Carvalho and CR Pierantoni worked on the conception of the project, significant critical review of the content of the paper, and final approval of the version to be published; JO Costa, ACS Stralen, TV Lauer and RB David worked in the collection, treatment, analysis and interpretation of the data, and writing of the paper.

## References

1. Bodstein R. Atenção básica na agenda da saúde. *Cien Saude Colet* 2002; 7(3):401-412.
2. Pinto HA, Sales MJT, Oliveira FP, Brizolara R, Figueiredo AM, Santos JT. O Programa Mais Médicos e o fortalecimento da atenção básica. *Divulg saúde debate* 2014; (51):105-120.
3. Federation of State Medical Boards of the United States. Assessing Scope of Practice in Health Care Delivery: Critical Questions in Assuring Public Access and Safety. 2005.
4. Baranek PM. *A review of scopes of practice of health professions in Canada: A balancing act*. Toronto: Health Council of Canada; 2005.
5. Wong E, Stewart M. Predicting the scope of practice of family physicians. *Can Fam Physician* 2010; 56(6):219-225.
6. Dill MJ, Pankow S, Erikson C, Shipman S. Survey Shows Consumers Opens to a Greater Role for Physician Assistants and Nurse Practitioners. *Health Affairs* 2013; 32(6):1135-1142.
7. Tepper JD, Schultz SE, Rothwell DM, Chan BTB. *Physician services in rural and Northern Ontario. ICES investigative report*. Toronto: Institute for Clinical Evaluative Sciences; 2006.
8. Bindman AB, Forrest CB, Britt H, Crampton P, Majeed A. Diagnostic scope of and exposure to primary care physicians in Australia, New Zealand, and the United States: cross sectional analysis of results from three national surveys. *BMJ* 2007; 334(7606):1261.
9. Myhre DL, Bajaj S, Jackson W. Determinants of an urban origin student choosing rural practice: a scoping review. *Rural Remote Health* 2015; 15(3):3483.
10. Nancarrow SA. Six principles to enhance health workforce flexibility. *Hum Resour Health* 2015; 13:9.
11. Campos FE, Machado MH, Girardi SN. A fixação de profissionais de saúde em regiões de necessidades. *Divulg. saúde debate* 2009; (44):13-24.
12. Collar JM. Formulação e Impacto do programa Mais Médicos na Atenção e Cuidado em Saúde: Contribuições Iniciais e Análise Comparativa. *Saúde em Redes* 2015; 1(2):43-56.
13. Kirk JM, Kirk EJ, Walker C. Mais Médicos: Cuba's Medical Internationalism Programme in Brazil. *Bulletin of Latin American Research* 2015.
14. World Health Organization (WHO). *Task shifting to tackle health worker shortages* [Internet]. 2007 [acessado 2016 mar 01]. Disponível em: [http://www.who.int/healthsystems/task\\_shifting\\_booklet.pdf](http://www.who.int/healthsystems/task_shifting_booklet.pdf).
15. Verhuslt L, Forrest CB. To Count Heads or to Count Services? Comparing Population-to-Physician Methods with Utilization-Based Methods for Physician Workforce Planning: A Case Study in a Remote Rural Administrative Region of British Columbia. *Health Care Policy* 2007; 2(4):178-192.
16. Toso BRGO, Filippin J, Giovannella L. Nurses' performance on primary care in the National Health Service in England. *Rev Bras Enferm* 2016; 69(1):169-177.
17. Fundação Getúlio Vargas (FGV). *Escassez de Médicos*. Rio de Janeiro: Centro de Políticas Sociais; 2008. [acessado 2016 mar 01]. Disponível em: <http://www.cps.fgv.br/ibrecps/medicos/index.htm>.

18. Conselho Regional de Medicina do Estado de São Paulo (CREMESP). *Demografia Médica no Brasil: dados gerais e descrições de desigualdades* [Internet]. São Paulo; 2011. [acessado 2016 mar 01]. Disponível em: [http://www.cremesp.org.br/pdfs/demografia\\_2\\_dezembro.pdf](http://www.cremesp.org.br/pdfs/demografia_2_dezembro.pdf).
19. Estação de Pesquisa de Sinais de Mercado (EPSM). *Identificação de Áreas de Escassez de Recursos Humanos em Saúde no Brasil*. Belo Horizonte: EPSM/NESCON/FM/UFMG; 2012. [acessado 2016 mar 01]. Disponível em: [Http://epsm.nescon.medicina.ufmg.br/epsm/Relate\\_Pesquisa/Identifica%C3%A7%C3%A3o%20de%20C3%A1reas%20de%20escassez%20de%20RHS%20no%20Brasil.pdf](http://epsm.nescon.medicina.ufmg.br/epsm/Relate_Pesquisa/Identifica%C3%A7%C3%A3o%20de%20C3%A1reas%20de%20escassez%20de%20RHS%20no%20Brasil.pdf).
20. Brasil. Ministério da Saúde (MS). Portaria Interministerial nº 1.369, de 8 de julho de 2013. Dispõe sobre a implementação do Projeto Mais Médicos para o Brasil. *Diário Oficial da União* 2013; 9 jul.
21. Brasil. Lei nº 12.871 de 22 de outubro de 2013. Institui o Programa Mais Médicos, altera as Leis no 8.745, de 9 de dezembro de 1993, e nº 6.932, de 7 de julho de 1981, e dá outras providências. *Diário Oficial da União* 2013; 23 out.
22. Santos LMP, Costas AM, Girardi SN. Programa Mais Médicos: uma ação efetiva para reduzir iniquidades em saúde. *Cien Saude Colet* 2015; 20(11):3547-3552.
23. Jaakkimainen RL, Sood PR, Schultz SE. Office-based procedures among urban and rural family physicians in Ontario. *Can Fam Physician* 2012; 58(10):578-e87.
24. Halvorsen PA, Edwards A, Aaraas IJ, Aasland OG, Kristiansen IS. What professional activities do general practitioners find most meaningful? Cross sectional survey of Norwegian general practitioners. *BMC family practice* 2013; 14(1):41.
25. Slade S, Busing N. Weekly work hours and clinical activities of Canadian family physicians: results of the 1997/98 National Family Physician Survey of the College of Family Physicians of Canada. *Can Med Assoc J* 2002; 166(11):1407-1411.
26. National Physician Survey (NPS). The 2007 National Physician Survey contacted approximately 70,000 family physicians and other specialists, medical residents and medical students in Canada. Mississauga; 2007. [acessado 2016 mar 01]. Disponível em: <http://nationalphysiciansurvey.ca/surveys/2007-survey>.
27. The physician foundation. Practice Patterns & Perspectives. An Examination of the Professional Morale, Practice Patterns, Career Plans, and Perspectives of Today's Physicians Based on Over 20,000 Survey Responses 2014. [acessado 2016 mar 01]. Disponível em: [http://www.physiciansfoundation.org/uploads/default/2014\\_Physicians\\_Foundation\\_Biennial\\_Physician\\_Survey\\_Report.pdf](http://www.physiciansfoundation.org/uploads/default/2014_Physicians_Foundation_Biennial_Physician_Survey_Report.pdf)
28. Ie K, Ichikawa S, Takemura YC. Development of a questionnaire to measure primary care physicians' scope of practice. *BMC family practice* 2015; 16(1):1.
29. O'Neill T, Peabody MR, Blackburn BE, Peterson LE. Creating the Individual Scope of Practice (I-SOP) scale. *J Appl Meas* 2014; 15(3):227-239.
30. Instituto Brasileiro de Geografia e Estatística (IBGE). *Regiões de Influência das Cidades, 2007*. Rio de Janeiro: IBGE; 2008. [acessado 2016 mar 01]. Disponível em: <http://biblioteca.ibge.gov.br/visualizacao/livros/liv40677.pdf>.
31. Instituto Brasileiro de Geografia e Estatística (IBGE). *Metodologia do Censo Demográfico 2010. Série relatórios metodológicos*. Rio de Janeiro: IBGE; 2013.
32. Brasil. Ministério da Saúde (MS). *Profissionais brasileiros ocupam 92% das vagas do Mais Médicos* [Internet]. 2015. [acessado 2016 mar 01]. Disponível em: <http://www.brasil.gov.br/saude/2015/03/profissionais-brasileiros-ocupam-92-das-vagas-do-mais-medicos>
33. Brasil. Ministério da Saúde (MS). *Brasileiros ocuparam todas as vagas oferecidas pelo Mais Médicos*. [Internet]. 2016. [acessado 2016 mar 01]. Disponível em: <http://www.brasil.gov.br/saude/2016/02/brasileiros-ocuparam-todas-as-vagas-oferecidas-pelo-mais-medicos>
34. Hedden L, Barer ML, Cardiff K, McGrail KM, Law MR, Bourgeault IL. The implications of the feminization of the primary care physician workforce on service supply: a systematic review. *Hum Resour Health* 2014; 12(1):32.
35. Peterson LE, Blackburn B, Peabody M, O'Neill TR. Family Physicians' Scope of Practice and American Board of Family Medicine Recertification Examination Performance. *J Am Board Fam Med* 2015; 28(2):265-270.
36. Baker E, Schmitz D, Epperly T, Nukui A, Miller CM. Rural Idaho family physicians' scope of practice. *J Rural Health* 2010; 26(1):85-89.
37. Hutten-Czapski P, Pitblado R, Slade S. Short report: Scope of family practice in rural and urban settings. *Can Fam Physician* 2004; 50:1548-1550.
38. Chaytors RG, Szafran O, Crutcher RA. Rural-urban and gender differences in procedures performed by family practice residency graduates. *Fam Med* 2001; 33(10):766-771.
39. Coutinho AJ, Cochrane A, Stelter K, Phillips Jr RL, Peterson LE. Comparison of Intended Scope of Practice for Family Medicine Residents With Reported Scope of Practice Among Practicing Family Physicians. *JAMA* 2015; 314(22):2364-2372.
40. Chen FM, Huntington J, Kim S, Phillips WR, Stevens NG. Prepared But Not Practicing: Declining Pregnancy Care Among Recent Family Medicine Residency Graduate. *Fam Med* 2006; 38(6):423-426.
41. Tong ST, Makaroff LA, Xierali IM, Parhat P, Puffer JC, Newton WP, Bazemore AW. Proportion of family physicians providing maternity care continues to decline. *J Am Board Fam Med* 2012; 25(3):270-271.
42. Chan BTB, Schultz SE. *Supply and utilization of general practitioner and family physician services in Ontario*: Institute for Clinical Evaluative Sciences; 2005.
43. Brasil. Ministério da Saúde (MS). *Requalifica UBS* [Internet]. 2014. [acessado 2016 mar 01]. Disponível em: [http://dab.saude.gov.br/portaldab/requalifica\\_ubs](http://dab.saude.gov.br/portaldab/requalifica_ubs)
44. Cameron PJ, Este DC, Worthington CA. Professional, personal and community: 3 domains of physician retention in rural communities. *Can J Rural Med* 2012; 17(2):47-55.
45. Wasko K, Jenkins J, Meili R. Medical practice in rural Saskatchewan: factors in physician recruitment and retention. *Can J Rural Med* 2014; 19(3):93-98.
46. Dower C, Moore J, Langelier M. It is time to restructure health professions scope-of-practice regulations to remove barriers to care. *Health Aff (Millwood)* 2013; 32(11):1971-1976.

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