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Medicine graduates intentions in the face of establishment predictors: Bahia's Mais Médicos Program

Intenções de graduandos de Medicina em face dos preditores de fixação: Programa Mais Médicos na Bahia

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ABSTRACT

Introduction: The quantitative deficit and inequalities in the distribution of doctors exacerbate the global health workforce crisis. Many policies have been adopted to face the problem, with the 'Mais Médicos' Program standing out due to its scope.

Objective: This study aimed to characterize, among undergraduate medical students in the state of Bahia, the intentions of future medical specialty and professional retention in priority areas defined by the More Doctors Program (PMM), according to the predictors indicated in the literature.

Methods: This is a cross-sectional exploratory study conducted with medical students from four federal universities in the state of Bahia.

Results: The study predominantly included students aged 20 to 24 years, with a lower socioeconomic profile in relation to previous studies, born in small and medium-sized municipalities in the state of Bahia, who mostly stated their option for medical residency in specialties other than the basic areas after graduation. An inequality was observed between the percentage of students who intended to work in Primary Care and those who wanted basic specialties, with the option for Family and Community Medicine being even lower. Female students clearly predominated among those who desired basic specialties and who envisioned a future employment in Primary Care in this state. Conversely, male students mostly chose specialties in other areas, especially those who had financial aspects as the main motivation for career choice.

Final considerations: The study added knowledge to the body of literature on changes in medical training in the country and the effects of policies leading to a generalist professional profile that meets the social needs of the population.

Keywords: More Doctors Program; Medical Education; Medical Specialties; Primary Health Care; Human Resources.

RESUMO

Introdução: *O déficit quantitativo e as desigualdades na distribuição de médicos agravam a crise global da força de trabalho em saúde. Muitas políticas têm sido adotadas para enfrentamento do problema, destacando-se pela sua abrangência o Programa Mais Médicos.*

Objetivo: *Este estudo objetivou caracterizar, entre graduandos de Medicina do estado da Bahia, as intenções de especialidade médica futura e de fixação em áreas prioritárias definidas pelo Programa Mais Médicos, conforme os preditores apontados na literatura.*

Método: *Trata-se de um estudo de corte transversal com caráter exploratório, realizado com estudantes dos cursos de Medicina de quatro universidades federais da Bahia.*

Resultado: *Predominaram estudantes de 20 a 24 anos, com perfil socioeconômico mais baixo em relação aos estudos anteriores, naturais dos pequenos e médios municípios baianos, que afirmaram, em sua maioria, a opção pela residência médica em especialidades de outras áreas, que não as áreas básicas, após a graduação. Verificou-se uma disparidade entre o percentual de estudantes com intenção de trabalhar na atenção primária à saúde e aqueles que desejaram especialidades básicas, sendo ainda consideravelmente menor a opção pela medicina de família e comunidade. As estudantes do sexo feminino predominaram de modo evidente entre aqueles que desejaram as especialidades de áreas básicas e que vislumbraram um futuro trabalho na atenção primária à saúde, nesse estado. De modo contrário, os estudantes do sexo masculino escolheram, na sua maioria, especialidades de outras áreas, especialmente aqueles que tiveram os aspectos financeiros como motivação principal para escolha de carreira.*

Conclusão: *O estudo acrescentou conhecimento ao corpo de literatura sobre as mudanças na formação médica no país e os efeitos de políticas indutoras de um perfil profissional generalista que atenda às necessidades sociais da população.*

Palavras-chave: *Programa Mais Médicos; Educação Médica; Especialidades Médicas; Atenção Primária à Saúde; Recursos Humanos.*

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INTRODUCTION

The quantitative deficit and inequalities in the distribution of physicians exacerbate the global health workforce crisis. The global nature, complexity and implications of the problem were made clear in the topic of the Third Global Forum on Human Resources in Health: "A universal truth: no health without a workforce"[1].

There is evidence that the educational policies recommended by the World Health Organization[2] to retain physicians, involving an increase in medical graduation vacancies in strategic regions, priority selection of students from these areas, thematic curricula and internships that value local needs and Primary Health Care (PHC), favor the recruitment and retention of physicians in areas with little assistance coverage[3-7].

Despite this evidence, the impacts of inequalities on the distribution and qualification of doctors still persist, both in developed and in developing countries, since choices related to professional careers are influenced by several economic, social and cultural factors[8]. The shortage of doctors remains one of the limiting factors for the expansion of PHC and constitutes one of the challenges for achieving the 2020-2030 Millennium Goals[9].

In the Brazilian context, many policies have been implemented to reduce inequalities in the distribution of physicians. The 'More Doctors Program' (PMM - *Programa Mais Médicos*) implemented in 2013 stands out due to its scope, in the context of the Expansion of the Medical Education Program by Federal institutions, started in June 2012[10]. The PMM was structured in three strategic axes: the provision of emergency care, the strengthening of the PHC infrastructure and changes in medical training and residency[11,12]. It should be noted that, despite the greater dissemination of emergency care provision, especially with the arrival of foreign physicians, the legal framework of the PMM determined curricular adaptations for all medical courses in the country, according to the training axis[12].

The impact of the PMM Training axis has been demonstrated through the achieved results, such as the expansion of undergraduate vacancies, prioritizing the countryside in relation to the country's capital cities, the approval of the new curricular guidelines and changes in the regulation of medical education[12-14]. The rules for access to medical residencies have also undergone modifications, aiming to encourage specializations that are more aligned with PHC (basic areas), such as Internal Medicine (IM), Pediatrics (P), General Surgery (GS), Gynecology and Obstetrics(GO) and Family and Community Medicine (FCM), with the latter being considered the gold standard for work in PHC. These specialties have direct access and are considered prerequisites for other related specialties. However, many challenges still need to be faced, as PHC and small municipalities remain unattractive workplaces for physicians and medical students [7,15,16].

In Brazil, there are few studies on the factors that influence medical students' future choices regarding their medical career. Many of these factors exert great influence during the training of these students. Understanding this complex process of choice, through empirical studies, can increase the impact of public policies and consolidate the expansion and quality of PHC, thus reducing inequalities in access to care, especially for populations in rural areas and small Brazilian municipalities.

This study aims to characterize, among undergraduate medical students in the state of Bahia, their intentions to pursue a future medical specialty and their retention in priority areas defined by the More Doctors Program, according to the predictors indicated in the literature.

METHOD

This is an exploratory cross-sectional study. The research participants are medical students from four federal universities in the state of Bahia, selected for this research because these courses were authorized through the PMM. The Northeast region of Brazil has the largest number of municipalities with a severe shortage of physicians, and Bahia had the largest number of authorized undergraduate vacancies in medicine[12,17].

These medical courses started between 2013/2014; two of the courses are expected to last seven years and have a modular format, with the first cycle being the Interdisciplinary Baccalaureate of Health (BIS, *Bacharelado Interdisciplinar em Saúde*) and the second cycle being a vocational course. The other courses last six years, with the initial two years being considered the basic cycle, followed by the four years of the clinical cycle.

The four universities that comprise this study sample were designated as Uni 1, Uni 2, Uni 3, and Uni 4. The most recent Master Plan for Regionalization (PDR, *Plano Diretor de Regionalização*) in Bahia divides the state into 28 Health Regions, which are grouped into 09 macro-regions. The participating universities are located in five of these macro-regions, which are considered priority due to the medical professional scarcity for PHC [12,18]. Uni 1 has its campus located in a macro-region with 15 municipalities and almost 500,000 inhabitants; Uni 2 is located in a macro-region that covers 22 municipalities and has almost 500,000 inhabitants; Uni 3 has campuses in 3 municipalities in two different macro-regions with 89 municipalities and more than 2.5 million inhabitants; and Uni 4 is located in a macro-region with 9 municipalities and approximately 260,000 inhabitants[18]. Uni 1 and Uni 4 each offer 40 vacancies a year, whereas Uni 2 and 3 offer 60 and

80 vacancies a year, respectively. At the time of the research, none of the universities had medical residency programs.

For data collection (February to May/2019), all medical students from the selected universities were invited by institutional emails sent by the collegiate bodies of the courses; messages sent by messaging applications and contact of the first author with the student representations of each course, aiming to explain and encourage participation in the study. The entire undergraduate student population was invited, and there was no sample randomization.

The research instrument consisted of a structured and unidentified virtual application questionnaire produced on the Google Forms® platform, built based on the literature on predictors of physician retention [3-6,19], reaching sixteen items.

The participants' sociodemographic profile was characterized, including questions about gender, age, place of birth, where they lived most of their lives (urban or rural area), employment (yes/no), and socioeconomic class according to the Brazilian Economic Classification Criteria (CC) of the Brazilian Association of Research Companies (ABEP)[20]. We included questions about the completion of a previous degree, the university and the semester of the current degree. Regarding future professional intentions, the questionnaire included the intention to carry out medical residency or specialization after graduation; the motivations for choosing the desired medical specialty; intention to work in PHC after graduation; and intention to stay in a future workplace.

Data analysis included descriptive statistics, bivariate and multivariate analyses. To verify the associations, Pearson's chi-square test was applied and the area of specialization desired by the student after graduation was defined as the outcome, considering that one of the main objectives of the PMM is precisely the change in the distribution profile of physicians among the areas, aiming at retaining a greater proportion of the medical workforce in basic clinical areas, particularly FCM. The specialties indicated by the students who stated they wanted to specialize in the future were classified as "basic areas", when the student mentioned FCM, IM, GO, P or GS, or as "other areas" when the student mentioned other medical specialties. It should also be noted that this classification into "basic areas" and "other areas" was necessary due to the large number of medical specialties, in addition to the fact that the PMM focuses on PHC. Thus, "basic areas" were considered specialties directly linked to PHC and "other areas" specialties less related to this level of care. The option to make the variable dichotomous is due to the way the study participants answered this question. In the form, this question allowed open answers, which led to a wide variety of responses that, in some cases, made it difficult to treat the data. Thus, this division allowed the analysis to maintain adequate quality without distorting the data. Finally, crude and adjusted odds ratios (OR) were calculated, and 95% confidence intervals (95%CI) were estimated using the logistic regression model, including variables with a significance level <20%. A significance level of 5% was adopted and all analyses were performed using the Statistical Package for the Social Sciences (SPSS) software, version 20.0[21].

It was decided to group the results related to the students' future intentions in the initial and final course periods. This grouping was necessary due to the diversity of course format in the four universities, allowing the statistical analysis to be carried out only in the initial and final periods.

All study participants signed the Free and Informed Consent Form (TCLE, *Termo de Consentimento Livre e Esclarecido*). The study was submitted to and approved by the Research Ethics Committee of the Health Sciences Center of Universidade Federal do Espírito Santo (UFES) under Opinion number 3.069.904.

RESULTS

Among the 1,522 medical students enrolled in 2019 at the four selected universities, 410 students participated in this survey, corresponding to 27% of the total.

According to Table 1, the female gender predominated (64.1%), as well as those aged between 20 and 24 years (66.3%), from socioeconomic classes B (49%) and C (37.6%), who, at the time of the survey, did not work while attending medical school (83.2%). It is noteworthy, however, that 17% of these needed to work during the course. Most undergraduate students were from the state of Bahia (54.1%) and lived mostly in urban areas throughout their lives (93.7%), with most (72.2%) living in small and medium-sized municipalities, following the PMM guidelines.[10,12,17]

Regarding the students' personal and professional trajectories (Table 2), most of them were studying to obtain their first degree (69.8%) and most (80.7%) intended to specialize after graduating from medical school.

Among the chosen specialties, "other areas" predominated, other than the basic ones (55.9%). Most participants (55.4%) reported not intending to work in PHC after graduation and only 24 students (5.9%) indicated FCM as their future specialty. Just over half of the students (55.6%) intended to remain in the state of Bahia (Table 2).

In the bivariate analysis (Table 3), significant associations were observed between the outcome and gender (p=0.025), working and studying (p=0.001), financial aspects as the main reason for choosing the specialty (p=0.001), intention to work in PHC after the graduation (p=0.001) and intention to remain in the state of Bahia (p=0.032). Overall, female students chose

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Table 1. Characteristics of the medical students participating in the study on the More Doctors Program, Bahia – 2019.

Variable	Category	n	%
Gender	Female	263	64.1
	Male	147	35.9
Age range (years)	< 20	31	7.6
	20 to 24	272	66.3
	25 to 29	73	17.8
	30 or older	34	8.3
Place of birth	Bahia	225	54.9
	Another state in the Northeast	51	12.4
	Another region of Brazil or another country	134	32.7
Place where you lived the longest	Rural zone	26	6.3
	Urban zone	384	93.7
Works and studies	Yes	69	16.8
	No	341	83.2
Socioeconomic class (ABEP criterion[1])	A	35	8.5
	B	201	49.0
	C	154	37.6
	D and E	20	4.9
University	Uni 1	96	23.4
	Uni 2	61	14.9
	Uni 3	178	43.4
	Uni 4	75	18.3
Course period	Initial (1st, 2nd and 3rd years)	249	60.7
	Final (4th, 5th and 6th years)	161	39.3

Source: Study data.
Legend: 1- Brazilian Economic Classification Criteria (CC) of Brazilian Association of Research Companies (ABEP)[19]

Table 2. Personal and professional trajectories of medical students participating in the research on the More Doctors Program – Bahia, 2019.

Variables	n	%
Current course as the first degree		
Yes	286	69.8
No	124	30.2
Previous degree in healthcare (n=124)		
Yes	94	75.8
No	30	24.2
Intention to do medical residency or specialization after graduation		
Yes	331	80.7
No	10	2.4
Does not know	69	16.8
Target activity area (n=331)		
Basic area	146	44.1
Other areas	185	55.9
Financial return as one of the reasons for choosing the specialty (n=331)		
Yes	47	14.2
No	284	85.8
Do you see yourself working in Primary Care after graduation?		
Yes	183	44.6
No	227	55.4
Intention to stay at a workplace in the graduation state (Bahia)		
Yes	232	56.6
No	178	43.4
Size of the municipality where you intend to work professionally after graduation		
Medium and large size	325	79.3
Small size	84	20.5
Another country	1	0.2

Source: study data.

specialties in the basic areas, intended to work in PHC in the future, and intended to remain in the same state where they graduated from medical school.

In the multivariate analysis (Table 4), male students (OR=2.07; 95%CI =1.25-3.43), who indicated financial aspects as the main factor for choosing the specialty (OR=2.73; 95%CI=1.29-5.78) and those who did not think about working in PHC in the future (OR=3.22; 95%CI=1.99-5.20) were more likely to choose specialties from other areas (not basic) after graduation.

In summary, students from federal universities selected and implemented in the state of Bahia, in the priority areas defined by the PMM, declared, for the most part, the choice for medical residency in specialties from areas other than the basic ones, after graduation. We found a disparity between the percentage of students intending to work in PHC and that of students who wanted basic specialties, with an even lower number of students that intended to choose FCM.

Female students evidently predominated among those who wanted specialties in basic areas and who envisioned future work in PHC in the state of Bahia. Conversely, male students mostly chose specialties from other areas, less connected to PHC, especially those who had financial aspects as their main motivation for choosing a career and who did not see themselves working in PHC in the future. Regarding the participants who mentioned financial return among the motivations for choosing a career, an almost three-fold greater probability of future option for other areas unrelated to PHC was observed (Table 4).

Table 3. Bivariate analysis of factors associated with the choice of the future medical specialty by medical students in the study on the More Doctors Program – Bahia, 2019.

Variables	Specialization intention						p-value**
	No or Does not know		Basic areas		Other areas		
	n	%	n	%	n	%	
Gender							
Female	49	18.6%	106	40.3%	108	41.1%	**0.007**
Male	30	20.4%	40	27.2%	77	52.4%	
Age (years)							
< 20	5	16.1%	10	32.3%	16	51.6%	0.583
20 to 24	50	18.4%	103	37.9%	119	43.8%	
25 to 29	14	19.2%	22	30.1%	37	50.7%	
30 or older	10	29.4%	11	32.4%	13	38.2%	
Place of birth							
Bahia	48	21.3%	71	31.6%	106	47.1%	0.249
Another state in the Northeast	9	17.6%	22	43.1%	20	39.2%	
Another region of Brazil or another country	22	16.4%	53	39.6%	59	44.0%	
Place where you lived the longest							
Rural zone	7	26.9%	5	19.2%	14	53.8%	0.108
Urban zone	72	18.8%	141	36.7%	171	44.5%	
Works and studies							
Yes	24	34.8%	15	21.7%	30	43.5%	0.117
No	55	16.1%	131	38.4%	155	45.5%	
Socioeconomic class (ABEP criterion[1])							
A	7	20.0%	12	34.3%	16	45.7%	0.814
B	35	17.4%	77	38.3%	89	44.3%	
C	34	22.1%	49	31.8%	71	46.1%	
D and E	3	15.0%	8	40.0%	9	45.0%	
University							
Uni 1	17	17.7%	38	39.6%	41	42.7%	0.174
Uni 2	14	23.0%	20	32.8%	27	44.3%	
Uni 3	32	18.0%	56	31.5%	90	50.6%	
Uni 4	16	21.3%	32	42.7%	27	36.0%	
Course period							
Initial (1st, 2nd and 3rd years)	42	16.9%	87	34.9%	120	48.2%	0.325
Final (4th, 5th and 6th years)	37	23.0%	59	36.6%	65	40.4%	
Current course as the first degree							
Yes	52	18.2%	105	36.7%	129	45.1%	0.664
No	27	21.8%	41	33.1%	56	45.2%	
Previous degree in healthcare (n=124)							
Yes	18	19.1%	31	33.0%	45	47.9%	0.575
No	9	30.0%	10	33.3%	11	36.7%	
Financial return as one of the reasons for choosing the specialty (n=331)							
Yes	0	0.0	11	23.4	36	76.6	**0.002**
No	0	0.0	135	47.5	149	52.5	
Do you see yourself working in Primary Care after graduation?							
Yes	54	29.5%	77	42.1%	52	28.4%	**0.001**
No	25	11.0%	69	30.4%	133	58.6%	

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Tabela 3. Continuation.

Variables	Specialization intention						p-value**
	No or Does not know		Basic areas		Other areas		
	n	%	n	%	n	%	
Intention to stay in the state of Bahia							
Yes	53	22.8%	86	37.1%	93	40.1%	0.118
No	26	14.6%	60	33.7%	92	51.7%	
Size of the municipality where you intend to do residency							
Medium and large size / another country	62	19.0%	112	34.4%	152	46.6%	0.220
Small size	17	20.2%	34	40.5%	33	39.3%	

Source: study data.

DISCUSSION

The analysis of the results was carried out considering the predictors of physician retention previously mentioned in the literature, which constitute the main guidelines of the PMM [3-6,12,16]. The study covered a non-randomized population of students from federal universities in the state of Bahia, who were still undergoing the training process, having not completed the medical course at any of these universities. The medical courses at the four universities that comprised the research scenario were implemented between 2013 and 2014. At the time of the study, none of the regions where the universities were located had medical residency programs, which may have had an impact on the observed results, especially regarding the intentions of local retention and future work in PHC.

The predominant age group among undergraduate students showed the same trend as in other studies, in which the majority of those starting the medical course comprised young adults attending their first graduation course[22-24]. Regarding the predominance of the female gender, our results corroborate other analyses that had already indicated, since 2009, a growing feminization of newly graduated medical professionals. Medical demographic data also showed an increasing number of female medical graduates, reaching 56.1%, 57.1% and 59%, respectively, in 2013, 2016 and 2019[16].

Regarding the socioeconomic class, our study differed from the literature by showing a higher proportion of vulnerable students when compared to other similar surveys with medical students in the country[15,22-27], as well as regional socioeconomic diversities, which make comparative analyses unfeasible.

The change in the socioeconomic profile of medical students, with an increase in the representation of more vulnerable population groups, constitutes one of the objectives of the PMM. The policy is based on references that support that the concepts of belonging and identification of professionals with less favored population groups strengthen the bond and qualify the approach [12,27].

Table 4. Multivariate logistic regression analysis of factors associated with choice of future medical specialty by medical students in the study on the More Doctors Program – Bahia, 2019.

Variable	OR (95%CI) unadjusted	OR (95%CI) adjusted*
Gender		
Female	1	1
Male	1.89 (1.18-3.01)	2.07 (1.25-3.43)
Financial return as one of the reasons for choosing the specialty		
Yes	2.97 (1.45-6.06)	2.73 (1.29-5.78)
No	1	1
Do you see yourself working in Primary Care after graduation?		
Yes	1	1
No	2.85 (1.81-4.51)	3.22 (1.99-5.20)

Source: study data. * Adjusted by Logistic Regression.

Considering the vacancy expansion policies in Federal Educational Institutions (IFE) in Brazil, the PMM has been considered as the most comprehensive policy for professional retention, and has already indicated, in its preliminary results, important changes in medical training[14,28]. According to the international literature, the physician's bonding with a region represents the most robust predictor of retention[29,30]. Corroborating these findings, in the present study, most of the participants, who were born in Bahia and lived in small and medium-sized municipalities, declared their intention to remain in that region.

In this context, a stated preference study reinforced the importance of these retention predictors by highlighting the attributes that most impacted the choice of undergraduate students: place of work, followed by working conditions, remuneration, access to medical residency and gender.

Students from private schools, with higher family income and female students, in general, were more resistant to moving to remote areas in the interior and unsafe urban regions. In this study, the future choice of students for PHC in remote regions of the interior persisted with very low percentages (15%), even with better salaries. However, when the option was for PHC in urban regions, especially large cities, the percentage of choice increased considerably (67.8%)[15]. This finding indicates a limitation of professional training in reorientation policies alone in changing the main profile of medical practice in the country. Hence, broader policies and strategies that focus not only on educational institutions, but also on professional appreciation, including financial return, and on the labor market, whether public or private, are necessary.

The international literature had already indicated that the female gender was a negative predictor for retention; however, it was very sensitive to measures aimed to improve the quality of life in the municipalities, such as improvements in infrastructure, education and leisure[29]. These data are justified by the responsibility for one's children, which falls more heavily on women, and the increase in the number of women providing for the family, reaching 40% in Brazil in 2015[31].

Our study indicated a greater intention to work in PHC among female students, residents of small and medium-sized municipalities in the state of Bahia. Contrary to the aforementioned studies, being female in our study showed to be a positive retention predictor. We must consider that in many of the previous studies, students living in large cities predominated, where most of the medical courses were located. Thus, one can say that the vacancies created specifically in these priority regions guided the recruitment and selection of students and favored the intention of staying in the state, especially for the female workforce.

Regarding the students' intention, studies carried out in the first decade of the 2000s showed a percentage of 80% of choices for specialties from other areas[24]. This preference has persisted to date, although there has been an increase in the choice of residents for specialties in basic areas (43%), justified by the need for basic training in many specialties that do not allow direct access[16]. These results are in line with the findings of this research, which indicate significantly more favorable choices for basic areas, although the preference for specialties in other areas less related to PHC persists.

Despite the increase in the intention to choose to work in PHC, we verified the persistence of the disparity between those students who intended to work in the PHC and the low percentages of choice for basic specialties and a much lower choice for work in FCM, suggesting that work in the PHC area remains undervalued. However, it is noteworthy that this percentage of choice for FCM was higher than that shown in the last Medical Demographic survey (4.5% residents in general and 5.4% of R1)[16].

It is important to consider that the quality of the experiences lived in the field of practice in PHC is decisive for the undergraduate students' future professional career choices[32]. Thus, the intention to choose specialties in basic areas, in addition to reflecting the skills developed during expanded training in undergraduate school, shows a greater probability of future physicians aiming to work in PHC.

The consistent statistical association between financial return as the main motivation for choices and the option for specialties from other areas highlights the complexity of the process of establishing a medical specialty, subject to gender and financial return specificities, and is influenced by the social stratum and economic origin of each professional. Despite favoring changes in the physician's profile, changes in the curricula have had little influence on the choices of medical specialties, with a greater impact from factors related to the job market. The generalist medical training remains undervalued and professional choices are mostly directed towards the most profitable specialties, guided by the market logic[8,33].

The increase in the number of women in medicine has been accompanied by gender inequality in various aspects of professional practice. A recent survey carried out with 2,400 medical professionals confirms the existence of a significant wage difference between the genders in Brazil, indicating that female doctors generally receive less financial compensation than their male counterparts. In this study, gender inequality persisted even after adjustment for work factors such as weekly workload, number of weekly shifts, working in a doctor's office, time of practice and specialization[34].

The findings show that the PMM is a policy that can have positive effects on changes in the profile of medical practice in Brazil, towards a greater number of medical school graduates for more general areas of activity, including FCM and PHC. By encouraging curricular changes aimed at a more humanized general medical practice and connected with the health needs of people and health systems, students can aim to work in PHC during their future professional career. However, as previously highlighted, these efforts must be associated with interventions to make these basic areas more attractive from a professional point of view, which includes salaries and financial gain perspectives, but it possibly does not end there, suggesting more studies are required to assess which factors, external to the medical school, are decisive for the choice of specialty and professional retention in a given location for medical students.

The results of this study indicate the great complexity of medical students' future choices. The Education Axis of the

PMM, even though it has well-defined guidelines aligned with the internationally defined retention predictors,[7,12,14,17] suffers impacts and political disputes of different types that decisively influence the future intentions of these graduates.

FINAL CONSIDERATIONS

The study showed that opening vacancies in priority locations and selecting students from these areas probably have a positive impact on future intentions to choose the specialty and stay in PHC in these regions of the state of Bahia. The study also showed ongoing changes in gender-related predictors, with women valuing PHC, considering the great overlap with gender-related inequalities in remuneration. Thus, positive results are expected in the medium and long term from policies aimed at reorienting medical training in Brazil, such as the PMM, regarding the provision of doctors in basic area specialties, especially FCM, reduction of inequalities and strengthening of the health system.

This study has limitations. This is a cross-sectional study carried out in four public universities, with a non-random sample. Therefore, caution is needed when generalizing the results, establishing cause and effect relationships and when considering a possible temporal sequence between the creation of the PMM, the founding of the HEIs and the choice of specialty by the graduates. Moreover, because an online questionnaire was used for data collection, there may have been some information and/or selection bias, which also limits the generalization of the findings. Nevertheless, as this is a relevant policy that has yet to be studied, the data presented herein contribute to a better understanding of the effects of opening medical schools after the implementation of the PMM.

The results, however, add knowledge to the body of literature that has been focusing on changes in medical training in the country and the effects of policies that induce a generalist professional profile that meets the population's social needs. Identifying effects and gaps can contribute to adjustments and reformulations aimed to increase the effectiveness of the Brazilian government actions and, for that purpose, more studies are needed to carry out a more in-depth qualitative analysis and an assessment of the impact of these policies on the availability of healthcare professionals better suited to the places and people who need them the most.

AUTHORS' CONTRIBUTION

Erika Maria Sampaio Rocha, Thiago Dias Sarti, Eliana Zandonade; Carlos Eduardo Gomes Siqueira and Maria Angélica Carvalho Andrade contributed to the design of the study; data analysis; writing and critical review of its content and approved the final version of the manuscript.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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REFERENCES

1. Campbell J, Dussault G, Buchan J, Pozo-Martin F, Guerra Arias M, Leone C, et al. A universal truth: no health without a workforce. Forum Report, Third Global Forum on Human Resources for Health, Recife, Brazil. Geneva: Global Health Workforce Alliance and World Health Organization; 2013 [aceso em 5 abr 2021]. Disponível em: https://reliefweb.int/sites/reliefweb.int/files/resources/GHWA_AUniversalTruthReport.pdf.
2. World Health Organization. Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations. Geneva: WHO; 2010.
3. Reeve C, Torres W, Ross SJ, Mohammadi L, Halili Junior SB, Cristobal F, et al. The impact of socially-accountable health professional education: a systematic review of the literature. Med Teach. 2016;39(1):67-73. doi: https://doi.org/10.1080/0142159X.2016.1231914.
4. Goodfellow A, Ulloa JG, Dowling PT, Talamantes E, Chheda S, Curtis B, et al. Predictors of primary care physician practice location in underserved urban or rural areas in the United States: a systematic literature review. Acad Med. 2016;91(9):1313-21. doi: https://doi.org/10.1097/ACM.0000000000001203.
5. Strasser R. Delivering on social accountability Canada's Northern Ontario School of Medicine. The Asia Pacific Scholar. 2016;1(1):1-6. doi: https://doi.org/10.29060/TAPS.2016-1-1/OA1014.
6. Guilbault RWR, Vinson JA. Clinical medical education in rural and underserved areas and eventual practice outcomes: a systematic review and meta-analysis. Educ Health. 2017;30(2):146-55. doi: https://doi.org/10.4103/efh.EfH_226_16.
7. Rocha EMS, Boiteux PAA, Azevedo GD, Siqueira CEG, Andrade MAC. Preditores educacionais para fixação de médicos em áreas remotas e desassistidas: uma revisão narrativa. Rev Bras Educ Med. 2020;44(1):e024. doi: https://doi.org/10.1590/1981-5271v44.1-20190281.
8. Sousa A, Schefer RM, Nyoni J, Boerma T. A comprehensive health labour market framework for universal health coverage. Bull World Health Organ. 2013;91:892-4. doi: http://dx.doi.org/10.2471/BLT.13.118927.
9. United Nations Organization. Transforming our world: the 2030 Agenda for Sustainable Development. New York: UN; 2015 [acesso em 5 abr 2021]. Disponível em: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E.
10. Brasil. Propostas de expansão de vagas do ensino médico nas Instituições Federais do Ensino Superior elaboradas pelo Grupo de Trabalho instituído pela Portaria nº 86, de 22 de março de 2012. Diário Oficial de União; 27 mar 2012.
11. 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; 23 out 2013.
12. Brasil. Programa Mais Médicos – dois anos: mais saúde para os brasileiros. Brasília: Ministério da Saúde; 2015.
13. Oliveira NA, Meirelles RMS, Cury GC, Alves LA. Mudanças curriculares no ensino médico brasileiro: um debate crucial no contexto do Promed. Rev Bras Educ Med. 2008;32(3)333-46. doi: https://doi.org/10.1590/S0100-55022008000300008.
14. Figueiredo AM, McKinley DW, Lima, KC, Azevedo GD. Medical school expansion policies: educational access and physician distribution. Med Educ. 2019;53(11):1121-31. doi: https://doi.org/10.1111/medu.13941.

15. Girardi SN, Carvalho CL, Maas LWD, Araujo JF, Massote AW, Stralen ACS, et al. Preferências para o trabalho na atenção primária por estudantes de medicina em Minas Gerais, Brasil: evidências de um experimento de preferência declarada. Cad Saude Publica. 2017;33(8):e00075316. doi: https://doi.org/10.1590/0102-311x00075316.

16. Scheffer M, coordenador. Demografia médica no Brasil 2020. São Paulo: FMUSP, CFM; 2020. 312 p.

17. Girardi SN, Carvalho CL, Farah JM, Araújo JF, Mass LWD, Campos LAB. Construção do índice de escassez de profissionais de saúde para apoio à Política Nacional de Promoção da Segurança Assistencial em Saúde. Belo Horizonte: Universidade Federal de Minas Gerais. 2010 [acesso em 2 mar 2021]. Disponível em: https://www.nescon.medicina.ufmg.br /biblioteca / imagem/2443.pdf.

18. Secretaria da Saúde do Estado da Bahia. Plano Diretor de Regionalização do estado da Bahia. 2014 [acesso em 20 mar 2021]. Disponível em: http:// www.saude.ba.gov.br/municipios-e-regionalizacao/.

19. Rocha EMS, Sarti TD, Azevedo GD, Filippon J, Siqueira CEG, Andrade MAC. A dimensão da formação no Programa Mais Médicos: hiato entre propostas e implementação. Rev Bras Educ Med. 2021;45(1):e034 doi: https://doi.org/10.1590/1981-5271v45.1-20200416.

20. Associação Brasileira de Empresas de Pesquisa. Critério de Classificação Econômica do Brasil. Abep; 2019 [acesso em 10 nov 2019]. Disponível em: http://www.abep.com/criterio-brasil.

21. IBM. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM.

22. Cardoso Filho FAB, Magalhães JF, Silva KML, Pereira ISSD. Perfil do estudante de Medicina da Universidade do Estado do Rio Grande do Norte (UERN). Rev Bras Educ Med. 2013;39(1):32-40. doi: https://doi.org/10.1590/1981-52712015v39n1e01092014.

23. Rego RM, Marques NA, Monteiro PC, Oliveira CLB, Lins NAA, Caldas CAM. O perfil atual do estudante de Medicina e sua repercussão na vivência do curso. Para Res Med J. 2019;2(1-4):e05 doi: http://dx.doi.org/10.4322/prmj.2018.005.

24. Veras RM, Fernandez CC, Feitosa CCM, Fernandes S. Perfil socioeconômico e expectativa de carreira dos estudantes de Medicina da Universidade Federal da Bahia. Rev Bras Educ Med. 2020;44(2):e056. doi: https://doi.org/10.1590/1981-5271v44.2-20190208

25. Ferreira RA, Peret Filho LA, Goulart EMA, Valadão MMA. O estudante de medicina da Universidade Federal de Minas Gerais: perfil e tendências. Rev Assoc Med Bras. 2000;46(3):224-31. doi: https://doi.org/10.1590/S0104-42302000000300007.

26. Fiorotti KP, Rossoni RR, Miranda AE. Perfil do estudante de Medicina da Universidade Federal do Espírito Santo, 2007. Rev Bras Educ Med. 2010;34(3):355-62. doi: https://doi.org/10.1590/S0100-55022010000300004.

27. Ristoff D. O novo perfil do campus brasileiro: uma análise do perfil socioeconômico do estudante de graduação. Avaliação: Revista da Avaliação da Educação Superior. 2014;19(3):723-47. doi: https://doi.org/10.1590/S1414-40772014000300010.

28. Pinto HA, Andreazza R, Ribeiro RJ, Loula MR, Reis AAC. O Programa Mais Médicos e a mudança do papel do Estado na regulação e ordenação da formação médica. Interface. 2019;23(supl 1):e170960. doi: https://doi.org/10.1590/Interface.170960.

29. Viscomi MH, Larkins S, Gupta TS. Recruitment and retention of general practitioners in rural Canada and Australia: a review of the literature. Can J Rural Med. 2013;18(1):13-23.

30. Farmer J, Kenny A, McKinstry C, Huysmans RD. A scoping review of the association between rural medical education and rural practice location. Hum Resour Health. 2015;13(27):1-15. doi: https://doi.org/10.1186/s12960-015-0017-3.

31. Instituto de Pesquisa Econômica Aplicada. Retrato das desigualdades de gênero e raça. Ipea 2015 [acesso em 10 nov 2019]. Disponível em: http://www.ipea.gov.br/retrato/indicadores_chefia_familia.html.

32. Coelho MGM, Machado MFAS, Bessa OAAC, Nuto SAS. Atenção primária à saúde na perspectiva da formação do profissional médico. Interface. 2020;24:e190740. doi: https://doi.org/10.1590/interface.190740.

33. Costa JRB, Romano VF, Costa RR, Gomes AP, Alves LA, Siqueira-Batista R. A transformação curricular e a escolha da especialidade médica. Rev Bras Educ Med. 2014;38(1):47-58. doi: https://doi.org/10.1590/S0100-55022014000100007.

34. Mainardi GM, Cassenote AJF, Guilloux AGA, Miotto BA, Scheffer MC. What explains wage differences between male and female Brazilian physicians? A cross-sectional nationwide study. BMJ Open. 2019;9:e023811. doi: https://doi.org/10.1136/bmjopen-2018-023811.

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