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Research Article

Offer and occupation of residency positions in family and community medicine in Brazil, 2020

Oferta e ocupação de vagas de residência em medicina de família e comunidade no Brasil, 2020

Oferta y ocupación de vacantes de residencia en medicina familiar y comunitaria en Brasil, 2020

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Abstract

Introduction: Idle positions are a growing problem, undermining the effectiveness of the expansion of the residency in family and community medicine in Brazil, an expansion that has intensified over the last ten years. It is unknown to what extent the idle positions are being effectively offered by residency programs. **Objective:** To describe the offer and occupation of positions in family and community medicine residency programs in Brazil, seeking to estimate to what extent the non-offering of positions explains their idleness. **Methods:** Data were obtained from the Brazilian Society of Family and Community Medicine (SBMFC) from a survey on residency programs in 2020, including the number of first-year (R1) positions offered and occupied. Supervisors of residency programs were asked about the number of R1 positions authorized for the same year, and publicly available government data were consulted. The offer and occupation of residency positions were described according to the location of the residency program, the legal nature of the proposing institutions, and the supplementation of the residents' grant. **Results:** Of the 72 programs that responded to the SBMFC survey, 28 informed us the number of authorized positions. The latter totaled 506 authorized positions, of which 417 (82%) had been offered. The 72 programs had offered a total of 948 positions, 651 of which (69%) had been filled. Among the idle positions (authorized but not occupied), 42% had not been offered by the respective programs. The latter percentage was higher in the Southern region; in programs based in municipalities with smaller populations; in state/district or private proposing institutions; and in programs without supplementation of the residency grant. **Conclusions:** To better elucidate the reasons for the inactivity of residency positions in family and community medicine, future research should consider the offer and occupation of positions separately. Likewise, policies for training professionals for the Brazilian Unified Health System could benefit from monitoring the effective offer of authorized positions.

Keywords: Brazil; Internship and residency; Family practice; Unified Health System.

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Resumo

Introdução: A ociosidade das vagas é um problema crescente, minando a efetividade da expansão da residência em medicina de família e comunidade no Brasil, expansão essa que se intensificou nos últimos dez anos. Não se sabe até que ponto as vagas ociosas estão sendo efetivamente ofertadas pelos programas de residência. **Objetivo:** Descrever a oferta e a ocupação de vagas de residência médica em medicina de família e comunidade no Brasil, para estimar até que ponto a não oferta de vagas explica sua ociosidade. **Métodos:** Obtivemos da Sociedade Brasileira de Medicina de Família e Comunidade (SBMFC) os dados de um levantamento de programas de residência em 2020, incluindo o número de vagas de primeiro ano (R1) ofertadas e ocupadas. Em seguida, perguntamos aos supervisores dos programas o número de vagas de R1 autorizadas para o mesmo ano e consultamos dados governamentais publicamente disponíveis. Descrevemos a oferta e a ocupação de vagas de residência em função da localização da sede, da natureza jurídica das instituições proponentes e da complementação da bolsa dos residentes. **Resultados:** Dos 72 programas que responderam ao levantamento da SBMFC, 28 informaram-nos o número de vagas autorizadas. Estes últimos somavam 506 vagas autorizadas, das quais 417 (82%) tinham sido ofertadas. Os 72 programas tinham ofertado ao todo 948 vagas, das quais 651 (69%) tinham sido ocupadas. Entre as vagas ociosas (autorizadas, mas não ocupadas), 42% não tinham sido ofertadas pelos respectivos programas. Este último percentual foi maior na Região Sul; nos programas com sede em municípios de menor porte populacional; nas instituições proponentes estaduais (ou distritais) ou privadas; e em programas sem suplementação da bolsa de residência. **Conclusões:** Para melhor elucidar os motivos para a ociosidade de vagas de residência em medicina de família e comunidade, futuras pesquisas devem considerar separadamente a oferta e a ocupação das vagas. Da mesma forma, políticas de formação de profissionais para o Sistema Único de Saúde poderiam beneficiar-se do monitoramento da efetiva oferta das vagas autorizadas.

Palavras-chave: Brasil; Internato e residência; Medicina de família e comunidade; Sistema único de saúde.

Resumen

Introducción: La ociosidad de las plazas es un problema creciente, minando la eficacia de la expansión de la residencia en la medicina familiar y comunitaria en Brasil, expansión que se ha intensificado en los últimos diez años. No se sabe hasta qué punto las plazas ociosas están siendo efectivamente ofrecidas por los programas de residencia. **Objetivo:** Describir la oferta y la ocupación de plazas de residencia en medicina de familia y comunidad en Brasil, para estimar hasta qué punto la no oferta de vagas explica su ociosidad. **Métodos:** Obtuvimos de la Sociedad Brasileña de Medicina de Familia y Comunitaria (SBMFC) datos de una encuesta de programas de residencia en 2020, incluyendo el número de plazas de primer año (R1) ofrecidas y ocupadas. A continuación, les preguntamos a los supervisores de los programas el número de plazas R1 autorizadas para ese mismo año, y consultamos datos públicos disponibles del gobierno. Describimos la oferta y la ocupación de las plazas de residencia en función de la ubicación de la sede, de la naturaleza jurídica de las instituciones proponentes y del complemento del estipendio de los residentes. **Resultados:** De los 72 programas que respondieron a la encuesta de la SBMFC, 28 nos informaron del número de plazas autorizadas. Estos últimos sumaron 506 vacantes autorizadas, de las cuales 417 (82%) habían sido ofrecidas. Los 72 programas habían ofrecido un total de 948 plazas, de las cuales 651 (69%) habían sido ocupadas. Entre las plazas ociosas (autorizadas pero no ocupadas), el 42% no habían sido ofrecidas por los respectivos programas. Este último porcentaje fue mayor en la región sur; en los programas con sede en municipios con menor población; en las instituciones proponentes estatales (o distritales) o privadas; y en los programas sin complemento del estipendio de los residentes. **Conclusiones:** Para aclarar mejor los motivos de la ociosidad de las vagas de residencia en la medicina familiar y comunitaria, las futuras investigaciones deben considerar por separado la oferta y la ocupación de las plazas. De la misma forma, las políticas de formación de profesionales para el Sistema Único de Salud podrían beneficiarse del monitoreo de la oferta efectiva de las plazas autorizadas.

Palabras-clave: Brasil; Internado y residencia; Medicina familiar y comunitaria; Sistema único de salud.

INTRODUCTION

In 2020, Brazil had only 7.1 thousand family and community doctors.[1] This corresponds to about 0.3 specialists for every 10 thousand Brazilians, or 1.7% of all doctors working in the period.[1] This number is clearly insufficient to cover the 43.3 thousand Family Health teams that the country had in the year, in addition to other primary healthcare models and other occupations such as teaching and management. Specialist degree exams consist of a way to help close this gap, allowing physicians with experience in primary health care to prove that they have the skills expected from family and community doctors. Another way is the expansion of medical residency programs.

Fortunately, residency programs in family and community medicine are considerably expanding. Campos and Izecksohn[2] report that the number of positions quadrupled from 2002 to 2007, contrary to an increase of only 43% for the sum of all specialties. Conversely, in the period from 2010 to 2019, according

to Scheffer et al.,[1] the number of physicians starting the residency in family and community medicine more than quintupled. Simas et al.[3] described the historical series of both the number of positions and the number of residents in the period from 2002 to 2016. Although both numbers substantially increased in the period, the occupation of positions progressively decreased, from 45% in 2002 and 2003 to 27% in 2014 to 2016.[3] Similar numbers were described by Zambon[4] for the 2002–2014 period.

Scheffer et al.[1] discuss a series of factors that could influence the (non-)occupation of residency positions. Newly-created programs could be less sought-after; some programs would not be able to obtain grants for all authorized positions; the number of preceptors might not be sufficient for authorized positions; and idleness could be overestimated due to the lack of registration of physicians who have already completed their residency, among other listed factors.[1]

In the case of family and community medicine, Zambon[4] interviewed the supervisors of 17 residency programs distributed throughout Brazil. Idleness greatly varied, from 0 to 90%, with no apparent relationship with the geographical region or the length of existence of the programs. According to the interviews, a series of factors could explain the low occupation of positions such as the medicine undergraduate curriculum, the primary healthcare environment, the work process in the Family Health strategy, and the lack of a job, career, and salary plan.

It is noteworthy that residency programs do not always offer all positions authorized by the National Commission of Medical Residency (*Comissão Nacional de Residência Médica* – CNRM). Although the proportion of occupied positions is usually estimated by considering authorized positions as the denominator, in practice, the offered positions constitute the ceiling for occupation. This may be important to understand the phenomenon of idleness of residency positions, as the reasons that condition the non-offering of positions may be different from those that condition their non-occupation.

In this study, we aimed to describe the offer and occupation of positions in the medical residency in family and community medicine in Brazil, discerning these two components and estimating the extent to which the non-offering of positions explains their idleness, and to correlate each component with characteristics of the residency programs.

METHODS

This exploratory quantitative research was based on secondary data and collected additional data from medical residency program supervisors. The research was approved by the Research Ethics Committee of Escola Superior de Ciências da Santa Casa de Misericórdia de Vitória under Opinion No. 4.554.282 (Certificate of Presentation for Ethical Consideration— CAAE 43059021.8.0000.5065). Considering that this is not a clinical research, patients did not participate in any stage. Nonetheless, the research involved the participation of several interested parties, considering that, in the design of the project, the authors included several roles (such as resident, preceptor, and/or supervisor) in two residency programs, even though these roles and institutional affiliations have evolved over time. Anonymized data are openly available from the Zenodo repository.[5]

Secondary data were provided by the Brazilian Society of Family and Community Medicine (*Sociedade Brasileira de Medicina de Família e Comunidade* – SBMFC). These data are the answers to an electronic questionnaire widely circulated by the SBMFC in September 2020. As the CNRM does not disclose the list of residency programs or their contact details, the SBMFC shared the questionnaire by its direct mail and social media platforms. The questionnaire was addressed to supervisors of medical residency programs in

the specialty, although it was exceptionally answered by residents of the respective programs as well. With regard to the present study, these data included the identity and contact of the coordinators, the identity and location (federative unit, municipality) of the proposing institutions, the supplementation amount of the residency grant, and the number of positions offered and occupied for the first year of residency (R1).

Some residency programs had been entered more than once in these data, and the information in one entry did not always match the data in the other. To handle this situation, the authors requested from CNRM, in March 2021, a list of the residency programs in operation in 2020. Unfortunately, this list did not include the number of authorized positions for each program. The names of the proposing institutions in the SBMFC data had been freely filled in; thus, the authors sought for the corresponding name on the CNRM list. Subsequently, the authors checked if the same program appeared more than once in the SBMFC data and kept the more-completely filled in entry (understanding that this entry would have been reported by the program supervisor). When in doubt, the program supervisor was contacted to inform which of the entries were correct.

To supplement these data, in July 2021, an e-mail was sent to all the supervisors identified in the SBMFC data, asking how many positions had been authorized for the respective programs in 2020. Moreover, the legal nature of the proposing institutions was obtained by searching them in the Federal Taxpayer Registry, and the population size of the lead municipalities (municipalities where the administrative headquarters of the residency programs are located. It is the place where the program's supervisors work, and the coordination of medical residency programs of the proposing institutions usually holds meetings in these municipalities), by consulting the population estimates of the Brazilian Institute of Geography and Statistics for 2020. In the case of two programs with inconsistent data (fewer authorized positions than offered, fewer offered positions than occupied), the supervisors were contacted to provide the correct data.

All explanatory variables were categorically treated. The federative units were grouped according to geographical region, the municipalities were categorized according to their population size (up to 100 thousand; 100,001 to 500 thousand; and over 500 thousand inhabitants), the legal nature was maintained as it was (federal public, state or district public, municipal public, philanthropic private, nonprofit private, profit private), and the supplementation of the residency grant was categorized as absent, up to BRL 2,999; BRL 3,000 to 4,999; BRL 5,000 to 7,999; and BRL 8,000 or more.

For each level of each explanatory variable, the number of residency programs was counted; and the number of authorized, offered, and occupied R1 positions was added up. Furthermore, the proportion of offered positions (among those authorized) and of occupied positions (among those offered) was calculated. Finally, the number of idle positions (authorized but not occupied), of authorized positions that had not been offered, and the proportion of the later in relation to the former were calculated. Considering that not all of the programs included in the SBMFC data replied to the e-mail sent for this survey, every aspect that involved the number of authorized positions was described only for the programs that replied to the authors. Data were tabulated using the R statistical computing language and environment, version 4.2.2.[6]

RESULTS

Among the 316 medical residency programs in family and community medicine listed by the CNRM, 72 (23%) had answered the SBMFC questionnaire. Of these, 28 (39%) informed the research how many positions were authorized for R1 residents to occupy in 2020.

As described in Table 1, the programs that responded to the research were mostly located in the Southeast Region (43%), based in municipalities with over 500 thousand inhabitants (61%). None of the programs that answered us were based in municipalities with less than 50 thousand inhabitants. The legal nature of the proposing institutions was mostly federal (36%) or municipal (25%) public; none of the programs that answered us were of a private profit nature. Only 29% of the programs did not supplement the residency grant; the supplementation amounts usually ranged between BRL 3,000 and BRL 8,000.

Table 1. Authorized and offered R1 positions, according to the characteristics of the residency programs in family and community medicine in Brazil, 2020.

Characteristic	Programs	Authorized positions	Offered positions	
			n	%
Region				
North	2	18	18	100.0
Northeast	3	53	45	84.9
Southeast	12	283	251	88.7
South	10	148	99	66.9
Midwest	1	4	4	100.0
Population size				
Up to 100 thousand	3	45	26	57.8
100 to 500 thousand	8	77	63	81.8
500 thousand or more	17	384	328	85.4
Legal nature				
Federal	7	79	71	89.9
State or district	2	32	8	25.0
Municipal	10	248	248	100.0
Philanthropic	4	50	42	84.0
Nonprofit private	5	97	48	49.5
Profit private	–	–	–	–
Grant supplementation (BRL)				
No	8	111	79	71.2
Up to 3 thousand	3	21	19	90.5
3 to 5 thousand	8	110	93	84.5
5 to 8 thousand	7	230	200	87.0
Over 8 thousand	2	34	26	76.5
Total	28	506	417	82.4

These 28 residency programs totaled 506 authorized R1 positions in 2020 (Table 1). Similar to the number of programs, most positions had been authorized for programs in the Southeast Region (56%), based in municipalities with over 500 thousand inhabitants (76%), with a municipal legal nature (49%). Regarding the supplementation of grants, most (45%) of the offered positions were supplemented from BRL 5,000 to BRL 8,000.

Of the 506 authorized positions, only 417 (82%) were actually offered by the programs (Table 1). In relative terms, the offer of positions was lower in programs based in the South Region (67%) or in municipalities with less than 100 thousand inhabitants (58%) as well as for programs of a state or district (25%) or private (49%) natures. Both programs without supplementation (71%) and those with supplementation greater than BRL 8,000 (76%) offered slightly less positions than the average of the programs that answered us.

In Table 2 we describe all the 72 residency programs that answered the SBMFC questionnaire. Compared with the programs that responded to our e-mail, these programs had a greater presence in municipalities with 100 thousand to 500 thousand inhabitants (39%), without disregarding the prominence of those with over 500 thousand inhabitants. In addition, municipal public proposing institutions were more usual (28%) than federal institutions (24%), and profit private institutions were as usual (13%) as nonprofit and philanthropic institutions.

Table 2. Offered and occupied R1 positions, according to the characteristics of the residency programs in family and community medicine in Brazil, 2020.

Characteristic	Programs	Offered positions	Occupied positions	
			n	%
Region				
North	3	28	28	100.0
Northeast	17	224	156	69.6
Southeast	30	433	320	73.9
South	17	181	87	48.1
Midwest	5	82	60	73.2
Population size				
Up to 100 thousand	7	84	66	78.6
100 to 500 thousand	28	282	155	55.0
500 thousand or more	37	582	430	73.9
Legal nature				
Federal	17	157	98	62.4
State	8	181	119	65.7
Municipal	20	409	286	69.9
Philanthropic	9	62	41	66.1
Nonprofit private	9	87	58	66.7
Profit private	9	52	49	94.2
Grant supplementation (BRL)				
No	20	156	96	61.5
Up to 3 thousand	5	74	48	64.9
3 to 5 thousand	21	286	166	58.0
5 to 8 thousand	19	338	260	76.9
Over 8 thousand	7	94	81	86.2
Total	72	948	651	68.7

This greater set of residency programs offered a total of 948 R1 positions in 2020 (Table 2). Most of the offered positions were located in institutions based in the Southeast Region (46%) and in municipalities with over 500 thousand inhabitants (61%) and a municipal public legal nature (43%). Only 16% of the offered positions did not have a grant supplementation, and once again the most usual amounts ranged between BRL 3,000 and BRL 8,000.

Among these 948 positions offered, only 651 (69%) were actually filled (Table 2). The occupation of positions was lower in the South Region (48%) and in municipalities with 100 to 500 thousand inhabitants (55%). The occupation was similar among other legal natures, but it was 94% in the case of profit private institutions. Grant supplementation had a “V-shaped” or “J-shaped” relationship with the occupation of positions. Programs that supplemented from BRL 3,000 to BRL 5,000 had lower occupation (58%) than those that supplemented less or that had no supplementation, and all of these programs had lower occupation than that of programs that supplemented more than BRL 5,000.

In Table 3 we gather the data from the previous tables, but only for the 28 programs that responded to the research. These programs had filled 294 positions, in such a way that there were 212 idle positions (authorized but not occupied), of which 89 (42%) had not been offered. This proportion of non-offered positions among idle positions was higher in the South Region (53%), in municipalities with less than 100 thousand inhabitants (76%), in state or district (83%) or private institutions (71%), and in programs without supplementation (60%).

Table 3. Idle and non-offered R1 positions, according to the characteristics of the residency programs in family and community medicine in Brazil, 2020.

Characteristic	Programs	Idle positions	Non-offered positions	
			n	%
Region				
North	2	–	–	–
Northeast	3	23	8	34.8
Southeast	12	95	32	33.7
South	10	92	49	53.3
Midwest	1	2	–	–
Population size				
Up to 100 thousand	3	25	19	76.0
100 to 500 thousand	8	42	14	33.3
500 thousand or more	17	145	56	38.6
Legal nature				
Federal	7	33	8	24.2
State	2	29	24	82.8
Municipal	10	65	–	–
Philanthropic	4	16	8	50.0
Nonprofit private	5	69	49	71.0
Profit private	–	–	–	–
Grant supplementation (BRL)				
No	8	53	32	60.4
Up to 3 thousand	3	7	2	28.6
3 to 5 thousand	8	59	17	28.8
5 to 8 thousand	7	76	30	39.5
Over 8 thousand	2	17	8	47.1
Total	28	212	89	42.0

DISCUSSION

In this research, we estimated that about two fifths of the idle positions were never even offered by the residency programs in family and community medicine. The non-offering seems to contribute to the idleness of positions, especially in the South Region; in programs based in municipalities with a smaller population; in state (or district) or private institutions; and in programs without supplementation of the residency grant. These are also the characteristics of the residency programs with the lowest offer in relation to the number of authorized positions.

These findings should be carefully interpreted due to a probable sample selection bias. By comparing the aforementioned results with the number of positions authorized and occupied in 2016,[3] we observed that the 72 programs in the SBMFC data account for the vast majority of occupied positions, but less than half of the authorized positions (in addition to the programs that reported this datum). This suggests that

more than 200 programs not surveyed by the SBMFC (and, therefore, not included in this study) have even greater idleness. It is possible that most of the programs outside this study are inactive, which would justify not having been surveyed by the SBMFC.

Furthermore, the verified correlations cannot be considered causal, due to the risk of confounding and reverse causality. As for confounding, it would be interesting to know the participation of educational institutions in the residency programs (such as proposing, partner, or neither) as well as the internship field (one municipality, more than one municipality, supplementary health, etc.). However, we chose to ask only the number of authorized positions, aiming at maximizing the number of programs participating in the survey. Qualitative research focused on the two stages, offer and occupation, could better indicate what would the relevant explanatory variables be and also the relationship between them.

Regarding reverse causality, the number of positions offered by a program in a year may be taking into account the occupation in the previous year; the number of authorized positions may be being adjusted depending on idleness; and the supplementation of the residency grant may be an attempt to compensate for other less attractive characteristics of the programs. The later, however, is relevant only for proposing institutions that, somehow, benefit from the work of resident physicians (municipalities and affiliated organizations), and for supplementation amounts greater than BRL 667 from the program *O Brasil Conta Comigo* ["Brazil counts on me"] (Ordinance MS/GM No. 580, from March 27, 2020) and BRL 4,500 from the program *Médicos pelo Brasil* ["Doctors for Brazil"] (Ordinance MS/GM No. 3,510, from December 18, 2019).

All in all, a considerable number of residency positions in family and community medicine are idle because they were not offered by the respective programs. It would be advisable for future studies to seek greater representativeness of the sample, in the case of quantitative research; and to explicitly address both the offer and the occupation of positions, in the case of qualitative research. In the meantime, greater attention from the CNRM (and its state counterparts) would be advisable to the actual offer of authorized positions. For instance, we believe that encouraging programs to adhere to the National Residency Exam would facilitate the access to the number of positions offered by the programs each year.

After the editorial approval of this article, CNRM announced the cancellation of 90 residency programs in family and community medicine (in addition to several other programs from several other specialties) because they had been inactive for more than two years.[7]

CONFLICT OF INTERESTS

LFF was the preceptor of a residency program in family and community medicine during part of the research project. Besides, LFF is associate editor of the RBMFC, but was not involved in any editorial decision regarding this article. LBP was a resident physician in family and community medicine during part of the research project. DLS declares no conflicts of interest. MSV was the preceptor of one residency program and supervisor of another residency program in family and community medicine.

AUTHORS' CONTRIBUTIONS

LFF: Formal analysis, Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Investigation, Methodology. LBP: Writing – review & editing, Investigation, Methodology. DLS: Formal analysis, Writing – original draft, Writing – review & editing, Investigation, Methodology. MSV: Writing – review & editing, Investigation, Methodology.

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