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"Mais Médicos" – "More Physicians" law: evaluating compliance with municipal criteria for the operation of medical schools

Lei do Mais Médicos: avaliando o cumprimento dos critérios municipais para funcionamento de escolas médicas

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ABSTRACT

Introduction: "Mais Médicos" (More Physicians) law (LMM) stated that authorizations for the operation of the medicine course should be preceded by a public call for municipalities and educational institutions, with mandatory requirements for selection.

Objective: This article aimed to investigate compliance with the criteria established in the first public call by the selected municipalities and with medical schools implemented through LMM.

Methods: This is a descriptive, exploratory study, with an analytical approach to documentary research procedures, using legislation documents and public data from the Ministry of Health as a data source.

Results: It was observed that all municipalities selected in the first call continued to meet the minimum criteria established for the indicators "number of primary care teams", "existence of CAPS" and "teaching hospital". As for the indicator "number of available SUS beds per student greater than or equal to 5", it seems that there is a weakness in this analysis with possible negative impacts on practical teaching scenarios.

Conclusion: It is necessary to establish an observatory to monitor the minimum conditions of public health equipment in municipalities that host medical schools arising from this law is reiterated, to ensure the quality of medical training regarding the adequate supply of practice scenarios and health teams.

Keywords: "Mais Médicos – "More Physicians" law; Public Policy; Audit; Municipalities.

RESUMO

Introdução: *A Lei do Mais Médicos (LMM) conferia que as autorizações para o funcionamento do curso de Medicina deveriam ser precedidas de chamamento público para os municípios e para as instituições de ensino, com requisitos obrigatórios para a seleção.*

Objetivo: *Este artigo objetivou investigar o cumprimento dos critérios estabelecidos no primeiro chamamento público pelos municípios selecionados e com escolas médicas implantadas por meio da LMM.*

Método: *Trata-se de um estudo descritivo, exploratório, com abordagem analítica de procedimentos de pesquisa documental, em que se utilizaram os documentos de legislação e os dados públicos do Ministério da Saúde como fonte de dados.*

Resultado: *Pôde-se apreender que todos os municípios selecionados no primeiro chamamento continuaram cumprindo os critérios mínimos estabelecidos para os indicadores "número de equipes de atenção básica", "existência de Caps" e "hospital de ensino". Já para o indicador "número de leitos disponíveis do SUS por aluno igual ou superior a cinco", constata-se que há uma fragilidade para essa análise com possíveis impactos negativos nos cenários práticos de ensino.*

Conclusão: *Reitera-se a necessidade de se instituir um observatório para o monitoramento das condições mínimas dos equipamentos públicos de saúde, dos municípios que sediam escolas médicas oriundas dessa lei, para se assegurar a qualidade da formação médica no que tange à oferta adequada de cenários de prática e equipes de saúde.*

Palavras-chave: *Lei do Mais Médicos; Política Pública; Auditoria; Municípios.*

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INTRODUCTION

Federal Law number 12871, of October 22, 2013, which instituted the More Doctors Program (PMM, *Programa Mais Médicos*), can be considered a historic milestone in the offer of undergraduate medical courses in the country. After this law, the authorization processes for this course no longer followed the regulations of Law 10.861/2004, still in force for other undergraduate courses, and started to follow the More Doctors Law (LMM, *Lei do Mais Médicos*). In its article 3, it was determined that the authorizations for the operation of the medical course should be preceded by a public call for the municipalities and for private higher education institutions (HEIs)[1].

Regarding the public call for municipalities, the need to comply with three selection stages was predicted. The first stage comprised the analysis of the relevance and social need of the offer of the Medicine course, verified by the following criteria: (i) having at least 70,000 inhabitants; (ii) not being the capital of the state; (iii) not having a medical course in its territory[2].

The second selection stage included the analysis of the structure of public facilities and health programs existing in the municipality. The following criteria were listed: (i) number of available SUS (Brazilian Unified Health System) beds of at least 250 beds (metric of 5 beds per student); (ii) minimum of 17 primary care teams; (iii) existence of urgent and emergency beds or Emergency Room; (iv) existence of at least three medical residency programs; (v) adherence to the National Program for the Improvement of Access and Quality in Primary Care – PMAQ (*Programa Nacional de Melhoria do Acesso e da Qualidade na Atenção Básica*), of the Ministry of Health; (vi) existence of a Psychosocial Care Center – CAPS (*Centro de Atenção Psicossocial*); (vii) teaching hospital or hospital unit with potential for teaching hospital; and (viii) existence of a hospital with more than 100 (one hundred) beds exclusively for the medical course[2].

The third stage considered the analysis of a project to improve the structure of public facilities and health programs in the municipality [2]. There was no objective instrument to detail the items that needed to be included in the project, only that the Secretariat for Regulation and Supervision of Higher Education (SERES, *Secretaria de Regulação e Supervisão da Educação Superior*) could designate specialists for the analysis, as well as to carry out on-site evaluation.

In view of these stages, it is observed that, in order to host a medical course, the municipalities should guarantee minimum conditions of infrastructure and public equipment, which are fundamental for medical education as recommended by the National Curriculum Guidelines (DCN, *Diretrizes Curriculares Nacionais*) of the course[3]. However, despite these conditions being provided for in the Public Call Notice, after the selection of the municipality and authorization for the operation of the course, a monitoring process was not identified to ensure compliance with these requirements.

This scenario differs from what occurs with the monitoring of compliance with the requirements that are incumbent on the HEIs. In this case, since March 2015, even before the start of the operation of the Medicine courses, the Commission for the Follow-up and Monitoring of Medical Schools (CAMEM, *Comissão de Acompanhamento e Monitoramento de Escolas Médicas*) was established, through Ordinance N. 306. This commission has the "purpose of monitoring and following the implementation and satisfactory offer of undergraduate medical courses in HEIs"[4].

It should be noted that numerous scientific studies evaluate the PMM in terms of effectiveness and achievement of the proposed objectives, such as, for example, the reduction of the shortage of medical professionals in priority regions for the SUS[5,6,7,8].

On the other hand, to our knowledge, no studies were found aiming to verify the continuity of compliance with the criteria agreed upon by the selected municipalities after the implementation of medical schools. Nor were commissions or investigations identified for this purpose.

Therefore, there is an urgent need to evaluate these aspects, since the non-compliance with the minimum requirements for the implementation of the course has a direct impact on the training process of medical students, especially regarding the performance of practices that depend on public health equipment and its teams. Additionally, the non-compliance with these requirements weakens the public policy itself, with negative effects on the quality of health that is offered to society.

Thus, the present study aims to investigate compliance with the criteria established in the first public call by the selected municipalities and with medical schools implemented through the More Doctors Law (LMM). It is expected, with this research, not only to audit the maintenance of compliance with the criteria placed on the municipalities, but also to contribute to the reflection on the implementation of a continuous and effective monitoring process.

METHOD

This is a descriptive, exploratory study, with an analytical approach to documentary research procedures, using legislation documents and public data from the Ministry of Health as a data source.

Initially, Law N. 12871, of October 22, 2013, which established the PMM, was analyzed, with the purpose of training

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human resources in the medical area for the Brazilian Unified Health System (SUS – *Sistema Único de Saúde*)[1]. In its article 3, it was verified that the authorization for the operation of medical courses should be preceded by a public call for municipalities and private HEIs.

Based on this call, the definitions of the methodological procedures were followed.

Selection of indicators

Considering the public call, the first public notice for the pre-selection of municipalities for the implementation of an undergraduate course in Medicine by private HEIs was researched, Public Notice n. 3, of October 22, 2013. In it, the criteria for the pre-selection of municipalities were evaluated, with the following being highlighted:

1. number of SUS beds available per student greater than or equal to 5 (five);
2. minimum of 17 primary care teams;
3. existence of CAPS;
4. teaching hospital or hospital unit with potential for teaching hospital.

Two criteria established at this stage were excluded: (i) "existence of at least three Medical Residency Programs" and (ii) "existence of a hospital with more than 100 beds exclusively for the course". The first case is justified by the fact that the residency programs could be a commitment to the winning HEI, to be implemented within one year of the beginning of the course activities; and, in the second case, because there is no public data that allows the analysis of compliance with the indicator.

Selection of municipalities

The municipalities contemplated in the first public call notice were selected, and with HEIs authorized for the operation of medical courses, according to the result published in the Official Gazette of the Union (DOU, *Diário Oficial da União*), Ordinance N. 545, of September 26, 2016[9]. Chart 1 shows the list of municipalities by federation unit (FU) and selected sponsor disclosed in the aforementioned Ordinance.

Chart 1. List of sponsors selected and classified in the first public call of HEIs for authorization to operate medical courses in municipalities selected under Notice N. 03. of October 22. 2013.

Municipality	UF	Selected sponsor
Vilhena	RO	Associação Educacional de Rondonia
Alagoinhas	BA	Sociedade de Ensino Superior Estácio de Sá Ltda
Eunápolis	BA	Pitágoras - Sistema de Educação Superior Sociedade Ltda
Guanambi	BA	Sociedade Padrão de Educação Superior Ltda
Itabuna	BA	Instituto Educacional Santo Agostinho Ltda
Jacobina	BA	AGES Empreendimentos Educacionais Ltda
Juazeiro	BA	IREP Sociedade de Ensino Superior. Medio e Fundamental Ltda.
Jaboatão dos Guararapes	PE	Sociedade de Educação Tiradentes S/S Ltda
Cachoeiro de Itapemirim	ES	Empresa Brasileira de Ensino. Pesquisa e Extensão S.A - EMBRAE
Contagem	MG	Sociedade Mineira de Cultura
Passos	MG	Centro Educacional Hyarte-ML-Ltda
Poços de Caldas	MG	Sociedade Mineira de Cultura
Sete Lagoas	MG	Centro Educacional Hyarte-ML-Ltda
Angra dos Reis	RJ	Sociedade de Ensino Superior Estácio de Sá Ltda
Três Rios	RJ	Sociedade Universitária Para o Ensino Médico Assistencial Ltda
Araçatuba	SP	Missão Salesiana de Mato Grosso
Araras	SP	Sociedade Regional de Ensino e Saúde S/S Ltda
Bauru	SP	Associação Educacional Nove de Julho
Cubatão	SP	AMC - Serviços Educacionais Ltda
Guarujá	SP	Associação Prudentina de Educação e Cultura APEC
Guarulhos	SP	Associação Educacional Nove de Julho
Jaú	SP	Associação Prudentina de Educação e Cultura APEC
Mauá	SP	Associação Educacional Nove de Julho

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Chart 1. Continuation.

Municipality	UF	Selected sponsor
Osasco	SP	Associação Educacional Nove de Julho
Piracicaba	SP	ISCP Sociedade Educacional S.A.
Rio Claro	SP	ISCP Sociedade Educacional S.A.
São Bernardo do Campo	SP	Associação Educacional Nove de Julho
São José dos Campos	SP	ISCP Sociedade Educacional S.A.
Campo Mourão	PR	CEI - Centro Educacional Integrado
Guarapuava	PR	Campo Real Educacional S.A
Pato Branco	PR	Associação Patobranquense de Ensino Superior S.C. Ltda
Umuarama	PR	Associação Paranaense de Ensino e Cultura
Erechim	RS	Fundação Regional Integrada
Ijuí	RS	UNISEB União dos Cursos Superiores SEB Ltda
Novo Hamburgo	RS	Associação Pro Ensino Superior em Novo Hamburgo
São Leopoldo	RS	Associação Antonio Vieira
Jaraguá do Sul	SC	Sociedade de Ensino Superior Estácio de Sá Ltda

Source: Prepared by the authors. Data extracted from Ordinance n. 545. of 09/26/2016[9].

Chart 2. Data collection trajectory by indicator.

Indicator	Source	Collection month		Route to data collection
		2013	2014-2019	
Number of available SUS beds per student greater than or equal to 5 (five)	Datasus	October	September	Datasus - Tabnet - Assistance network - CNES - physical resources - Hospital - inpatient beds. Selection of lines: municipalities in Brazil; Selection in columns: competence year/ month Selection in content: the number of SUS beds
Minimum of 17 primary care teams	E-gestorAB	October	September	"Primary Care Information and Management" (e-manager) - primary care Coverage" - Download of compressed files by period - Selection of the file "historical-AB-municipalities-2007-2020[12]".
Existence of CAPS	Datasus	October	September	Datasus - Tabnet - Assistance network - CNES - Institutions - Type of Institutions - Psychosocial Care Center. Selection of lines: municipalities in Brazil; Selection in columns: competence year/month Selection in content: quantity
Teaching hospital or hospital unit with potential for teaching hospital	Datasus	October	September	Datasus - Tabnet - Healthcare network - CNES - Institutions - Type of Institutions - General Hospital. Selection of lines: municipalities in Brazil; Selection in column: competence year/month Selection in content: quantity

Source: Prepared by the authors.

Time frame

The period from 2013 to 2019 was defined to include the year of publication of the first public call notice for the municipalities and to cancel the possible effects of extra investments as a result of the Covid-19 pandemic, declared on March 11, 2020[10].

As these indicators are made publicly available on a monthly basis, the month of October of the year 2013 was established as the "initial stage" of the indicator of each municipality, as this was the month of publication of the first public call notice. In subsequent years, data for the months of September were obtained, considering that the result was released in that month.

Data collection

Data collection for the selected indicators was carried out on the website of the Department of Informatics of the Unified Health System (DataSUS) and on the website of Primary Care Information and Management (E-gestorAB). Chart 2 shows the collection trajectory for each defined indicator.

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Within the scope of the indicator "number of SUS beds available per student greater than or equal to 5 (five)", the number of existing beds was verified. To continue with the analysis of the metric established in the indicator "greater than or equal to 5", the number of annual vacancies made available for each municipality was sought in Public Notice N. 6, of 2014, the first public call for private HEI sponsors[11]. For the calculation of SUS beds per student, the same rationale exemplified in the call notice of the municipalities was considered: "that is, for a course with 50 vacancies, the municipality must have at least 250 SUS beds available"[2].

Data organization and analysis

The data were tabulated in Microsoft Excel. For the analysis, in addition to the verification of compliance with the requirement, by the municipality, year by year, the analysis of the compound annual growth rate (CAGR) was added. This measure is widely used in economics for the analysis of financial investments, but it can also be used for other measures, such as the level of production, the number of registered users, or the situation in which the intention is to compare a final value and an initial value during a given period[12].

To obtain this rate in Microsoft Excel, the following formula is used[13]:

$$CAGR = ((Vf / Vi) \text{ ^ } (1 / n)) - 1$$

Where:

Vf = final value

Vi = initial value

n = number of years under analysis

RESULTS AND DISCUSSION

This section presents the data collected from each indicator, with the CAGR calculated for the period under study. In addition to these results, the discussion of the data from the proposed perspective is also carried out.

Indicator "number of beds available in SUS per student greater than or equal to 5 (five)"

Table 1 presents the consolidated data for this indicator, including the number of annual vacancies authorized for each municipality, the number of required beds according to the metric established in the notice, the historical evolution, from 2013 to 2019, and the CAGR for the period selected for this analysis.

Table 1. Evolution of the number of beds available in SUS. 2013-2019. in the municipalities selected in the first public call of the municipalities for the implementation of an undergraduate course in Medicine by private HEI.

Municipality	FU	Number of annual course vacancies	Number of required beds	Difference between the required beds and Number of beds in Sept 2014	Oct 2013	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018	Sept 2019	CAGR 2013-2019
Alagoinhas	BA	65	325	-145	174	180	180	175	175	177	187	1.2%
Angra dos Reis	RJ	55	275	24	210	299	299	294	303	331	290	5.5%
Araçatuba	SP	65	325	153	477	478	478	478	333	341	305	-7.2%
Araras	SP	55	275	22	289	297	307	300	300	262	262	-1.6%
Bauru	SP	100	500	231	703	731	638	612	612	612	636	-1.7%
Cachoeiro de Itapemirim	ES	100	500	223	763	723	493	493	345	352	354	-12.0%
Campo Mourão	PR	50	250	-131	125	119	119	122	138	138	154	3.5%
Contagem	MG	50	250	-20	311	230	230	218	333	328	339	1.4%
Cubatão	SP	50	250	-116	134	134	134	141	141	66	66	-11.1%
Erechim	RS	55	275	-118	123	157	159	159	159	159	159	4.4%
Eunápolis	BA	55	275	-124	174	151	145	147	147	147	125	-5.4%
Guanambi	BA	60	300	-186	115	114	125	125	157	157	159	5.5%
Guarapuava	PR	55	275	24	274	299	265	272	248	252	270	-0.2%
Guarujá	SP	55	275	-12	237	263	234	234	219	225	225	-0.9%
Guarulhos	SP	100	500	928	1441	1428	1429	1453	1456	1456	1444	0.0%
Ijuí	RS	50	250	-58	184	192	138	127	129	129	157	-2.6%

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Tabela 1. Continuation.

Municipality	FU	Number of annual course vacancies	Number of required beds	Difference between the required beds and Number of beds in Sept 2014	Oct 2013	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018	Sept 2019	CAGR 2013-2019
Itabuna	BA	85	425	204	636	629	621	485	490	490	408	-7.1%
Jaboatão dos Guararapes	PE	100	500	-40	463	460	445	415	415	530	550	2.9%
Jacobina	BA	55	275	-31	242	244	103	103	103	103	107	-12.7%
Jaraguá do Sul	SC	50	250	-14	231	236	231	231	231	244	244	0.9%
Jaú	SP	55	275	430	705	705	705	705	715	711	711	0.1%
Juazeiro	BA	55	275	107	400	382	382	366	392	452	468	2.7%
Mauá	SP	50	250	66	292	316	316	303	246	246	189	-7.0%
Novo Hamburgo	RS	60	300	-10	289	290	284	279	237	246	243	-2.8%
Osasco	SP	70	350	242	592	592	608	604	591	589	578	-0.4%
Passos	MG	50	250	41	291	291	290	304	327	284	164	-9.1%
Pato Branco	PR	50	250	-62	188	188	196	205	195	208	205	1.5%
Piracicaba	SP	75	375	-66	312	309	309	315	282	331	331	1.0%
Poços de Caldas	MG	50	250	-36	214	214	206	189	187	187	191	-1.9%
Rio Claro	SP	55	275	3	274	278	278	267	232	190	188	-6.1%
São Bernardo do Campo	SP	100	500	55	724	555	564	560	593	785	780	1.2%
São José dos Campos	SP	100	500	318	833	818	740	736	736	869	823	-0.2%
São Leopoldo	RS	65	325	-91	214	234	234	221	168	168	133	-7.6%
Sete Lagoas	MG	50	250	-9	241	241	241	242	242	242	217	-1.7%
Três Rios	RJ	50	250	19	269	269	255	264	226	226	186	-6.0%
Umuarama	PR	60	300	-12	289	288	294	496	496	508	525	10.5%
Vilhena	RO	50	250	-62	161	188	188	188	188	187	187	2.5%

Source: Prepared by the authors.

It is possible to see in the column "difference between required beds and the number of existing beds in September 2014", that twenty municipalities (54%) did not meet the metric established in the public notice. It is assumed, therefore, that the municipal managers at the time included beds from other municipalities that were part of the same health region as a possibility predicted in the public notice. As this information is not in the public domain, it was not possible to make a reliable analysis of compliance with this requirement.

That said, in order to analyze the historical series, the number of SUS beds registered for the municipality in the year of disclosure of the selection result of the municipalities was considered, since the established partnerships were done so with the objective of complementation.

In the meantime, it is observed that sixteen municipalities (43%) presented a positive growth rate for the number of beds, highlighting the municipalities with the highest growth, Umuarama-PR, Angra dos Reis-RJ and Guanambi-BA, with a CAGR of 10.5%, 5.5% and 5.5%, respectively. In a percentage analysis of absolute numbers, the increase in the number of beds was 81.7%, 38.1% and 38.3%, respectively.

On the other hand, 21 municipalities (56.7%) had a negative CAGR, with the municipalities of Jacobina-BA, Cachoeiro de Itapemirim-ES and Cubatão-SP having the greatest reduction in the number of beds between 2013 and 2019 period, with rates of -12.7%, -12.0% and -11.1%, respectively. In a percentage analysis of absolute numbers, the reduction in the number of beds was 55.8%, 53.6% and 50.7%, respectively.

This fact sheds light on the need for compliance with this indicator by the governmental bodies that rule this public policy. In the same way that 56.7% of the selected municipalities showed a reduction in the number of beds over the study period, this may also have occurred with the adjacent municipalities of the indicated health regions, which, if true, may be impacting these results even further.

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The availability of hospital beds is fundamental for real in-service practices in medical education, so that students can experience learning that cannot be reproduced only in the context of the classroom[14]. It is being in contact with the largest number of patients that the student learns to collect stories, to conduct an anamnesis, and to give accurate diagnoses[15]. Therefore, the absence or lack of beds impacts the development of this learning process.

In this context, as this criterion was guaranteed by the municipality for the offer of the course, it should be mandatory for this guarantee to continue being credited to it. However, it is worth noting that this "lack" of beds is beyond these municipalities. According to data from the Federal Council of Medicine, 77% of the municipalities that host medical schools have a number of beds below the parameter advocated by medical entities, of at least 5 beds per medical student, similar to that attributed in the LMM[16].

As a logical corollary, it is assumed that there is a generalized relaxation for this indicator, since there is a continuation of the expansion in the number of medical schools and vacancies, without the guarantee of the pre-defined parameter for the supposed high-quality medical training.

Indicator "minimum of 17 primary care teams"

Table 2 shows the number of primary care teams in each year and the CAGR for the period under study.

Table 2. Evolution of the number of primary care teams. 2013-2019. in the municipalities selected in the first public call of the municipalities for the implementation of an undergraduate Medicine course by private HEIs.

Municipality	FU	Oct 2013	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018	Sept 2019	CAGR 2013-2019
Alagoinhas	BA	26	26	27	27	29	37	35	5.1%
Angra dos Reis	RJ	64	86	89	86	77	65	62	-0.5%
Araçatuba	SP	37	55	50	53	54	49	50	5.1%
Araras	SP	22	21	19	20	21	21	21	-0.8%
Bauru	SP	38	48	48	49	48	52	49	4.3%
Cachoeiro de Itapemirim	ES	45	60	59	60	55	57	50	1.8%
Campo Mourão	PR	25	24	25	22	23	22	21	-2.9%
Contagem	MG	134	135	127	127	129	144	154	2.3%
Cubatão	SP	23	23	25	28	28	21	32	5.7%
Erechim	RS	17	17	19	21	22	25	23	5.2%
Eunápolis	BA	20	27	31	30	30	31	33	8.7%
Guanambi	BA	20	22	22	22	22	25	27	5.1%
Guarapuava	PR	44	45	44	39	38	39	44	0.0%
Guarujá	SP	48	50	61	67	61	64	60	3.8%
Guarulhos	SP	175	222	211	193	191	182	174	-0.1%
Ijuí	RS	26	19	19	20	19	19	22	-2.7%
Itabuna	BA	30	36	41	36	41	49	53	9.9%
Jaboatão dos Guararapes	PE	88	91	99	115	121	120	129	6.6%
Jacobina	BA	19	24	18	19	20	22	22	2.5%
Jaraguá do Sul	SC	26	34	38	40	36	35	35	5.1%
Jaú	SP	21	22	23	28	25	26	17	-3.5%
Juazeiro	BA	55	59	61	63	63	63	63	2.3%
Mauá	SP	55	104	96	99	101	82	65	2.8%
Novo Hamburgo	RS	46	58	65	74	76	75	75	8.5%
Osasco	SP	46	71	76	115	101	98	99	13.6%
Passos	MG	21	24	22	24	28	30	28	4.9%
Pato Branco	PR	18	20	20	20	19	21	23	4.2%
Piracicaba	SP	61	73	70	79	75	80	72	2.8%

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Table 2. Continuation.

Municipality	FU	Oct 2013	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018	Sept 2019	CAGR 2013-2019
Poços de Caldas	MG	34	36	40	39	41	42	43	4.0%
Rio Claro	SP	21	26	24	23	25	26	33	7.8%
São Bernardo do Campo	SP	116	132	138	140	140	142	151	4.5%
São José dos Campos	SP	58	93	95	90	96	103	112	11.6%
São Leopoldo	RS	23	21	22	23	23	25	25	1.4%
Sete Lagoas	MG	37	55	59	56	59	63	61	8.7%
Três Rios	RJ	23	28	28	28	29	32	30	4.5%
Umuarama	PR	21	29	26	26	25	25	26	3.6%
Vilhena	RO	13	32	32	24	25	24	23	10.0%

Source: Prepared by the authors.

It is observed that, at the time of the release of the public notice, 2013, all municipalities met the minimum number of primary care teams, except for the municipality of Vilhena-RO, which had 13 teams. However, in 2014, the year of disclosure of the result of the pre-selection of municipalities, the municipality already had 32 teams.

It is also observed that six municipalities (16.2%) had a negative growth rate for the period under study, Jaú-SP, Campo Mourão-PR, Ijuí-RS, Araras-SP, Angra dos Reis-RJ and Guarulhos-SP. On the other hand, 83.8% of the municipalities had a positive growth rate, with emphasis on the municipalities of Osasco-SP, São José dos Campos-SP and Vilhena-RO, which had the highest CAGR, 13.6%, 11.6% and 10.0%, respectively.

Regarding the analysis of the assessed criterion, it is found that, throughout the analyzed period, all municipalities maintained compliance with the aforementioned criterion. This reflects positively on the process of training new doctors, especially when the pedagogical project of the schools presupposes the integration of the student with the primary health care teams, based on the expansion of learning spaces as recommended in the course DCN[17].

In this context, the student learns both in the multiprofessional context, as well as from the perspective of the person who receives care and their living conditions, not being restricted to the disease[18]. It also provides a more solid education, based on strengthening doctor-patient-family-community bonds[14].

That said, by ensuring compliance with the indicator under analysis, the municipalities provide conditions for medical schools to develop curricular practices in an interdisciplinary perspective, with a learning field integrated with primary care health services and teams, enabling a more comprehensive medical education.

Indicator "existence of CAPS"

Table 3 shows the number of CAPS units in each municipality over the time frame and the CAGR for the selected period.

It is observed that all municipalities had CAPS units since the year of enactment of the law, maintaining their existence throughout the analyzed period. As the established criterion is only to have this equipment, it is ratified that 100% of the municipalities continued to meet this criterion during the evaluated period.

When performing the CAGR analysis, it can be observed that nineteen municipalities (51.4%) maintained the number throughout the historical period. Two municipalities (5.4%), Contagem-MG and Jaboatão dos Guararapes-PE, recorded a reduction in the 2013-2019 period, with CAGR of -3.7% and -4.7%, respectively. On the other hand, sixteen municipalities (43.2%) had a positive CAGR for this indicator, i.e., new CAPS units were built over this period.

The existence of this practice scenario in the municipalities where medical schools are located provides the inclusion of students in spaces that allow the development of teaching-learning in mental health, an aspect that is extremely necessary for the training of future physicians[19].

Practical experience at the CAPS can develop in students the perspective of care and comprehensive assistance in the context of mental health[17], expanding medical training beyond the perspective of psychiatry[20].

Indicator "existence of a teaching hospital or hospital unit with potential for a teaching hospital"

Table 4 shows the number of hospitals in each municipality per year of study and the CAGR for the period under analysis.

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Table 3. Existence of CAPS. in the period from 2013 to 2019. in the municipalities selected in the first public call of the municipalities for the implementation of an undergraduate course in Medicine by private HEIs.

Municipality	FU	Oct 2013	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018	Sept 2019	CAGR 2013-2019
Alagoinhas	BA	1	1	1	1	1	1	1	0.0%
Angra dos Reis	RJ	3	3	3	3	3	3	3	0.0%
Araçatuba	SP	1	1	1	1	3	3	3	20.1%
Araras	SP	1	1	2	2	2	2	2	12.2%
Bauru	SP	3	4	4	4	4	4	4	4.9%
Cachoeiro de Itapemirim	ES	2	2	2	2	2	2	2	0.0%
Campo Mourão	PR	1	2	2	2	2	2	2	12.2%
Contagem	MG	5	5	4	4	4	4	4	-3.7%
Cubatão	SP	2	2	2	2	2	2	2	0.0%
Erechim	RS	2	2	2	2	2	2	2	0.0%
Eunápolis	BA	3	3	3	3	3	3	3	0.0%
Guanambi	BA	1	2	2	2	2	2	2	12.2%
Guarapuava	PR	2	4	4	4	4	4	4	12.2%
Guarujá	SP	4	4	4	4	4	4	4	0.0%
Guarulhos	SP	7	7	7	7	7	7	7	0.0%
Ijuí	RS	3	3	3	3	3	3	3	0.0%
Itabuna	BA	3	3	3	3	3	3	3	0.0%
Jaboatão dos Guararapes	PE	4	4	4	4	3	3	3	-4.7%
Jacobina	BA	2	2	2	2	2	2	2	0.0%
Jaraguá do Sul	SC	2	3	3	3	3	3	3	7.0%
Jaú	SP	1	1	1	1	1	1	1	0.0%
Juazeiro	BA	2	2	2	2	3	3	3	7.0%
Mauá	SP	3	3	3	3	3	3	3	0.0%
Novo Hamburgo	RS	5	5	5	5	5	5	5	0.0%
Osasco	SP	2	3	3	3	3	3	3	7.0%
Passos	MG	2	2	2	2	2	2	2	0.0%
Pato Branco	PR	1	1	1	1	1	1	1	0.0%
Piracicaba	SP	1	1	1	1	1	1	2	12.2%
Poços de Caldas	MG	1	1	1	1	1	1	2	12.2%
Rio Claro	SP	3	3	3	3	3	3	3	0.0%
São Bernardo do Campo	SP	7	8	8	8	9	9	9	4.3%
São José dos Campos	SP	4	4	4	5	5	5	5	3.8%
São Leopoldo	RS	2	2	2	2	3	3	3	7.0%
Sete Lagoas	MG	2	3	3	3	3	3	3	7.0%
Três Rios	RJ	2	2	2	2	2	2	2	0.0%
Umuarama	PR	1	2	2	2	2	2	2	12.2%
Vilhena	RO	1	1	1	1	1	1	1	0.0%

Source: Prepared by the authors.

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Table 4. Teaching hospital or hospital unit with potential for a teaching hospital. in the period of 2013 to 2019. in the municipalities selected in the first public call of the municipalities for the implementation of an undergraduate course in Medicine by private HEIs.

Municipality	FU	Oct 2013	Sept 2014	Sept 2015	Sept 2016	Sept 2017	Sept 2018	Sept 2019	CAGR 2013-2019
Alagoinhas	BA	2	2	2	2	2	2	2	0.0%
Angra dos Reis	RJ	4	5	5	5	5	5	6	7.0%
Araçatuba	SP	2	2	2	3	3	3	4	12.2%
Araras	SP	3	3	3	3	3	3	3	0.0%
Bauru	SP	7	7	7	5	6	6	7	0.0%
Cachoeiro de Itapemirim	ES	4	4	4	3	3	3	3	-4.7%
Campo Mourão	PR	3	3	3	3	3	3	3	0.0%
Contagem	MG	3	3	3	3	4	4	4	4.9%
Cubatão	SP	2	2	2	2	2	2	2	0.0%
Erechim	RS	2	2	2	2	3	4	4	12.2%
Eunápolis	BA	5	5	4	4	4	4	4	-3.7%
Guanambi	BA	4	4	3	3	3	3	4	0.0%
Guarapuava	PR	3	3	3	3	3	3	3	0.0%
Guarujá	SP	1	2	2	3	3	4	4	26.0%
Guarulhos	SP	10	10	10	11	12	12	12	3.1%
Ijuí	RS	3	3	3	3	3	3	3	0.0%
Itabuna	BA	3	3	3	3	3	3	2	-6.5%
Jaboatão dos Guararapes	PE	7	7	7	7	7	8	8	2.3%
Jacobina	BA	3	3	3	3	3	3	3	0.0%
Jaraguá do Sul	SC	3	3	2	2	2	2	2	-6.5%
Jaú	SP	1	1	1	1	1	1	1	0.0%
Juazeiro	BA	3	3	3	3	4	4	5	8.9%
Mauá	SP	5	5	4	4	4	4	4	-3.7%
Novo Hamburgo	RS	3	3	3	3	3	3	3	0.0%
Osasco	SP	6	6	6	6	6	6	5	-3.0%
Passos	MG	2	2	2	2	2	2	2	0.0%
Pato Branco	PR	3	3	3	3	5	5	3	0.0%
Piracicaba	SP	5	4	4	4	4	5	4	-3.7%
Poços de Caldas	MG	5	5	5	5	5	5	5	0.0%
Rio Claro	SP	3	3	3	3	3	3	3	0.0%
São Bernardo do Campo	SP	12	12	13	13	13	12	12	0.0%
São José dos Campos	SP	12	12	11	12	12	14	14	2.6%
São Leopoldo	RS	1	1	1	1	1	1	1	0.0%
Sete Lagoas	MG	3	3	4	4	4	4	3	0.0%
Três Rios	RJ	2	2	2	2	1	1	1	-10.9%
Umuarama	PR	3	3	3	4	4	4	4	4.9%
Vilhena	RO	3	3	2	2	2	2	2	-6.5%

Source: Prepared by the authors.

It is observed that all municipalities had a hospital registered with the CNES over the established time frame. As the indicator requirement is only to have the equipment, 100% of the municipalities were in compliance.

However, when assessing the CAGR, it is verified that nine municipalities (24.3%) had a negative CAGR. In other

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words, there was a reduction in the number of registered hospitals. Eighteen municipalities (48.7%) remained with the same number of hospitals, and ten municipalities (27.0%) had a positive growth rate from 2013 to 2019, with the construction of new hospitals, especially the municipalities of Guarujá-SP, Erechim-RS and Araçatuba-SP, with CAGR of 26.0%, 12.2% and 12.2%, respectively. In absolute numbers, the former increased from one hospital to four hospitals, and the latter two from two to four hospitals. This suggests investments in public health equipment and, consequently, a greater supply of scenarios for in-service practice, which is essential for medical training.

In this context, according to the DCN of the medical course, the hospital is one of the practice scenarios that should be present in the training process, articulated with social spaces of coexistence, primary care units, home care, and specialty outpatient clinics, aiming to provide the experience of continuity of care[3].

Thus, it is noted that the guidelines include the need to diversify scenarios for medical education, but learning in hospitals, with continuous and qualified supervision, continues to be essential for professional training[21].

Consolidated CAGR and indicators by municipality

Table 5 shows a consolidated growth rate for each indicator assessed, within the defined time frame, with an illustrative beacon according to the result of each municipality.

Table 5. Annual growth rate composed by indicator by municipality. 2013-2019.

Municipality	UF	Number of available SUS beds per student greater than or equal to 5 (five)	Minimum of 17 primary care teams	Existence of CAPS	Teaching hospital or hospital unit with potential for teaching hospital
Alagoinhas	BA	1.2%	5.1%	0.0%	0.0%
Angra dos Reis	RJ	5.5%	-0.5%	0.0%	7.0%
Araçatuba	SP	-7.2%	5.1%	20.1%	12.2%
Araras	SP	-1.6%	-0.8%	12.2%	0.0%
Bauru	SP	-1.7%	4.3%	4.9%	0.0%
Cachoeiro de Itapemirim	ES	-12.0%	1.8%	0.0%	-4.7%
Campo Mourão	PR	3.5%	-2.9%	12.2%	0.0%
Contagem	MG	1.4%	2.3%	-3.7%	4.9%
Cubatão	SP	-11.1%	5.7%	0.0%	0.0%
Erechim	RS	4.4%	5.2%	0.0%	12.2%
Eunápolis	BA	-5.4%	8.7%	0.0%	-3.7%
Guanambi	BA	5.5%	5.1%	12.2%	0.0%
Guarapuava	PR	-0.2%	0.0%	12.2%	0.0%
Guarujá	SP	-0.9%	3.8%	0.0%	26.0%
Guarulhos	SP	0.0%	-0.1%	0.0%	3.1%
Ijuí	RS	-2.6%	-2.7%	0.0%	0.0%
Itabuna	BA	-7.1%	9.9%	0.0%	-6.5%
Jaboatão dos Guararapes	PE	2.9%	6.6%	-4.7%	2.3%
Jacobina	BA	-12.7%	2.5%	0.0%	0.0%
Jaraguá do Sul	SC	0.9%	5.1%	7.0%	-6.5%
Jaú	SP	0.1%	-3.5%	0.0%	0.0%
Juazeiro	BA	2.7%	2.3%	7.0%	8.9%
Mauá	SP	-7.0%	2.8%	0.0%	-3.7%
Novo Hamburgo	RS	-2.8%	8.5%	0.0%	0.0%
Osasco	SP	-0.4%	13.6%	7.0%	-3.0%
Passos	MG	-9.1%	4.9%	0.0%	0.0%
Pato Branco	PR	1.5%	4.2%	0.0%	0.0%
Piracicaba	SP	1.0%	2.8%	12.2%	-3.7%
Poços de Caldas	MG	-1.9%	4.0%	12.2%	0.0%

Continue...

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Table 5. Continuation.

Municipality	UF	Number of available SUS beds per student greater than or equal to 5 (five)	Minimum of 17 primary care teams	Existence of CAPS	Teaching hospital or hospital unit with potential for teaching hospital
Rio Claro	SP	-6.1%	7.8%	0.0%	0.0%
São Bernardo do Campo	SP	1.2%	4.5%	4.3%	0.0%
São José dos Campos	SP	-0.2%	11.6%	3.8%	2.6%
São Leopoldo	RS	-7.6%	1.4%	7.0%	0.0%
Sete Lagoas	MG	-1.7%	8.7%	7.0%	0.0%
Três Rios	RJ	-6.0%	4.5%	0.0%	-10.9%
Umuarama	PR	10.5%	3.6%	12.2%	4.9%
Vilhena	RO	2.5%	10.0%	0.0%	-6.5%

Positive CAGR Zero CAGR Negative CAGR.
Source: Prepared by the authors.

It should be noted that, of the 37 municipalities, only two (5.4%), Juazeiro-BA and Umuarama-PR, had a positive CAGR for all the assessed indicators. Four municipalities (10.8%), Erechim-RS, Guanambi-BA, Pato Branco-PR and São Bernardo do Campo-SP, either showed growth over time or guaranteed the same result as at the time of the selection. Finally, 31 municipalities (84%) had one or two negative CAGR among the four indicators.

It is clear that one of the limitations of this study is the fact that we evaluated the results based on secondary data and, therefore, we are subject to the lack of data reliability, precision and integration.

On the other hand, to the best of our knowledge, this is the first study that analyzes the meeting of criteria by the municipalities for the expansion and consolidation of medical schools in the country. Therefore, the present study sheds light on a little-debated but extremely important aspect.

Certainly, the purely quantitative analysis of these indicators is not enough to ensure the quality of training, but, undoubtedly, not having the guarantee of public equipment and health teams weakens the training process, since learning in real practice scenarios is essential in medical undergraduate training.

In a scenario of increasing expansion in the field of medical education in Brazil, paying attention to the meeting of the criteria for opening/operating schools is of fundamental importance to guarantee the quality of training and the provision of health to society.

FINAL CONSIDERATIONS

The aim of this article was to investigate compliance with the criteria established in the first public call by the selected municipalities and with medical schools implemented through the More Doctors Law (LMM). We verified that all the target municipalities maintained compliance with these criteria for the indicators "number of primary care teams", "existence of CAPS" and "teaching hospital", despite the fact that some had a negative growth rate over the analyzed time frame.

For the indicator "number of SUS beds available per student greater than or equal to 5", it is found that there is a weakness in the analysis of this indicator only with public access data. First, because beds from other municipalities in the regional health center could be added to allow meeting this indicator, but information on whether this occurred is not available. Second, because even though the number of beds was already below the metrified one, it was demonstrated in the present study that most of the municipalities had a negative growth rate.

Thus, the importance of establishing a policy for monitoring the criteria that are the responsibility of the municipalities is revealed, such as there is for the follow-up and monitoring of the criteria that are the responsibility of the HEIs.

It is worth noting that this article verified the municipalities selected in the first public call of the LMM. Nevertheless, a second public call for municipalities took place in 2017 and, in 2023, a new list of municipalities pre-selected for the call for private HEIs to operate the medical course was released, bringing together new possibilities for the inclusion of municipalities in the interior, training new doctors and reducing asymmetries in the distribution of these professionals.

That said, it is mandatory to establish an observatory to monitor the minimum conditions of public health equipment in the municipalities where medical schools are located, to ensure practice scenarios and health teams that enable inexorable in-service practices in medical undergraduate courses. After all, the purpose should not only be to increase the number of doctors, but also to ensure quality training for these new doctors. And

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this permeates both the HEIs and the public health equipment of the municipalities.

AUTHORS' CONTRIBUTIONS

Flávia Guimarães Menezes Silva: manuscript writing – proofreading and editing; Paulo André Jesuino dos Santos: visualization and validation; Luiz Fernando Quintanilha: validation and supervision.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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