

Privatization and geographic inequalities in the distribution and expansion of higher nursing education in Brazil

Privatização e desigualdades geográficas na distribuição e expansão do ensino superior de enfermagem no Brasil
Privatización y desigualdades geográficas en la distribución y expansión de la educación superior en enfermería en Brasil

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ABSTRACT

Objectives: to analyze the influence of privatization and geographic inequalities in the distribution and expansion of higher education in nursing in Brazil. **Methods:** a cross-sectional study, with online data of 1,244 courses and 190,610 nursing vacancies, started between 1890 and 2019. Proportions were estimated and differences were verified with statistical tests ($\alpha=5\%$), vacancy rate per 10,000 inhabitants and private ratio/public. **Results:** there was an accelerated, disorderly and heterogeneous growth in the number of courses and vacancies for nursing over 129 years, with strong private influence, favoring their concentration in large urban centers, capitals and richer states. **Conclusions:** the significant expansion of higher education in nursing in Brazil occurred with excessive private supply and unequal distribution between its locations, indicating the need for state regulation in the opening of new courses and vacancies, which can minimize the negative repercussions on the quality of education, health care and workforce imbalances.

Descriptors: Nursing; Schools of Nursing; Educational Institutions; Education, Higher; Privatization.

RESUMO

Objetivos: analisar a influência da privatização e as desigualdades geográficas na distribuição e expansão do ensino superior de enfermagem no Brasil. **Métodos:** estudo transversal, com dados *online* de 1.244 cursos e 190.610 vagas para enfermagem, iniciados entre 1890 e 2019. Estimaram-se proporções e verificaram-se diferenças com testes estatísticos ($\alpha=5\%$), taxa de vagas por 10.000 habitantes e razão privada/pública. **Resultados:** ocorreu acelerado, desordenado e heterogêneo crescimento no número de cursos e vagas para enfermagem ao longo de 129 anos, com forte influência privada, favorecendo a concentração desses em grandes centros urbanos, capitais e estados mais ricos. **Conclusões:** a expressiva expansão do ensino superior de enfermagem no Brasil ocorreu com excessiva oferta privada e desigual distribuição entre suas localidades, indicando a necessidade de regulação estatal na abertura de novos cursos e vagas, o que pode minimizar as repercussões negativas na qualidade do ensino, assistência à saúde e desequilíbrios na força de trabalho.

Descritores: Enfermagem; Escolas de Enfermagem; Instituições de Ensino; Educação Superior; Privatização.

RESUMEN

Objetivos: analizar la influencia de la privatización y las desigualdades geográficas en la distribución y expansión de la educación superior en enfermería en Brasil. **Métodos:** estudio transversal, con datos en línea de 1.244 cursos y 190.610 vacantes de enfermería, iniciado entre 1890 y 2019. Se estimaron proporciones y se verificaron diferencias con pruebas estadísticas ($\alpha = 5\%$), tasa de vacantes por 10,000 habitantes y razón privado/público. **Resultados:** hubo un crecimiento acelerado, desordenado y heterogéneo en el número de cursos y vacantes de enfermería a lo largo de 129 años, con fuerte influencia privada, favoreciendo la concentración de estos en grandes centros urbanos, capitales y estados más ricos. **Conclusiones:** la expresiva expansión de la educación superior en enfermería en Brasil ocurrió con una oferta privada excesiva y una distribución desigual entre sus ubicaciones, lo que indica la necesidad de una regulación estatal en la apertura de nuevos cursos y vacantes, que puede minimizar las repercusiones negativas en la calidad de la enseñanza, la asistencia a los desequilibrios en salud y fuerza laboral.

Descriptorios: Enfermería; Escuelas de Enfermería; Instituciones de Enseñanza; Educación Superior; Privatización.

INTRODUCTION

The supply and distribution of higher education in the health sector is a topic of global debate, as they are associated with socioeconomic development, the quality of health systems and human resource supply to the health labor market⁽¹⁻²⁾.

In Brazil, there has been an important expansion of higher education in the health area, new courses and vacancies have been created and distributed throughout all regions and states, increasing the number of enrollments in the country. This phenomenon has been driven by a combination of factors. These include political interventions and government programs on the reformulation and public financing of higher education, and greater flexibility and relaxation of regulation for opening and increasing the number of courses and vacancies as well as the rules defining the modalities of education⁽²⁾. With this, there was a progressive privatization of higher education as well as for health courses in the country⁽¹⁻³⁾.

For nursing, this process occurred even more intensely, with private initiative being the protagonist of this expansion⁽²⁻³⁾. In 2019, nursing higher education represented the largest offer of courses and vacancies among all health undergraduate students in Brazil⁽⁴⁾, with an immense majority in private Higher Education Institutions (HEIs) (87.8%)⁽²⁾.

However, if, on the one hand, this significant increase in the number of schools and vacancies can be considered positive, leading to access to higher education, on the other hand, it has generated questions about the quality of this teaching. Moreover, this great representativeness has not yet solved the problem of concentration of nurses in certain locations, as it does not guarantee an equitable distribution of nursing education and workforce throughout the national territory^(2-3,5-6). This condition may arise from the fact that the expansion of undergraduate nursing courses and vacancies in Brazil occurred rapidly and with little planning, driven by the private sector to explore market niches, with little adherence to demands and regional differences in health and education, which can lead to negative responses for the entire society and profession.

Most studies that analyze this movement of expansion of undergraduate nursing courses in Brazil tend to emphasize the participation of the private sector, its role, impact and trends in nursing education, but without disaggregating their analyses for the country's regions as well as for the different types and demographic sizes of Brazilian cities^(2,5). Some others even sought to verify this behavior, but only at specific times, or in more recent years, from the 1990s or even only considering a single year^(2-3,5,7-14).

In fact, the understanding of the influence of privatization on the expansion and distribution of this education over several decades is still incomplete, especially since the first nursing course, created in 1890, and what would be the main geographic and demographic characteristics associated with this unequal expansion and distribution over time, in a country of continental dimensions and diversities of types and sizes of cities.

Therefore, we emphasize the importance of research that increases the understanding of the aspects that permeate the expansion and distribution of nursing professionals in Brazil, as well as the factors that have influenced the increase in the labor force in the area, in order to subsidize the planning and effective actions that consider the particularities of these processes in the different regions of Brazil.

OBJECTIVES

To analyze the influence of privatization and geographic inequalities in the distribution and expansion of higher education in nursing in Brazil.

METHODS

Ethical aspects

The research respected ethical issues according to the guidelines described in Resolution 510/16⁽¹⁵⁾. Thus, the review was waived by Institutional Review Board, as it was elaborated with aggregates of secondary data available online, which do not contain confidential information that allows identifying subjects. Thus, the ethical issues, guidelines and norms that regulate research in Brazil were respected.

Study design, period, and location

This is a cross-sectional study, based on secondary data available online in the electronic system of the Brazilian Ministry of Education (e-MEC Registry)⁽¹⁶⁾. The database was collected for undergraduate nursing courses in Brazil was performed on e-MEC portal, in the advanced consultation tab of the e-MEC system (<http://emec.mec.gov.br/>), between July 2019 and March 2021. Data corresponding to the 2010 Census of the Brazilian Institute of Geography and Statistics (IBGE - *Instituto Brasileiro de Geografia e Estatística*) were collected in October 2019, and those referring to estimates for the 2019 population in March 2021 in the IBGE electronic system⁽¹⁷⁾.

Sources, inclusion and exclusion criteria

Also, e-MEC portal was the source for secondary data collection on nursing higher education courses and vacancies. This analysis included only the courses and vacancies in the in-class modality, in teaching and bachelor's degrees, which had their variables updated in July 2019. Then, the courses and vacancies that, according to information from e-MEC portal, until July 2019, had not informed on e-MEC the activities' operation start date were excluded.

Thus, for this study, 1,244 courses and 190,610 respective vacancies related to undergraduate nursing were considered, starting between 1890, the year the first School of Nursing Professional in Brazil was created⁽⁷⁾, and July 2019, the date of obtaining the initial base on e-MEC. Figure 1 describes the stages of data collection and the population used in the research.

Study protocol

From the database obtained on e-MEC portal, the following variables were collected about the undergraduate courses: course operation start (year); institution's administrative category (public or private); type of administration (federal, state and municipal); number of vacancies offered; and course's geographical location. From this last information and from the demographic data available in the IBGE electronic system, course and vacancy location within the FU (Capital, Metropolitan Region (MR) (excluding the capital) and the countryside of the state, the population size of

the cities where the course is located and the vacancies offered (small size: <50,000 inhabitants and demographic density (DD) <80 inhabitants/km², medium size: 50,000 to 100,000 inhabitants or DD ≥80 inhabitants/km², and large size: >100,000 inhabitants), the country's macro-region (North, Northeast, Midwest, Southeast and South) and the density of the number of vacancies offered by 10,000 inhabitants in the country's macro-regions and for the Federative Units (FU) were included as study variables. Following, these data were analyzed considering the institution's administrative nature.

Analysis of results, and statistics

Comparisons of distribution of nursing courses and vacancies were carried out, according to variables related to HEIs and location. Absolute and relative frequencies were presented. The rate of public vacancies, private and total per 10,000 inhabitants was estimated for the FU and macro-regions of Brazil. Also, the private/public ratio of the number of vacancies was calculated. Pearson's chi-square Fisher's exact tests were performed to verify statistically significant differences in the distribution of the variables of interest according to the institution's administrative nature. The differences were considered when p-value <0.05. Data were organized in Microsoft Excel program* and then analyzed in Stata*, version 14.0 (StataCorp LP, College Station, TX, USA).

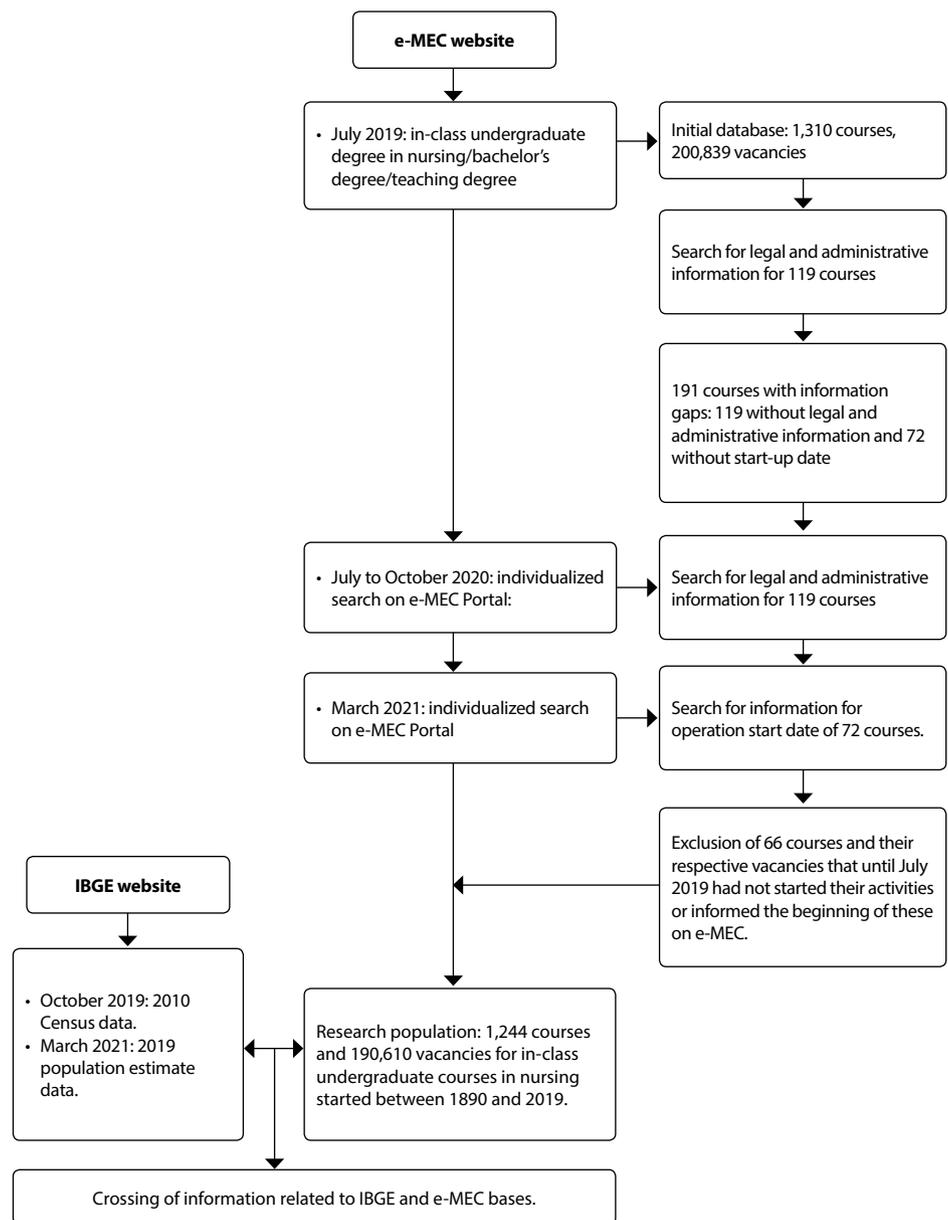
RESULTS

There was a high number of courses and vacancies for undergraduate nursing in the in-class modality over 129 years assessed. Until July 2019, most courses (85.9%) and vacancies (93.6%) were linked to private HEIs, characterizing, in absolute terms, the privatization of nursing education in the country. Only 1.7% of private courses and 1.5% of public courses had been extinguished by 2019.

The first public course was started in 1890, and the private one, in 1939, both in the Southeast, which until then concentrated all courses in the country. In the following years, in the five regions, there was an increase in the number of public courses and a slow growth of private ones. Between 1956 and 1968, there

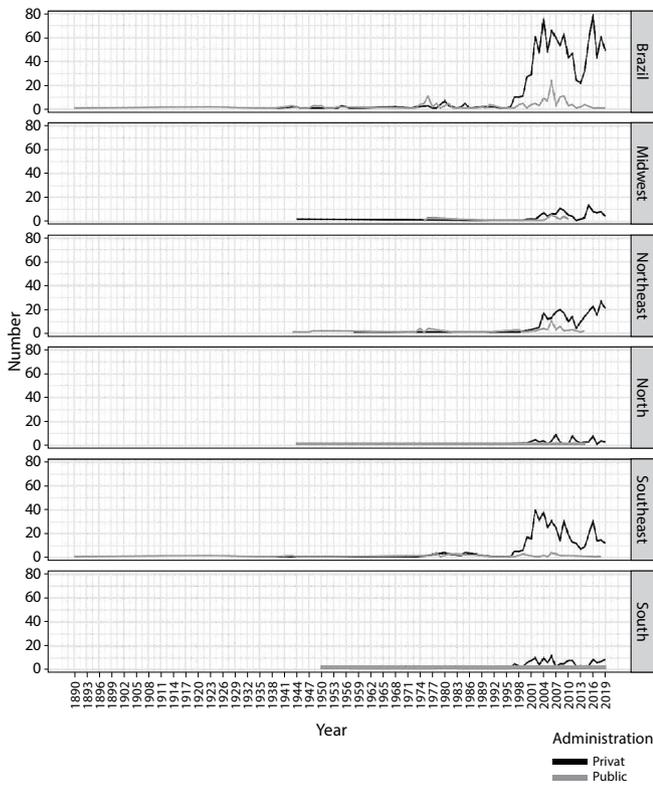
was a slowdown in the beginning of new courses, especially public, with a resumption of growth in the 1970s and 1980s. In the 1980s, the privatization process began. This intensified throughout the 1990s and 2000s. From 1890 to 1997, most courses were still under public management (51.7%), but from 1997 to 2010, an intense process of opening new courses was instituted in all regions of the country, especially private ones (Figure 2).

Until 2006, the South was the second region with the highest concentration of courses. After that year and until 2019, it was the Northeast that held this position. Between 2006 and 2011, most (45.4%) of public courses started in the period were implemented in the Northeast. Between 2011 and 2019, there was a decline in the five regions in the growth of public courses and in the maintenance of the privatization process, with 377 courses started; of these, only 10 were public (Figure 2).



e-MEC – electronic system of the Brazilian Ministry of Education; IBGE – Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística).

Figure 1 - Research flowchart: data collection and population



Source: e-MEC, 2019.

Figure 2 - Evolution of nursing courses according to administrative nature and geographic distribution, 1980-2019

There was a predominance of private courses and vacancies in large urban centers (capitals and MR), with statistical differences in relation to cities in the countryside (p -value<0.05). However, in relative terms, public education was higher in cities in the countryside of the states. Regarding the population size of cities, there was a predominance of courses and vacancies in public and private in large cities (>100,000 inhabitants), but with statistical differences only for the distribution of vacancies (p -value=0.001). Small cities had a lower proportion of courses and vacancies. However, in them, the participation of the public sector was relatively greater than that of the private (Table 1).

Table 2 presents the temporal evolution of the ratio of the number of private/public vacancies. In Brazil, this ratio is currently 16 times and it was higher in capitals and MR (>23.0) than in countryside cities (9.8). Among the population sizes, large cities had a higher vacancy ratio (19.2) against other types of cities (\leq 8.7). In large cities, the private/public ratio after a period of decline in the 1970s went from 8.8 between 1980 and 1989 to 173.3 between 2010 and 2019, while in medium-sized cities it ranged from 10.0 to 32.5 in the same period. In small cities, only in the 21st century did the offer of private vacancies exceed public ones.

There were statistically significant differences in the geographic distribution of courses between regions (p -value=0.001) and vacancies between regions and states in Brazil (p -value=0.001). The Northeast states were the only ones that differed in the number of courses (p -value=0.004), and the South states were the only ones that did not differ in the number of vacancies (p -value=0.446). Until 2019, the Southeast had the highest proportion of total courses (40.8%) and vacancies (45.8%), the highest proportion of courses (42.0%) and vacancies (46.8%) private, and density of vacancies per 10 thousand inhabitants (9.7) greater than the national figure (8.9). In this same region, there are still the states with the highest number of courses and vacancies: São Paulo, Minas Gerais and Rio de Janeiro. The Northeast had the second highest number of courses (26.8%) and vacancies (26.3%) and courses (32.2%) public for graduation. However, the density of vacancies per 10,000 inhabitants was below (8.7) the national average (8.9) (Table 3).

The North had the lowest number of courses (7.5%) and vacancies (7.6%) and lower vacancy density (7.9) than the national (8.9). The Midwest had the highest density of vacancies per 10,000 inhabitants in the country (12.6), being well above the national figure (8.9). In this region, the Federal District is also located, which has more than double the density of vacancies per 10,000 inhabitants in the country (23.2), while the South has the lowest density in the country (5.9). In all regions and states, the density of private vacancies per 10,000 inhabitants was higher than the density of public vacancies for undergraduates in Brazil (Table 3).

Table 1 - Distribution of nursing courses and vacancies, according to the institution's administrative category, Brazil, 1890-2019

Distribution	Courses						p value*	Vacancies						
	Private		Public		Total			Private		Public		Total		p value*
	n	%	n	%	n	%	n	%	n	%	n	%		
Type of administration	1,069	85.9	175	14.1	1,244	100		179,384	93.6	11,235	6.4	190,619	100	
Federal														
State			87	49.7	87	7.0				5,310	47.2	5,310	2.7	
Municipal			72	41.2	72	5.8	---			4,085	36.4	4,085	2.2	---
Private			16	9.1	16	1.3				1,840	16.4	1,840	1.0	
Location of courses	1,069	100			1,069	85.9		179,384	100			179,384	94.1	
Capital														
Metropolitan Region (excluding capital)	383	35.8	52	29.7	435	35.0		86,345	48.1	3,722	33.1	90,067	47.2	
Countryside of the state	216	20.2	22	12.6	238	19.1	0.002	34,079	19.0	1,475	13.1	35,554	18.7	0.001
Population size ¹ of cities in 2010*	470	43.0	101	57.7	571	45.9		58,960	32.9	6,038	53.8	64,998	34.1	
Large														
Medium	784	73.3	117	66.9	901	72.4		149,916	83.6	7,811	69.5	157,727	82.8	0.001
Small	194	18.2	40	22.8	234	18.8	0.203	20,706	11.5	2,412	21.5	23,118	12.1	
Pequeno porte	91	8.5	18	10.3	109	8.8		8,763	4.9	1,012	9.0	9,774	5.1	

Source: e-MEC, 2019.

*Pearson's chi-square test; 1- Small size: <50,000 inhabitants and demographic density (DD) <80 inhabitants/km²; Medium size: 50,000 to 100,000 inhabitants or DD \geq 80 inhabitants/km²; Large: >100,000 inhabitants.

Table 2 - Temporal evolution of the ratio of the number of private/public vacancies in undergraduate nursing courses, according to the cities where the courses are located, Brazil, 1890-2019

Private/public number of vacancies ratio	Course start year										Total
	1890 to 1939	1940 to 1949	1950 to 1959	1960 to 1969	1970 to 1979	1980 to 1989	1990 to 1999	2000 to 2009	2010 to 2019		
Brazil	0.4	0.9	2.0	4.5	0.7	9.2	9.8	19.6	63.4	16.0	
Location of courses											
Capital	0.4	0.8	1.4	4.5	0.7	15.6	21.0	60.9	834.4	23.2	
Metropolitan Region (excluding capital)	0.0	1.1	0.0**	0.0	1.7	45.6	46.7	19.0	115.3	23.1	
Countryside of the state	0.0	0.0	2.4	0.0	0.3	3.5	2.9	10.6	22.3	9.8	
Population size ¹ of cities in 2010*											
Large	0.4	0.9	1.9	4.5	0.6	8.8	10.1	34.6	173.3	19.2	
Medium	0.0	0.0	0.0	0.0	6.0	10.0	12.3	5.0	32.5	8.6	
Small	0.0	0.0	0.0	0.0	0.0	0.0**	0.0	9.0	8.6	8.7	

Source: e-MEC, 2019.

*Pearson's chi-square test; 1- Small size: <50,000 inhabitants and demographic density (DD) <80 inhabitants/km²; Medium size: 50,000 to 100,000 inhabitants or DD ≥80 inhabitants/km²; Large: >100,000 inhabitants. **There is no record of public vacancies in these locations.

Table 3 - Geographical distribution of nursing courses and vacancies, according to the institution's administrative nature, Brazil, 1890-2019

Geographic distribution	Courses ¹						Vacancies ¹						Vacancies/10,000 inhabitants**				
	Private		Public		Overall total		p value*	Private		Public		Total		p value*	Private vacancies		Public vacancies
Region/ Federated Unit	n	%	n	%	n	%		n	%	n	%	n	%		n	%	n
Brazil	1,069	85.9	175	14.1	1,244	100	179,384	93.6	11,235	6.4	190,619	100	8.4	0.5	8.9		
Norte	72	6.7	21	12.0	93	7.5	12,805	7.1	1,672	14.9	14,477	7.6	7.0	0.9	7.9		
Acre	2	0.2	2	1.1	4	0.3	330	0.2	60	0.5	390	0.2	3.7	0.7	4.4		
Amazonas	9	0.8	4	2.3	13	1.0	4,205	2.3	246	2.2	4,451	3.3	10.1	0.6	10.7		
Pará	25	2.3	6	3.4	31	2.5	4,200	2.3	366	3.3	4,566	2.4	4.9	0.4	5.3		
Rondônia	18	1.7	1	0.6	19	1.5	1,990	1.1	30	0.3	2,020	1.1	11.2	0.2	11.4		
Roraima	2	0.2	2	1.1	4	0.3	400	0.2	180	1.6	580	0.3	6.6	3.0	9.6		
Tocantins	13	1.2	3	1.7	16	1.3	1,230	0.7	640	5.7	1,870	1.0	7.8	4.1	11.9		
Amapá	3	0.3	3	1.7	6	0.5	450	0.3	150	1.3	600	0.3	5.3	1.8	7.1		
Nordeste	270	25.3	65	36.6	334	26.8	46,472	25.9	3,619	32.2	50,091	26.3	8.1	0.6	8.7		
Alagoas	16	1.5	3	1.7	19	1.5	2,742	1.5	140	1.2	2,882	1.5	8.2	0.4	8.6		
Bahia	77	7.2	9	5.1	86	6.9	12,410	6.9	526	4.7	12,936	6.8	8.2	0.4	8.6		
Ceará	41	3.8	6	3.5	47	3.8	6,610	3.7	410	3.6	7,020	3.7	7.2	0.5	7.7		
Maranhão	24	2.2	16	9.1	40	3.2	3,576	1.9	775	6.9	4,351	2.3	5.0	1.1	6.1		
Paraíba	18	1.7	6	3.4	24	1.9	3,660	2.1	410	3.7	4,070	2.1	9.1	1.0	10.1		
Pernambuco	48	4.5	7	4.0	55	4.4	9,524	5.4	465	4.1	9,989	5.3	9.7	0.5	10.2		
Piauí	20	1.9	7	4.0	27	2.2	2,725	1.5	390	3.5	3,115	1.6	8.3	1.2	9.5		
Rio Grande do Norte	13	1.2	7	4.0	20	1.6	2,445	1.4	358	3.2	2,803	1.5	7.0	1.0	8.0		
Sergipe	13	1.2	3	1.7	16	1.3	2,780	1.5	145	1.3	2,925	1.5	12.1	0.6	12.7		
Sudeste	464	43.4	43	24.6	507	40.8	83,969	46.8	3,328	29.6	87,297	45.8	9.3	0.4	9.7		
Espírito Santo	23	2.2	2	1.1	25	2.0	2,420	1.4	110	1.0	2,530	1.3	6.0	0.3	6.3		
Minas Gerais	134	12.5	12	6.9	146	11.7	16,280	9.1	862	7.7	17,142	9.0	7.6	0.4	8.0		
Rio de Janeiro	96	9.0	7	4.0	103	8.3	18,407	10.2	598	5.3	19,005	9.9	10.2	0.3	10.5		
São Paulo	211	19.7	22	12.6	233	18.7	46,862	26.1	1,758	15.6	48,620	25.6	10.0	0.4	10.4		
Sul	152	14.2	24	13.7	176	14.1	16,571	9.3	1,275	11.3	17,846	9.3	5.5	0.4	5.9		
Rio Grande do Sul	52	4.9	7	4.0	59	4.7	5,645	3.2	447	4.0	6,092	3.2	4.9	0.4	5.3		
Santa Catarina	39	3.7	5	9.9	44	3.5	3,880	2.2	279	2.4	4,159	2.1	5.4	0.4	5.8		
Paraná	61	5.7	12	6.9	73	5.9	7,046	3.9	549	4.9	7,595	4.0	6.1	0.5	6.6		
Centro-Oeste	111	10.4	23	13.1	134	10.8	19,567	10.9	1,341	11.9	20,908	11.0	11.8	0.8	12.6		
Goiás	42	3.9	8	4.6	50	4.0	6,704	3.7	480	4.3	7,184	3.7	9.5	0.6	10.1		
Mato Grosso do Sul	15	1.4	4	2.3	19	1.5	2,500	1.4	190	1.7	2,690	1.4	9.0	0.7	9.7		
Mato Grosso	24	2.6	7	4.0	31	2.5	3,425	1.9	410	3.6	3,835	2.0	9.8	1.2	11.0		
Distrito Federal	30	2.8	4	2.3	34	2.7	6,938	3.9	261	2.3	7,199	3.8	22.3	0.9	23.2		

Source: e-MEC, 2019.

*Pearson's chi-square test; 1- Difference in the distribution of courses (p-value=0.001) and vacancies (p-value=0.001) between regions;

**To calculate the vacancy rate/10,000 inhabitants, the estimate for the 2019 population reported by the IBGE and the vacancies in activity in the same year were considered.

DISCUSSION

At the beginning of the 19th century, the urbanization process experienced more intensely by the Southeast influenced the creation of the first nursing schools in the region⁽⁸⁾. It contributed to the first

nursing course, started in 1890 at the Professional Nursing School in Rio de Janeiro⁽⁷⁾, until mid-1939, the Southeast also concentrated all the first undergraduate courses initiated in the country.

After that, there is an increase in new courses in all regions of Brazil, with a slowdown in this growth between the 1950s and

1960s. This phenomenon was also perceived in the other areas of higher education as a consequence of the political and ideological conflicts, which interrupted the democratic process in the country, favored the crisis at the Brazilian university and neutralized the growth of higher education observed in previous decades⁽⁹⁾.

This context leads to the perception that the expansion of higher education in nursing in Brazil is not processed in isolation, but associated with or due to the dynamics of the country's development, with the same socioeconomic and ideological determinants.

Already in the 1970s, there was the resumption of the course expansion, with parallel growth of private participation in the area, which had also been described for the other areas of higher education in Brazil⁽¹⁸⁾. Despite this increase, authors portray the impact of several events on the resumption of the expansion observed in the period, including the influence of the University Reform of 1968, the implementation of a program developed by the Department of University Affairs of the Ministry of Education and Culture (DAU/MEC) and the creation of the Educational Credit Program (*Programa de Crédito Educativo*)⁽¹⁸⁾.

The exponential creation of new courses and vacancies observed since the 1990s, mainly between the years 1997 and 2010, was primarily commanded by the expansion of private HEIs, which represented 87% of this increase. Having the direct influence of the legal frameworks initiated in this period. It was highlighted the creation of the Unified Health System (SUS - *Sistema Único de Saúde*) and its respective implementation, through an extensive network of services at different levels of complexity, which increased the supply of vacancies in the labor market for health professionals, attracting an increasing number of people interested in the area, emerging niches of opportunity in the education and health market, who contributed to the creation of new nursing courses⁽¹⁰⁾.

In the education sector, the Brazilian National Education Guidelines and Bases Act (LDB - *Lei de Diretrizes e Bases da Educação Nacional*) of 1996 liberalized the provision of higher education by the private sector, causing substantial changes in the organization and functioning of the country's national higher education system^(1,18), favoring the start of private courses observed in the 1990s and contributing to that, since 1998, the number of private courses exceeded the number of courses linked to public HEIs. Together with these policies, other legal instruments implemented by the government directly favored the expansion of the private sector, including the University for All Program (PROUNI - *Programa Universidade para Todos*) and the Higher Education Student Financing Fund (FIES - *Fundo de Financiamento de Estudante de Ensino Superior*)^(1,18).

These policies implemented by the State, over the years, helped to shift the responsibility of higher education to free private enterprise⁽¹¹⁾, cooperating, in a way, with the drastic reduction of state resources for the expansion and maintenance of public HEIs, favoring the disappearance of the idea of a public university, free and based on teaching/research/extension^(1,18).

In this follow-up, private higher education had facilitated its expansion, which occurred at an accelerated pace. Business conglomerates with high trading capacity were formed, which helped transform education into a marketable and priced business model as commodity in the stock market^(1,18-20).

Thus, in 2019, the private sector already accounted for 88% of HEIs and 75% of enrollment in the higher education system and 84.5% of health courses⁽⁴⁾. Nursing degree, up to the same year, had a large and expressive number of 1,069 (85.9%) courses and 179,384 (93.6%) vacancies offered by the private school network, corroborating the disparity between public and private education, pointed out in previous studies that had already highlighted the trend of privatization of higher education for nursing in the country^(3,11).

The private expansion in higher education in nursing brings another important aspect to be discussed the expansion of private courses for graduation in the distance learning modality. By 2020, 82,000 vacancies were already offered in this modality and exclusively by private HEIs. However, this expansion has been contrary to the recommendations of the Federal Nursing Council and the Brazilian Nursing Association (*Associação Brasileira de Enfermagem*), as they are contrary to the guidelines of the Brazilian National Guidelines and Curricula of undergraduate nursing courses in Brazil. Moreover, we emphasize the concern for the expansion of the distance learning modality within the profession, because nursing education has characteristics related to the technical qualification of these professionals and to human relations within the profession, which can contribute to loss of quality in care and consequent devaluation of these professionals⁽²¹⁾.

Still on the increase of undergraduate courses, over 10 years, this has been standing out among the health courses with the highest number of enrolled and incoming⁽⁴⁾. However, in 2019, even with an expressive number of vacancies in activity and 138,449 freshmen, only 41,264 students completed the course in the same year⁽⁴⁾. The disproportion between the number of freshmen and graduates brings another concern to the area, the great dropout of students mainly in private HEIs for graduation, pointing out, therefore, the educational system limitations, which apparently expands access to higher education in nursing, but does not guarantee student permanence until the course completion^(3,12).

In relation to the expansion of public education for nursing, there was a resumption in growth between 2006 and 2011, with a higher proportion in the Northeast, one of the most privileged by the Program for Restructuring and Expansion of Federal Universities (Reuni - *Programa de Reestruturação e Expansão das Universidades Federais*)⁽²²⁾. This program resumed the growth of public education and sought to increase access to higher education through the expansion of federal HEIs, with the creation of new institutions, vacancies and courses and expansion of the existing^(19,23), contributing to the federal HEI being responsible for about half of courses (49.7%) and vacancies (47.2%) offered by public HEIs for nursing in Brazil.

Regarding the distribution of courses and vacancies, historically, undergraduate courses linked to the private network have a higher concentration in the South and Southeast^(3,18,24). However, our findings indicate that, despite the maintenance of important distortions between the distribution of undergraduate health courses in Brazil, there is a trend in deconcentration of the offer of private courses in this area, characterized by the increase in the relative participation of other regions. There was a highlight in the growth of courses observed in the Northeast, which presented the highest proportion of courses (36.6%) and

vacancies (32.2%) public and the second highest proportion of courses (25.3%) and vacancies (25.9%) in private HEIs until 2019. This change, in part, reflects the insertion of policies of democratization of access developed by the government that prioritized public expansion and the reduction of regional asymmetries, as well as the economic development observed in the region⁽²²⁾.

Another finding was the fact that the state of Maranhão (9.1%) emerges with the second highest concentration of public nursing courses in the country, behind only the state of São Paulo (12.6%). However, in the general proportion of public and private courses, the state does not stand out, also presenting low density of vacancies per 10,000 inhabitants and still being among the lowest percentages of nurses per inhabitant⁽²⁵⁻²⁶⁾.

However, corroborating other studies, even though this trend of deconcentration of undergraduate courses in the country is already observed, the heterogeneous distribution of courses and vacancies for undergraduate nursing in Brazil still prevails^(11,13) configured by the geographic inequalities observed in their distribution in the regions, especially in North, which continues to present the lowest offer of courses (7.5%), vacancies (7.6%) and density of vacancies per 10 thousand inhabitants below the national average. Meanwhile, the Southeast holds the majority of public (40.8%) and private (45.8%) courses in the country and density of vacancies per 10,000 inhabitants above the national average.

Also in this context, the Southeast, Northeast and Midwest have the highest vacancy densities for nursing per 10,000 inhabitants in Brazil, which seems to have repercussions on variations in the distribution of nurses within the country, as these regions also have the highest densities of these professionals per population in the country^(5,25).

These inequalities in the distribution of courses and vacancies were not present between the regions, but they also happen within them, when analyzing the North, which, even with a density of vacancies below the national level, has states well above this average, such as Tocantins, which also stands out among the states with the highest number of nurses per population in Brazil⁽²⁵⁻²⁶⁾.

In relation to the most current scenario on the distribution and importance of these professionals, the COVID-19 pandemic has undoubtedly exposed how essential nursing workers are, making the profession go from being devalued to the protagonist of the fight against the new coronavirus. However, it brought up a number of chronic problems faced by the profession (workload, lame wages and unhealthy working conditions). It also presented new challenges, such as the impacts on training generated by the pandemic, gaps in training and distribution of these professionals in regions of Brazil, as evidenced by the lag of these professionals in more remote regions of Brazil^(5,27).

Geographical inequities were observed in the distribution of courses and vacancies for nursing supported by private education. Although all regions had a higher supply of privately held education, the Southeast alone concentrated almost half of all courses (43.4%) and private (46.8%) courses in the country. The states of this region also represented the highest concentrations, respectively, of private courses and vacancies: São Paulo (19.7%; 26.1%), Minas Gerais (12.5%; 9.1%) and Rio de Janeiro (9.0%; 10.2%). This situation reaffirms the panorama evidenced in other studies and reflects the regional inequalities, resulting from the region

presenting a higher concentration of Gross Domestic Product, the majority of the Brazilian population, the labor market, greater infrastructure of health services and having experienced more intense industrialization and urbanization processes prior to those in other regions and states^(5,13).

The great representativeness of private education for nursing in Brazil, over the years, was responsible for the largest number of undergraduate courses and vacancies in large urban centers, especially in the capitals. Studies indicate that the offer of health degrees seems to be more influenced by the dynamics of socio-economic, political and market factors than on elements related to the organization and planning of the health sector, which may contribute to maintaining distortions in the distribution of nurses throughout the country^(5,28).

Thus, bringing up the debate on the weaknesses of the authorization and regulation processes for undergraduate nursing courses in the country, currently, there is no more effective participation of councils and professional entities in the area in decision-making regarding the opening of new courses for graduation or maintenance. There is also no effective survey in the national territory of the labor market's real needs that precede the creation of undergraduate courses. Although the legislation requires assessment by the government and the State to monitor the evolution of education, with periodic censuses and assessments of courses and student performance, there is no direction on the part of the government in the creation of these courses. This task has always been restricted to the HEIs themselves. In the case of private HEIs, they have complete freedom to follow the education market guidelines⁽¹⁴⁾.

Nursing education privatization has been presenting itself as a reflection of the conformation of the educational system in the country, which starts to present growth in supply, with the indiscriminate opening of new courses, without considering the specific needs and demands of each region, causing regional and intra-regional imbalance in this supply, which contributes to the uncontrolled proliferation of undergraduate and HEI courses and vacancies, increasingly distant from the idea of a university, by creating isolated courses without standards reasonable quality^(11-12,18,20).

When considering quality of teaching, studies also indicate that the significant increase in private higher education presents a mismatch between quality and quantity, in the understanding that the modality of public education, especially federal universities, always performs better than private ones^(14,21,29). Moreover, although there are some elite private universities, in general private HEIs serve a mass clientele that is not always seen as prestigious, as, in part, it offers access to students who have not successfully entered public educational institutions and operate in mostly as a business model based on the logic of immediate profit, in which professors have little influence and students are seen as consumers^(21,29). This directly affects the innovation and qualification of these trained professionals and as a result perpetuates the dominance of profitable private universities of low quality.

In this sense, understanding that the quality of education can directly interfere in the health system⁽¹⁸⁻²⁰⁾, policies that regulate private participation in increasing the offer of higher education are increasingly necessary, especially from publicly traded institutions and large educational groups.

Study limitations

The study presents some limitations, such as those inherent to cross-sectional studies and those related to the secondary base used. Data incompleteness on e-MEC was verified for some HEIs, especially the information of the type of academic-administrative classification (university center, university, college and federal institutes)⁽¹⁸⁾, which implied the realization of individualized search in other tabs on e-MEC portal to fill these gaps. However, none of these limitations were preventing the research

Contributions to nursing

The results contribute as a comprehensive source of knowledge about the secular trajectory of the expansion and distribution of nursing education in Brazil. Therefore, they can support policies and measures to correct the identified disparities and propose reflections and debates about the implications they bring to the profession, education, health and the labor market. The inequitable scenario of distribution of courses and vacancies reflects the rapid and disorderly way in which this expansion occurred thanks to the strong privatization process of higher education for graduation in Brazil.

CONCLUSIONS

The significant expansion of higher education in nursing in Brazil occurred with excessive private supply and unequal distribution among the various locations. This scenario indicates the need for state regulation for the opening of new courses and vacancies, as well as for their maintenance, which can minimize the negative repercussions on quality of education, health care and imbalances in the workforce.

The study exposed the significant increase in nursing courses and vacancies over 129 years, especially over the last 25 years. However, the public sector's role was quite timid when compared

to the significant private increase in all regions of Brazil. This misstep in the expansion of supply indicates the strong influence of the market in the creation and distribution of nursing courses and vacancies in the country. The exponential privatization favored the concentration of this teaching in large urban centers, capitals and large population cities.

Therefore, this expansion does not seem to solve the unequal distribution of professionals within the various locations of Brazil, and, at the same time, can amplify imbalances in supply and demand in specific areas. More central and rich areas can generate a greater supply of trained professionals and worse employability, while in the most remote ones, their deprivation can be maintaining, perpetuating regional inequities. Although the State has made some efforts to reduce regional asymmetries, they are still limited and have not been effective in deconcentrating the privatization apparatus responsible for the broad training of nursing professionals in the country. Thus, there is an urgent need for the State to order and regulate the training of human resources in health in Brazil, reducing the poor distribution of courses and vacancies between regions and types of cities, especially for those less populated and less developed in Brazil.

SUPPLEMENTARY MATERIAL

This article is part of an academic production developed by the Graduate Program in Nursing of the *Universidade Federal do Maranhão*, entitled "*Expansão e distribuição da educação superior em Enfermagem no Brasil: desafios e perspectivas*". The data presented in the survey is available at the SciELO data repository (<https://doi.org/10.48331/scielodata.JQDPXA>).

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