



SPACIAL DISTRIBUTION OF NURSING GRADUATE COURSES
DISTRIBUIÇÃO ESPACIAL DOS CURSOS DE GRADUAÇÃO EM ENFERMAGEM
DISTRIBUCIÓN ESPACIAL DE LOS CURSOS DE GRADUACIÓN EN ENFERMERIA

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ABSTRACT

Objective: to perform a mapping of the spatial distribution of higher education institutions offering nursing undergraduate courses. **Method:** this is a quantitative, descriptive and exploratory study. Data were collected through interactive consultations with the e-MEC e-MEC portal. It was possible to generate a Geographic Database (BDGEO), by indexing the geographical coordinates - the latitude and longitude of the HEIs, and the results are presented in figure form. **Results:** it is evident from the results that the courses are distributed as follows: the Southeast region has 43% of the total undergraduate Nursing courses in the country followed by the Northeast region, with 24.12%; of the South region, with 14.61%; of the Center-West, with 10.96%, and the North Region, with 7.3% of the courses. **Conclusion:** a mapping showed a disparity between the regions in relation to the distribution of higher education institutions offering nursing undergraduate courses, with the highest concentration in regions with higher development, making it difficult to train new nurses in the regions economically disadvantaged states. **Descritores:** Health Education; Nursing; Higher Education; Vocational Training; Health Education; Nursing Education.

RESUMO

Objetivo: realizar um mapeamento da distribuição espacial das instituições de ensino superior que oferecem cursos de graduação em Enfermagem. **Método:** trata-se de um estudo quantitativo, descritivo e exploratório. Realizou-se a coleta de dados, por meio de consultas interativas ao sistema virtual do portal do Ministério da Educação, o e-MEC. Permitiu-se gerar um Banco de Dados Geográfico (BDGEO), por meio da indexação das coordenadas geográficas - a latitude e longitude das IES's, e, os resultados se apresentam em forma de figura. **Resultados:** evidencia-se, pelos resultados, que os cursos se distribuem da seguinte forma: a região Sudeste possui 43% do total de cursos de graduação em Enfermagem do país seguida da região Nordeste, com 24,12%; da região Sul, com 14,61%; do Centro-Oeste, com 10,96%, e da região Norte, com 7,3% dos cursos. **Conclusão:** demonstrou-se, no mapeamento, uma disparidade entre as regiões em relação à distribuição das instituições de ensino superior que oferecem cursos de graduação em Enfermagem, com a concentração mais alta em regiões com maior desenvolvimento, dificultando a formação de novos enfermeiros nas regiões dos Estados economicamente desfavorecidos. **Descritores:** Educação em Saúde; Enfermagem; Ensino Superior; Formação Profissional; Ensino em Saúde; Educação em Enfermagem.

RESUMEN

Objetivo: realizar un mapeamiento de la distribución espacial de las instituciones de enseñanza superior que ofrecen cursos de graduación en Enfermería. **Método:** se trata de un estudio cuantitativo, descriptivo y exploratorio. Se realizó la recolección de datos, por medio de consultas interactivas al sistema virtual del portal del Ministerio de Educación, el e-MEC. Se permitió generar un Banco de Datos Geográficos (BDGEO), por medio de la indexación de las coordenadas geográficas - la latitud y longitud de las IES's, y, los resultados se presentan en forma de figura. **Resultados:** se evidencia, por los resultados, que los cursos se distribuyen de la siguiente forma: la región Sudeste posee el 43% del total de cursos de graduación en Enfermería del país seguida de la región Nordeste, con el 24,12%; de la región Sur, con el 14,61%; del Centro-Oeste, con el 10,96%, y de la región Norte, con el 7,3% de los cursos. **Conclusión:** se demostró, en el mapeamiento, una disparidad entre las regiones en relación a la distribución de las instituciones de enseñanza superior que ofrecen cursos de graduación en Enfermería, con la concentración más alta en regiones con mayor desarrollo, dificultando la formación de nuevos enfermeros en las regiones de los Estados económicamente desfavorecidos. **Descritores:** Educación en Salud; Enfermería; Enseñanza Superior; Formación Profesional; Enseñanza en Salud; Educación en Enfermería.

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INTRODUCTION

Higher education institutions (HEIs) are considered to exert a great influence on society and that the growth of HEIs in the country does not come exclusively from the processes of technological innovation and the diffusion of science and culture, but mainly from their impacts on training, methods of modernization and improvement of society. Thus, undergraduate courses are created to meet a societal need, as in the specific case of the Nursing course.¹

It is historically verified that Nursing education in Brazil was only started in 1890, 82 years after the creation of the first higher education schools, through Decree Num. 791, with the purpose of instructing nurses to work in hospices, civilian and military hospitals, along the lines of existing schools in France.²

The expansion of the Nursing course was observed since 1968, with Law 5,540 - the Higher Education Reform Law, which, in addition to ensuring its expansion, also implemented postgraduate studies at two levels: Master's and Ph.D.³

In general, Nursing is a profession that has continually deconstructed and built its history, freeing itself from past paradigms and inserting more adequate ones with its scope, adding elements such as ideas, the development of the body politic -social and the formation of opinions. The linkage of Nursing to society is permeated by the concepts that have developed in the course of its historical trajectory and which currently influence the conception of its concept and its meaning as a profession of health.⁴

The systematization of nursing in the colonial period began in Brazil, extending until the nineteenth century, when the care of the sick was carried out, in most cases, by slaves, who helped the Jesuits, who also practiced the functions of doctors and nurses.⁵

It is pointed out that, prior to the modernization of Nursing in the country, the Brazilian Nursing was in charge of sisters of charity and lay people, almost exclusively at the mercy of their routine, forged in the confrontation of the concrete conditions of the customs of the Sacred Houses of Mercy scattered around Brazil.⁶

Thus, by means of the approval of Decree 17.268 / 1926, Nursing education in the country, and in 1931, by Decree 20.109 of the Presidency of the Republic, the Ana Neri School was officially considered a reference standard for the whole of Brazil.⁷

It is verified that, until 1947, there were 16 nursing undergraduate courses in the country. This reality was changed with the publication of Law No. 775, in 1949, responsible for the expansion of the number of Nursing schools, since it made it compulsory to include the Nursing course in every university or medical school. This process was concluded with the registration of 39 higher education courses in Nursing in 1964, resulting in an increase of 43.75% in 17 years¹ - growth that culminated with the founding of the Brazilian Nursing Association (ABEn).

ABEn was created on August 26, 1926, for the purpose of joining the International Council of Nurses (ICN). This denomination continued until August 7, 1944, when the reform of the entity's statute was renamed the Brazilian Association of Graduated Nurses (ABED). It is known that, in 1954, the ABED was once again called the Brazilian Nursing Association, a name that remains to this day.⁸

ABEn is identified as the first professional nursing organization in Brazil. It is observed that, in the 70's, ABEn conquered the formation of the Nursing Councils and, later, the Nurses' Unions. The increase of class entities in Nursing is considered, as in any other profession, as a consequence of their own growth.⁹

Finally, ABEn is defined as a non-profit civil society composed of nurses and nursing technicians. It is, more specifically, an entity of private law, of a scientific and assistance nature, governed by the provisions of the statute, general regulation or bylaws.¹⁰

On March 21, 1947, during the First National Nursing Congress, by Edith de Magalhães Fraenkel, a draft was widely discussed and approved by the participants, which requested the Ministry of Education and Health to create the Federal Council of Nursing (COFEN), with the objective of regulating and supervising the teaching and practice of the profession.⁷

It was originated, years later, by Federal Law No. 5,905, of July 12, 1973, to the Federal and Regional Nursing Councils, representing a great landmark for the history of Brazilian Nursing; the Federal Council represents the highest normative body and the Regional Nursing Councils (Corens) are responsible for the executive function. It is verified that the two, united, form the system Cofen/Councils of the institution.¹¹

Among the main achievements of the Cofen / Corens system are the intense political work for the regulation of Law 7,498 of June 25, 1986, the Law of Professional Exercise of

Nursing, the institution of a project to supervise the exercise of Nursing and the elaboration of the Code of Ethics of Nursing Professionals.¹¹

With the National Education Guidelines and Bases Law (LDB), nº 9.394 / 96, innovations and changes in national education were instituted, with the restructuration of undergraduate courses, with the extinction of minimum curricula and the adoption of curricular guidelines for each course.¹²

The training of health professionals, among them, the nurse, according to the National Curricular Guidelines, according to Resolution CNE / CES nº 3, of November 7, 2001, is mandated that these workers develop actions related to the the right of the citizen to health, given the aspects of the labor market, the functions of the Unified Health System and its principles.¹³

In 2014, it was possible to reformulate the curricular guidelines, that the nurse presented a generalist, humanistic, critical and reflexive profile, focusing on the curricular stages in the hospital, outpatient, basic health services network and also in complementary activities.¹⁴

According to Resolution CNE / CES nº 4, of April 6, 2009, the minimum workload for several undergraduate courses in the health area was established, among them, Nursing, in four thousand hours and ten semesters classes.¹²

It is observed that the Nursing teaching area has undergone changes in the country related to the obligations of its function in the training of human resources with the profile appropriate to the health requirements of the population and the authenticity of their role in the elaboration of modern knowledge and of utility to society.³

It is considered that research in the area of Nursing in Brazil has evolved, both in quantity and in quality. It is pointed out in the literature that this is due to the expansion and advancement of postgraduate courses (masters, doctorates) and also to undergraduate education, since students are induced, in different ways, to propose and to conduct new projects.¹⁵

It can be seen, therefore, that Nursing is a growing growing profession, currently mostly by younger people. As a possible cause for this growth, the number of new courses offered in recent years is indicated, as a significant increase in the number of graduates in Brazil.¹⁶ This growth jump was observed, initially, between the 30s and 40s, when 23 new Nursing schools were created to attend to

the hospital labor market, which required the hiring of nurses, as a result of the time.¹⁷ In 1991, there was another period marked by the significant increase in the number of nursing undergraduate courses. This year, 106 courses were registered, and in 2011 this number was 799, showing an expansion of 645.28%. It was noted that this increase was more vigorous from the LDB in 1996, mainly in the Southeast region, which had 43% of the country's undergraduate nursing courses, followed by the Northeast region, which now has 24, 12.6% in the South, 14.61% in the Midwest, and 10.96% in the North Region, with only 7.3% of the courses.³

OBJECTIVE

- To carry out a mapping of the spatial distribution of higher education institutions offering nursing undergraduate courses.

METHOD

It is a quantitative, exploratory, descriptive study, with data collection obtained through interactive consultations to the virtual system of the portal of the Ministry of Education, the e-MEC (emec.mec.gov.br), of institutions undergraduate courses in Nursing registered in Brazil. With the data, it was possible to generate a Geographic Database (BDGEO), by indexing the geographical coordinates - the latitude and longitude of HEIs that have Nursing courses in the country.

The spatial distribution of HEIs was represented by thematic maps grouped by regions and states. It should be noted that some information could not be considered due to the lack of information available on the portal. Data were collected from April to May 2016.

The survey was carried out in relation to the quantitative of the HEIs with undergraduate Nursing courses in Brazil registered in the e-MEC in two phases.

The following data were collected in the first phase: the name of the institution; the name of the maintainer; the administrative category of HEIs; the academic organization of HEIs; the address; the Zipcode; the neighborhood; The telephone; the municipality and the State. A datasheet was then obtained in the Microsoft Excel 2013 program.

In the second phase, a Geographic Data Bank (BDGEO) was created by indexing the geographic coordinates in HEIs that have Nursing courses in Brazil, from which the spatial distribution of the institutions was obtained through thematic maps.

It was necessary for the BDGEO to carry out a manual consultation at each address of the HEIs, using the Google Maps virtual system, collecting the latitude and longitude of each address and extracting the X and Y coordinates of each location. The complex step was considered, since some addresses did not present the exact location of the HEI, being necessary to find the point of the correct location.

Data was organized into a spreadsheet in Microsoft Excel 2013, descriptive and inferential statistics were recorded, and spatial analyzes were carried out using georeferencing from the BDGEO with the production of thematic maps using ARCGIS 10.5 software.

It should be noted that, because it is documentary data of free access and available on the Internet, there was no need to submit to the Committee on Ethics and Research in Human Beings.

RESULTS

There are currently 795 higher education institutions with undergraduate courses in Nursing in Brazil, according to e-MEC, during the period studied. The research findings were organized as follows: number of HEIs with Nursing course in each Brazilian region; number of HEIs with nursing course per Federative Unit and punctual distribution of HEI's with undergraduate Nursing course by regions of Brazil.

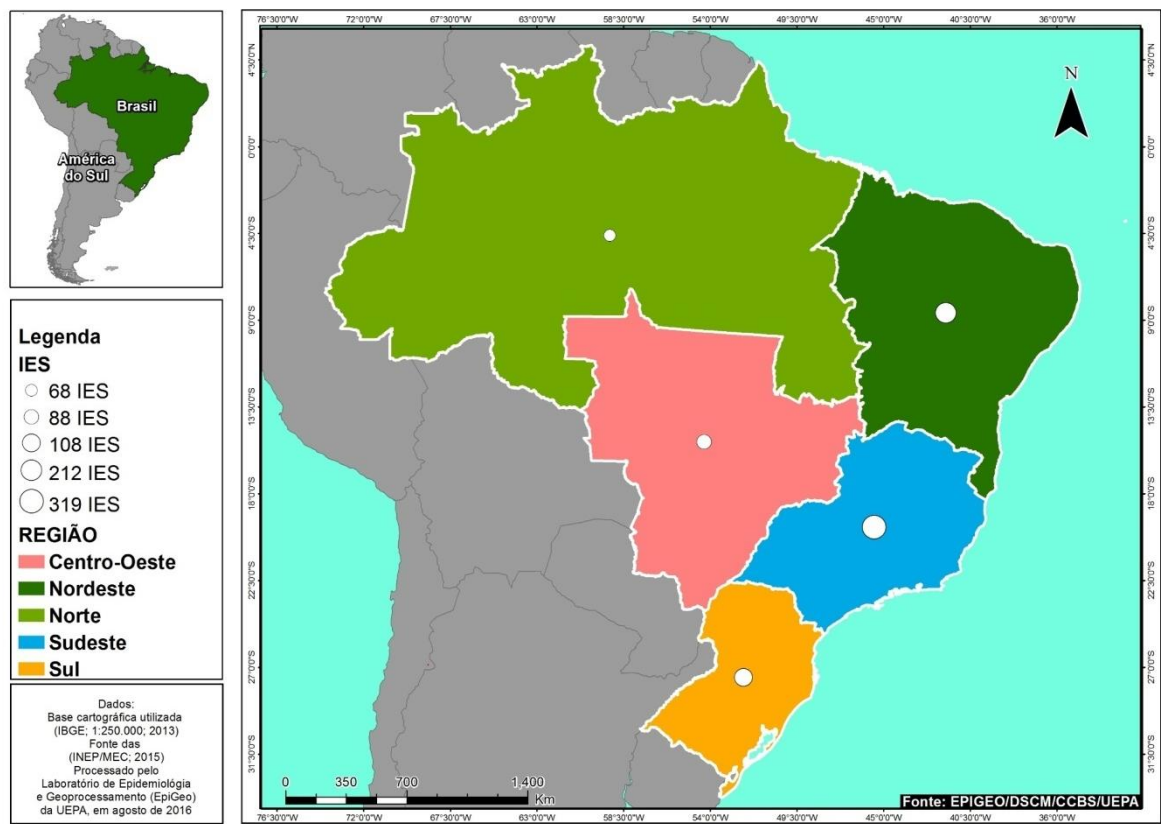


Figure 1. Number of higher education institutions that have the Nursing course by Brazilian regions. Belém (PA), Brazil, 2016.

Figure 1 shows the largest number of HEI's in the Southeast region, with 319, followed by the Northeast region, with 212, the South

region, with 108, the Central-West region, with 88, and, finally, region, with 68.

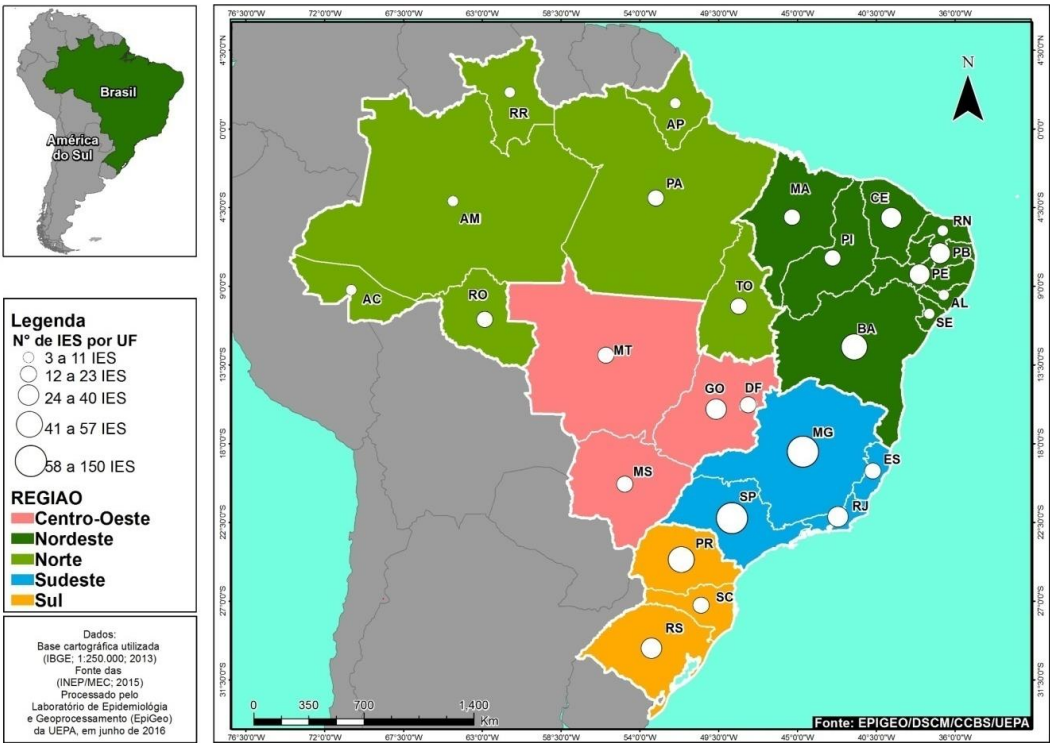


Figure 2. Number of higher education institutions that have the Nursing course, by State and in the Federal District, in Brazil. Belém (PA), Brazil, 2016.

It can be seen in the distribution of the HEI's that have the Nursing course, by the Federative Unit (FU), that is the largest concentration in the Southeast region, in the State of Minas Gerais; followed by the

Northeast region, in the State of Bahia; the South region, in the State of Paraná; the Central-West region, in the State of Goiás and, finally, the North region, in the State of Roraima (Figure 2).

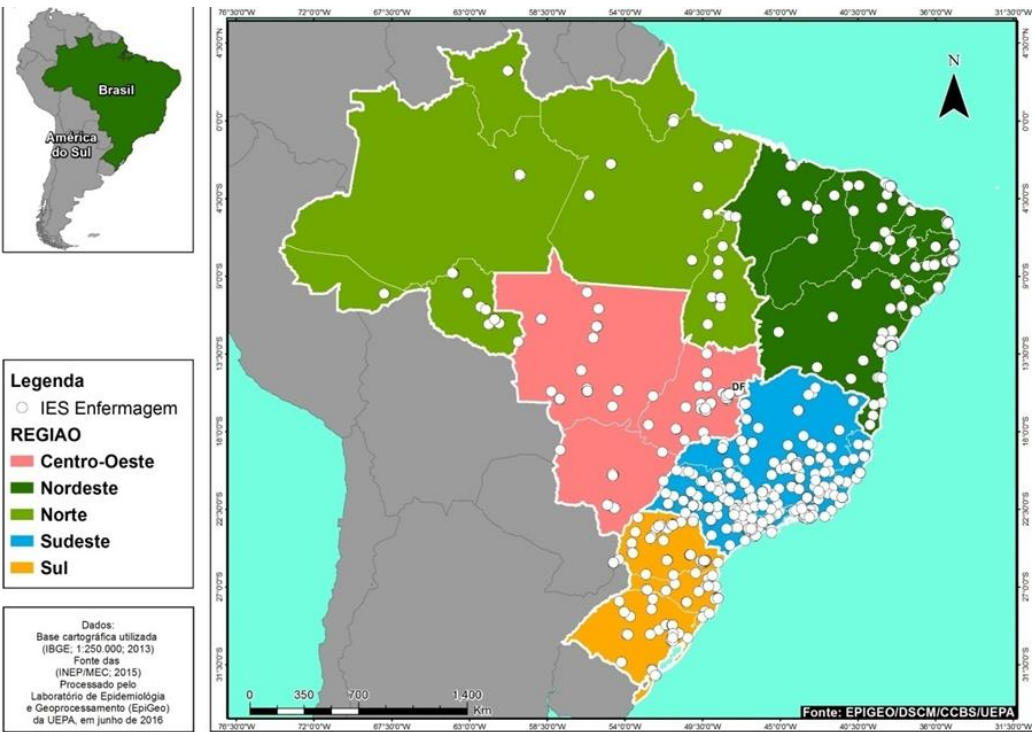


Figure 3: Punctual distribution of higher education institutions that have undergraduate courses in Nursing by regions of Brazil. Belém (PA), Brazil, 2016.

Figure 3 shows the distribution of HEIs with undergraduate nursing courses in Brazilian regions. It is verified that the lowest geographic concentration is in the North region, and in the State of Amazonas, the municipality of Manaus has the smallest number of HEI's, and the highest concentration is in relation to the Southeast region, in the State of São Paulo, in the city of São Paulo; in the State of Rio de Janeiro, in the municipality of Rio de Janeiro; in the

State of Minas Gerais, in the municipality of Belo Horizonte, and in the State of Espírito Santo, in the municipality of Vitória.

The greatest number of HEIs related to the Northeast region is shown: in the State of Bahia, in the municipality of Salvador; in the State of Pernambuco, in the city of Recife; in the state of Ceará, in the municipality of Fortaleza. The HEIs are found in the Central-West region: in the State of Goiás, in the municipality of Goiânia; in the Federal District

and in the State of Mato Grosso, in the municipalities of Cuiabá, Alta Floresta, Sorriso and Sinop.

Also in the Southern region: in the State of Paraná, the municipalities of Londrina and Maringá; in the State of Santa Catarina, the municipalities of Balneário Comboriú, Florianópolis and Joinville; in the State of Rio Grande do Sul, the municipalities of Santa Maria, Pelotas, Porto Alegre and Caxias do Sul. The highest concentration of HEIs in capitals and metropolitan regions is therefore perceived (Figure 3).

DISCUSSION

It is presented, by location, the characterization of the distribution of the number of HEIs with Nursing courses in Brazil, in maps constructed using geostatistics techniques, from the Georeferenced Database (BDGEO), starting from a macro view to a micro-vision, that is, by regions and.

It was possible, though the punctual distribution map obtained by the study, to present the exact location of the HEI by the geographic coordinates, where they are inserted punctually, that is, an overlap of HEIs can be evidenced by the fact that they are largely concentrated, in capitals and metropolitan regions.

It is considered that the Nursing teaching area in Brazil has undergone several modifications, according to the conditions of its role in the training of workers with a profile appropriate to the health needs of the population.¹⁸

It can be observed that, according to a survey, 18 the Southeast region has the highest number of Nursing courses offered and evaluated, due to the population coverage and because it represents the largest agglomeration of income in the country, following the distribution of the Gross Domestic Product (GDP), which reaffirms regional inequalities.

The Northeast region is identified as the most privileged area for the restructuring and expansion program of the federal universities of the country, since part of the growth of the institutions of this region was made through modifications of some campuses. It is understood, therefore, despite the increase of the federal universities, that about 85% of the 446 IES's of the Northeast are part of the private education network.¹⁹

There is a medium number of HEIs in the South, when compared to other regions, since industrial development induces the demand for qualified services. It is pointed out the

diversification of establishments as another important condition in the expansion of Nursing education from 1991.¹⁸

According to another study, 20 this number of HEIs in the South region is still small for Nursing, both in relation to the total number of research groups, and those who study education issues in the nursing area.

It is noteworthy that there was a growth in the expansion of Nursing courses in the Center-West region, however, this region did not follow the same growth in other regions of Brazil as it is, among other reasons, a region still in development, when compared to the Southeast and South of Brazil.²¹

The inequality in the organization of the courses among the regions is highlighted, since the North region, with its needs for access to higher education, includes one of the most deprived areas of infrastructure and where the real health needs of the Brazilian population are evidenced. The specific social, political and economic issues of the North region are added, together with the factors related to the national sphere, as the cause of the small number of the higher Nursing courses in the region under study.²²

CONCLUSION

It is demonstrated, through the mapping developed in this study, a disparity between the regions in relation to the distribution of higher education institutions with undergraduate courses in Nursing in Brazil. Nursing courses are concentrated in more developed regions, making it difficult to train new nurses in the regions of economically disadvantaged states.

It is verified that the increase in the number of higher Nursing courses is now a reality. The specific social, political and economic issues of each region are defined, together with factors at the national level, as determinants for the current situation of the higher Nursing courses in Brazil.

As a limitation of the research, due to the interactive nature of the queries in the e-MEC system, the difficulty and the delay of the data collection stand out, with the need to search each IES individually. It is pointed out that there is no condensed list of this information in the literature and, although the system contains textual search, it does not include all the necessary data.

Emphasis is given to the importance of broadening and deepening knowledge in the search for new solutions and opportunities for the growth of new HEIs in the regions with

lower concentration of undergraduate courses in Nursing.

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