

Nursing education: mapping in the perspective of transformation

Educação em enfermagem: mapeamento na perspectiva de transformação

Educación en enfermería: el mapa en la perspectiva de la transformación

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How to cite this article:

Fernandes JD, Silva RMO, Teixeira GAS, Florêncio RMS, Silva LS, Freitas CM. Nursing education: mapping in the perspective of transformation. Rev Bras Enferm. 2020;73(3):e20180749. doi: <http://dx.doi.org/10.1590/0034-7167-2018-0749>

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EDITOR IN CHIEF: Dulce Aparecida Barbosa
ASSOCIATE EDITOR: Marcos Brandão

Submission: 09-24-2018 **Approval:** 04-16-2019

ABSTRACT

Objective: to construct a theoretical, field and analysis mapping of nursing education in the context of public education policies in Brazil. **Method:** a descriptive study with a mixed approach of investigation, having as theoretical-analytical instruments the studies on maps construction (theoretical, field and analytical), which allowed the distribution, imbalances, tendencies and contradictions verification of the phenomenon studied. **Results:** the disordered expansion of vacancies in nursing has been occurring in a disorganized, asymmetric way and directed to the distancing of the State in the assistance to the educational sector, as well as the consequent privatization of education and reaffirmation of social imbalance of regions with the lowest economic power. **Final considerations:** the study made technological, scientific and academic contributions possible and showed that public policies directed intense and disorderly expansion of courses/vacancies, indicating the need to establish strategies that can promote actions to strengthen the quality of nursing education.

Descriptors: Nursing Education; Education, Nursing, Graduate; Education, Professional; Education; Nursing.

RESUMO

Objetivo: construir um mapeamento teórico, de campo e de análise da área da Educação em Enfermagem, no contexto das políticas públicas de educação, no Brasil. **Método:** estudo descritivo com abordagem mista de investigação, tendo como instrumental teórico-analítico os estudos sobre a construção de *mapas* (teórico, de campo e analítico) que permitiram a verificação da distribuição, desequilíbrios, tendências e contradições do fenômeno estudado. **Resultados:** a expansão desordenada de vagas na área da Enfermagem vem ocorrendo de forma desorganizada, assimétrica e direcionada ao distanciamento do Estado no atendimento ao setor educacional, assim como a consequente privatização do ensino, além da reafirmação do desequilíbrio social das regiões de menor poder econômico.

Considerações finais: o estudo possibilitou contribuições tecnológicas, científicas e acadêmicas, e evidenciou que políticas públicas direcionaram intensa e desordenada expansão de cursos/vagas, indicando a necessidade do estabelecimento de estratégias que possam promover ações para o fortalecimento da qualidade da educação em Enfermagem.

Descritores: Educação em Enfermagem; Educação de Pós-Graduação em Enfermagem; Educação Profissionalizante; Educação; Enfermagem.

RESUMEN

Objetivo: construir un mapeo teórico, de campo y de análisis del área de la Educación en Enfermería, en el contexto de las políticas públicas de educación, en Brasil. **Método:** el estudio descriptivo con enfoque mixto de investigación, teniendo como referencial teórico-analítico los estudios sobre la construcción de mapas (teórico, de campo y analítico) que permitieron la verificación de la distribución, desequilibrios, tendencias y contradicciones del fenómeno estudiado. **Resultados:** la expansión desordenada de vacantes en el área de enfermería viene ocurriendo de forma desorganizada, asimétrica y dirigida al distanciamiento del Estado en la atención al sector educativo, así como la consiguiente privatización de la enseñanza, además de la reafirmación del desequilibrio social de las regiones de menor poder económico. **Consideraciones finales:** o el estudio posibilitó contribuciones tecnológicas, científicas y académicas, y evidenció que políticas públicas dirigieron intensa y desordenada expansión de cursos/vacantes, indicando la necesidad del establecimiento de estrategias que puedan promover acciones para el fortalecimiento de la calidad de la educación en Enfermería.

Descriptorios: Educación en Enfermería; Educación de Posgrado en Enfermería; Educación Profesional; Educación; Enfermería.

INTRODUCTION

In Brazil, the theme of Nursing Education (NE) is a social demand of fundamental importance, especially considering the accelerated and disorderly expansion of courses/places in educational institutions (mid-level technical professional, undergraduate and *lato sensu* and *stricto sensu* graduate courses) and the changes that occur in the world of work, with the introduction of new technologies that require training of a more qualified worker.

This demand expresses the conjuncture of the 80s and 90s of the twentieth century, when the country already suffered the consequences of the neoliberal policy that was covered by the market logic and minimization of the state emphasized the low proportion of students enrolled. On the other hand, in a productivist perspective, expansion of courses/vacancies appeared as a strategy for the social inclusion of young people who sought a social and economic elevator, a smoker of the problem of unemployment, among others⁽¹⁻³⁾.

In support of these arguments, Law 9,394/1996, *Lei das Diretrizes e Bases da Educação Nacional* (National Education Bases and Guidelines Law) (LDB/96) was approved, which enabled a significant expansion of night and distance education institutions, courses and vacancies, in addition to opening spaces for organizational, curricular and autonomy alternatives in the educational sector. In compliance with this Law, the *Plano Nacional da Educação* (PNE - National Education Plan) was approved, 2001-2010, which presented a policy focused on the expansion of education as a strategy for the country's development⁽⁴⁾.

Since then, the education system in Brazil started to show great growth in its offer, with indiscriminate opening of new courses/undergraduate courses, graduate courses (*stricto sensu* and *lato sensu*), high school, evening and distance courses, without control, for example, of the specific needs and demands of each region. This expansion movement caused a geographical inequality (regional and intra-regional imbalance) of this supply, and also the privatization of the system and the uncontrolled proliferation of courses and institutions that are increasingly distant from minimum quality standards⁽²⁾.

This finding evidenced the necessity of the present study, which aims at the NE in Brazil, at the three training levels (mid-level technical professional, undergraduate and *lato sensu* and *stricto sensu* graduate courses), their tendencies, perspectives and contradictions, seeking to advance in the construction of knowledge on this theme. There is a need for research that can serve as reference for quality in the process of professional training in nursing. In addition, the existing literature does not yet provide a map of NE's operational capacity, that is, a mapping as a methodological principle that expresses the reality of this area, its current overview, tendencies and contradictions. Thus, the present study seeks to fill this gap in the literature of the area, seeking to improve nursing training.

Therefore, the following research problem was established: what is the NE area map in its three training levels (mid-level technical professional, undergraduate and *lato sensu* and *stricto sensu* graduate courses) in Brazil, considering education public policies?

The idea of NE *map* is to be a guide to the understanding of the attributes or characteristics of the mapped phenomenon, to arrive at a new knowledge; it is a way of obtaining knowledge of a given phenomenon through a set of elements, and then, through

a technical-descriptive approach, expressing this knowledge, illustrating it with representations – *maps*⁽⁵⁻⁶⁾.

The present research had as object of study the NE in Brazil, in the different training levels, its perspectives and contradictions, considering education public policies in the country, through an approximation with a concrete reality. Its purpose was to subsidize the formulation of strategies to be established by governmental programs by education managers and more specifically the NE. This should be an important source of encouragement to the debate and reflection on the issues addressed here, as well as to contribute to a better adaptation of the planning and performance of NE activities, aiming at its transformation.

It is not simply a question of constructing a *map*, but of constructing a *map* that does not yet exist, situating and contextualizing the analysis of a phenomenon and thus contributing to the development of new knowledge. In addition, it allows another researcher to have, in this research, the point of reference to carry out a new route to other points of the *map*.

OBJECTIVE

To construct a theoretical, field and analysis mapping of nursing education in the context of public education policies in Brazil.

METHOD

Ethical aspects

The operationalization of this research was based on the ethical principles of Resolution 466/2012 of the Brazilian Health Board (*Conselho Nacional de Saúde*), since the secondary data from digital public platforms did not require the screening of the Research Ethics Committee. However, the necessary sources were cited. In addition, the information selected for the analysis went through the peer review, to state the reliability of the results, in order to guarantee the scientific rigor demanded in research of this nature.

Theoretical-methodological framework

The theoretical-methodological foundations and their analytical bases were made possible, essentially, but not exclusively, in the studies on Educational Research Mapping⁽⁵⁻⁶⁾ as instrumental to establish images of the studied reality, evidencing relevant characteristics of the broad and profound changes on NE in Brazil.

This theoretical-methodological basis allows identifying the structure and traits of the data/information researched, defining what is relevant and organizing the data in order to delineate the *map*. Structure is the set of data/information and relationships that constitute a particular unit or system⁽⁵⁾. Trace can be understood as the smallest unit identifiable in a structure and is not restricted to the analysis of the problem, but rather, it bases the organization and classification of the data/information raised⁽⁵⁻⁶⁾.

This reference adoption allowed the understanding of the mapped phenomenon and the comparison or understanding of certain information in a given context and, consequently, the understanding of the attributes of the mapped phenomenon and answers to the questions of the researcher. Finally, to construct a *map* is to act on the studied phenomena.

The professionals of the construction of the theme point to several types of *maps*, namely: '*theoretical maps*' that are indications that compose a theoretical axis of the subject studied; '*field map*', which constitutes the essential points in the survey, classification and organization of exploratory data; '*Analysis map*' that constitutes a methodological principle to analyze the research through perception and understanding of the data collected, its interpretation and evaluation⁽⁵⁻⁶⁾.

Type of study

This is a descriptive study, in the mixed perspective of research, when simultaneously using quantitative and qualitative methods, understanding that the different types of data provide better visibility of the researched problem.

This study had as a guideline the mapping of the evolution, distribution, tendencies and contradictions of NE in its three training levels in Brazil through an approximation with a concrete reality, aiming not only at the transformation of this area, but also the changes in the provision of health services to the population. That is, mapping not only as the expression of the phenomenon studied, but also, how it is possible to explain it, constructing senses and meanings about it.

Methodological procedures

Mapping, as a process involved in the construction of the *map*, was developed in three moments. In the first moment, the '*theoretical map*' was carried out through a qualitative study of the specific legislation, with the guidelines that defined the education in the country and its impacts in the NE, in its three training levels. It was sought the apprehension of facts and information and how these combine and (re) combine, in the middle of a historical-social totality that configures the society where the area is inserted.

In a second moment, these data/information were organized and classified quantitatively, favoring the construction of the '*field map*' that constituted the essential points in the survey, classification and organization of the data of educational institutions that offer nursing courses (mid-level technical professional, undergraduate and *lato sensu* and *stricto sensu* graduate courses) in Brazil. Also, in this second moment and in this same line of quantitative approach, the mapping of the course offerings, administrative category, geographical distribution, tendencies and contradictions in its three training levels, based on the year 2015, the year in which the research was carried out.

In a third moment, presented in the topic of the Discussion, the '*analysis map*' or '*analytical map*' was carried out, which was constituted in the process of analysis and interpretation of the studied phenomenon, taking as base the '*theoretical map*' and the '*field map*'.

Collection and organization of data

The data/information was collected in the sites of the Electronic System for Registration of Higher Education of the Ministry of Education (e-MEC), Higher Education Census, *Instituto Nacional de Estudos e Pesquisas Anísio Teixeira* (INEP - National Institute for Educational Studies and Research "Anísio Teixeira"), *Coordenação*

de Aperfeiçoamento de Pessoal de Ensino Superior (CAPES - Coordination for Improvement of Higher Education Personnel), *Cadastro Nacional de Cursos de Especialização* (Brazilian Register of Specialization Courses), *Sistema Nacional de Informações da Educação Profissional e Tecnológica* (freely translated as National System of Professional and Technological Education Information). Searches were also made in the legal documents governing education in the country, taking into account the research objectives.

Data analysis

The data presented in the '*theoretical map*' and the '*field map*' were analyzed/discussed in the '*analysis map*' or '*analytical map*', by means of the theoretical and methodological principle of analysis and interpretation of the studied phenomena⁽⁵⁻⁶⁾, establishing connections between the subject addressed, its regularities and contradictions that structure the complexity of the area, without considering its relations with the totality.

RESULTS

Following the steps of the construction of *maps* as theoretical-methodological principle⁽⁵⁻⁶⁾, the results are presented here through the '*theoretical map*' and the '*field map*' of NE in the country, in its different training levels, as instrumental for the establishment of images, making possible the understanding of the mapped phenomenon.

Theoretical Map of Nursing Education in Brazil

Theoretical Map of Nursing Education in Undergraduate Course

Industrial development in the early 1940s demonstrated the need for a skilled workforce, requiring changes in the conceptions of professional education, as well as its institutionalization. The educational system became an incentive both for the generation of labor, in order to meet the demands of the new economic model, and to prevent the problems arising from the intense rural exodus^(2,4).

The State, taking into account the logic of the production of health services, instituted Law 775/1949, which instituted nursing teaching as a matter of law, establishing an expansion of the number of schools and beginning the evolution of nursing courses in the country^(1-2,4).

Until 1947, there were 16 undergraduate nursing courses in Brazil. After the creation of Law 775/49, this number passed to 33 schools in 1956 and reached the mark of 39 until the year 1964, that is, a growth of 43.75%^(1-2,4).

With the *Lei das Diretrizes e Bases da Educação Nacional* (National Education Bases and Guidelines Law) (LDB/61), which established the guidelines and bases of the Brazilian education in elementary school, high school and higher education, education became an obligation of public power and free to private initiative, favoring the quantitative expansion of education in the country⁽¹⁾.

In 1968, the University Reform (UR) established the norms of organization and functioning of higher education and its articulation with the middle school; favored the expansion of higher education that required more training of the teaching

staff to attend the technological area and the demand of the productive process; institutionalized the Graduate Education (GR) in two levels (Master's and Doctoral), aiming to qualify personnel to supply the teaching of Undergraduate Education (Under)^(1-2,4).

UR, highlighting the increase in the number of places and the modernization of higher education, favored the expansion of nursing education in the country. From the 1960s to the mid-1970s, only two nursing schools were set up in universities and linked to the federal government. From 1975 to 1980, 38 courses were created and in 1990 the number of courses reached the mark of 102 establishments distributed throughout the country. Of this total, 57 (56%) were in public institutions and 45 (44%) were in private institutions^(1-2,4).

In 1996, LDB/1996 made possible an expressive expansion of educational institutions and increase of courses/vacancies, in addition to expanding and instituting mechanisms of access, of the academic organization and of the offer of courses; of basic education (kindergarten, elementary and high school) and higher education; structured other forms of education, such as Distance Education (DE) and professional education, among other measures. It also ensured the autonomy of educational institutions, enabling them to create, expand, modify and extinguish courses; expansion and reduction of vacancies and preparation of courses programs⁽¹⁾.

With LDB / 96, it was established the extinction of minimum curricula and the adoption of National Curricular Guidelines. In NE, CNE/CES 03/2001 Resolution was approved, which defined the National Curricular Guidelines for nursing undergraduate course⁽⁷⁾.

With LDB/96, the Federal Education Board (CFE – *Conselho Federal de Educação*) was abolished and the National Education Board (CNE – *Conselho Nacional de Educação*) was created, which gave the Ministry of Education greater autonomy in conducting the process of expansion of education. The higher education system became integrated by the Higher Education Institutions (HEI) maintained by the Union and those maintained by private and non-profit organizations. Moreover, this Law recognized higher education as a good of marketable service, that is, as an object of profit⁽⁸⁾.

In compliance with LDB/96, the PNE 2001-2010 was approved, which presented a State policy for the decade 2001/2010, focused on the expansion of education, in the DE system and in the diversification of the educational offer, through night, modular and sequential courses, as well as strategies for the development of the country^(1-2,4,8).

Data collected on the e-MEC website record that, until 1996, there were 108 Under nursing courses. In 2015, according to the Higher Education Census, this number reached the mark of 901, reaching a growth of 734.26%. It should be noted that this expansion took place with a strong concentration in the Southeast, region of greater industrial development.

Considering the administrative category of the institutions offering these courses, another tendency was observed when, until 1996, there were 62 courses offered by the public network and 46 by the private network. Since then, this ratio has reversed, that is, the number of private network courses increased from 46 in 1996 to 731 in 2015, showing a growth of 1,489.1%. Meanwhile, the public network went from 62 to 170, experiencing growth of only 174.1%.

In 2014, the II *Plano Nacional de Educação* (freely translated as II National Education Plan) 2014/2024 was approved, which presented goals and strategies for the development of national education. Of the goals related to higher education, there is a 50%

increase in the gross enrollment rate at this level of education and 33% in the net rate of the population aged 18 to 24; this means an expansion of approximately 40% of new registrations. On the other hand, budgetary resources are not consistent with this Law.

Theoretical Map of *Stricto Sensu* Graduate Nursing Education

In compliance with LDB/1961, the CFE/CES Opinion 977/1965, also known as *Parecer Newton Sucupira* (Newton Sucupira Opinion), regulated GR, which was established as *Lato Sensu* Graduate Course (LSGC) and *Stricto Sensu* Graduate Course (SSGC). LSGC conformed to the specialization and improvement courses. SSGC conformed to the masters and doctoral courses.

Despite the LDB/1961, the Newton Sucupira Opinion, in 1965, and the University Reform in 1968, the SSGC in the area of nursing was only instituted in 1972, when the Masters course was created at *Escola de Enfermagem Anna Nery* of the *Universidade Federal do Rio de Janeiro*, aiming to qualify professionals for the teaching and researchers of the area, attending to the movement of expansion of higher education and the promotion of scientific work of nursing^(4,9).

In 1975, the I *Plano Nacional de Pós-Graduação* (I PNPG – freely translated as First National Graduate Course Plan) was formulated for the period from 1975 to 1979, when it was emphasized the need to expand this level of education, aiming at the qualification of professionals for the labor market. Under the PNPG I, and in line with the development policy of the time, eight master's degrees were created in this decade, four in the Southeast, two in the South and two in the Northeast. All were offered by public institutions^(4,9).

In 1981, the II PNPG 1982-1985 established priorities and guidelines for GR, in addition to expressing concern about the inequality in the regional distribution of courses and institutions. Under the Plan, in the area of nursing, four Doctoral Programs were created. All offered by public institutions and in the Southeast⁽⁴⁾.

The III PNPG, 1986-1989, had as its central question the expansion of teacher training, emphasizing evaluation, participation of the scientific community and the development of scientific and technological research. At the end of this plan, 25 SSGC courses in nursing were in operation, of which 16 were Masters and nine were Doctoral⁽⁹⁾.

SSGC in nursing, although it started in 1972, its effective expansion only occurred as of the LDB/1996, when it was observed that, in the 1990s, 11 SSGC were created with six masters and five doctorates⁽⁹⁾.

The V PNPG 2005-2010 aimed to expand GR by increasing the number of graduates needed to qualify the higher education system in the country, the science and technology system and the business sector. It sought to reduce regional imbalances in GR's offer, in addition to valuing GR's greater insertion in society through the modality of a professional master's degree, narrowing relations between universities and the productive sector⁽⁴⁾.

Under the terms of the V PNPG, in 2007, on the CAPES website, 32 nurses and 42 courses were registered in nursing, with 27 academic masters (AM), 13 doctorates (DO) and 2 professional masters (PM). At the end of 2010, the area offered 48 programs and 72 courses, of which 42 AM, 23 DO and 7 PM. In June 2011, the area offered 51 SSGC and 75 courses (42 AM, 24 DO and 9 PM), an increase of 59.3% and 78.5% in number of programs and courses, respectively.

In 2013, under the sixth PNPG 2011-2020, the CAPES website registered, for nursing, the offer of 63 SSGC programs (26 with AM and DO, 02 DO, 21 AM and 14 PM), with 89 courses (28 DO, 47 AM and 14 PM). These programs/courses were predominantly distributed in the Southeast, with 49.4%, followed by 20.2% in the Northeast, 19.1% in the South, 9.0% in the Center-West and 2.3% in the North.

The VI PNPG 2011-2020 presented its goals distributed in the following axes: expansion of the National Graduate System; focus on quality; endogenous breakdown; expansion of the SSGC with the reduction of regional imbalances and encouragement of internationalization; strengthening of Programs; evaluation of quality against quantity, with production of relevant knowledge and with academic, industrial and social impact; multi and interdisciplinarity; support for the different levels and education modalities; increase in the number of students enrolled in GR and encourage research; 75% increase in the proportion of faculty masters and doctors in exercise.

The achievement of these goals, however, is related to the country's budget growth, which means that they can be compromised in the face of the country's current economic crisis, with a reduction in the education budget, and more specifically GR.

Theoretical Map of *Lato Sensu* Graduate Nursing Education

Although specialization and improvement courses were started in Brazil in 1951, only with the LDB/61, the first reference to these courses was recorded, when the Newton Sucupira Opinion conceptualized and regulated the GR courses, distinguishing LSGC from SSGC. SSGC was assigned to Masters and Doctoral programs, and LSGC for specialization courses.

In 1965, the Newton Sucupira Opinion conceptualized the GR, creating the expression, *stricto sensu*, for Masters and Doctoral programs, and the expression, *lato sensu*, for the specialization courses. Until then, there was no explicit differentiation between these training levels. It is worth mentioning, however, that the LSGC remained without specific regulations.

In 1968, the Law of the University Reform gave to the courses of specialization, the status of graduate status; determined that the courses of specialization, improvement, extension and others, were given according to the plans drawn up and approved by the universities and isolated institutions that offered this type of teaching. This Law, however, did not define the profile of these courses, and the LSGC remained, once again, without specific legislation that would explain its operation and a normative action for its regulation.

In 1975, the I PNPG encouraged the LSGC - improvement and specialization - through specific programs, so that they could respond more efficiently and flexibly to the short-term needs of the labor market. In the II PNPG, LSGC appears with the same focus as it appeared in the I PNPG, that is, training for teaching and attending to the multiple demands of a labor market in deep and accelerated transformation. The III and V PNPG did not present any item related to the LSGC, nor did the PNE proposed for the years 2001 to 2010.

With LDB/96, the National Education Board/Higher Education Chamber (*Conselho Nacional de Educação/Câmara de Educação Superior*), issued Resolution 02/1996, which regulated the classroom LSGC courses to be developed outside the headquarters and aimed at the qualification of faculty. Thereafter, there is an expansion of the LSGC, particularly of the specialization courses aimed at

technical and professional qualification. These courses have been expanding significantly, although there is no record of this reality. The Higher Education Census in 2003 already showed expansion in the number of accredited institutions of higher education, which offered them, particularly to private institutions that represented 84.9% of all these institutions. This expansion occurred in parallel with the offer of classroom undergraduate courses⁽⁴⁾.

The 2015 Education Census, available on the INEP website, shows that there has been an expansion in the number of accredited higher education institutions offering LSGC courses, both classroom and distance learning.

LSGC has undergone a change in the conceptual focus of its role, having as a milestone the separation between *lato* and *stricto sensu*, the fact that it has been generating unbridled market expansion, mainly because it is today without a regulatory body, thus without control of its offer and minimum quality requirement⁽⁴⁾.

It is worth mentioning, however, that despite this expansion, specialization courses continue to occupy a prominent place in the Brazilian graduate system, playing an important role in the training of professionals for the deepening of the knowledge and updating of professionals, particularly health.

Theoretical Map of Professional Education Mid-level Technician in Nursing

Nursing auxiliary courses, although they began in the 1930s, only in 1949, were sanctioned by Law 775/49, which established the provision of two regular courses: nursing and nursing auxiliaries.

With LDB/61, it was determined the need to change the structures of the nursing courses, opening the possibility for the creation of a nursing technician course. Being regulated, nursing assistant courses began to expand. Until 1947, the area had only one nursing assistant school. In 1951, there were 12 schools. In 1961, there were already 49 courses and, in 1966, 76 courses. During this period, four technical nursing schools were also created. Since then, technical schools have been created progressively under the responsibility of Health Offices⁽¹⁰⁾.

Considering the large number of workers in the health services, developing health activities without adequate qualification, the "Large Scale Training" *Programa de Formação em Larga Escala de Pessoal de Nível Médio e Elementar* (freely translated as Program of Large Scale Training of Middle and Elementary Personnel) for Health Services (Large Scale Project - PLE (*Projeto Larga Escala*)) was implemented. From 1981, it was configured as a training strategy, aiming to qualify a workforce in the health sector.

From then on, PLE favored the expansion of technical schools, under the responsibility of the Health Offices of the states. The Technical Health School of SUS, the Center for Human Resources in Health and the *Projeto de Profissionalização dos Trabalhadores de Enfermagem* (PROFAE - freely translated as Nursing Worker Professionalization Project), financed by the Inter-American Development Bank (IDB) and the National Treasury, implemented by the Ministry of Health, in all Brazilian states, were created.

Based on this expansionist tendency, with the creation of new schools and projects for human resources for health in the area of technical training, it can be observed that in 1983, 115 nursing technician courses and 145 auxiliary nursing courses were in operation⁽¹⁰⁾.

This expansionist tendency, encouraged by LDB/96, favored the emergence of some government programs to encourage the expansion of vacancies and the diversification of courses in the various fields of knowledge. In health, PROFAE and the creation of the Technical Schools Network of the Brazilian Unified Health System (SUS – *Sistema Único de Saúde*) in 2000 stand out. Thus, the current figures, after the incentives for the expansion of nursing technical courses, are shown in the 'field map'.

Field Map of Nursing Education in Brazil

The 'field map' is represented by images shown in Figures 1, 2, 3, 4 and 5, which represent a tendency of the distribution of the number of courses in their different education levels by state, geographical region, administrative category and a representation of the quantitative relationship between these different teaching levels in nursing.

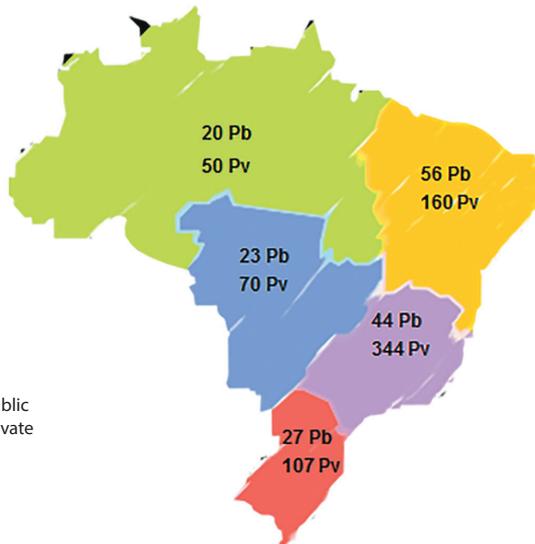


Figure 1 – Undergraduate courses and administrative category - Brazil, 2015, Salvador, Bahia, Brazil, 2018

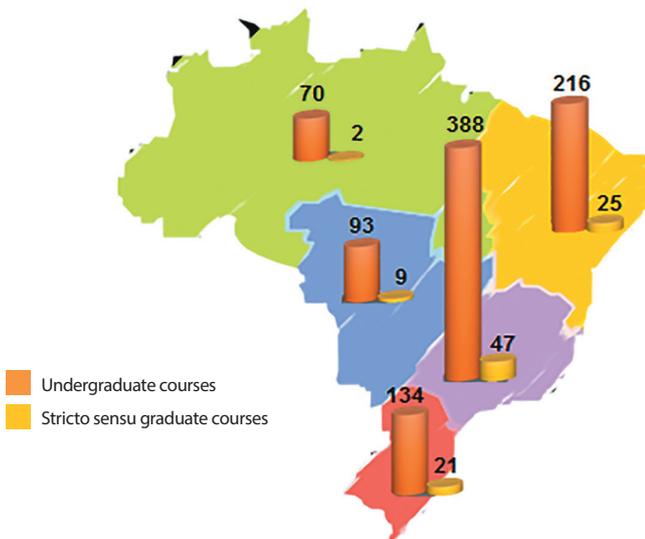


Figure 2 – Undergraduate courses and nursing Stricto Sensu Graduate Courses by geographic region - Brazil, 2015, Salvador, Bahia, Brazil, 2018

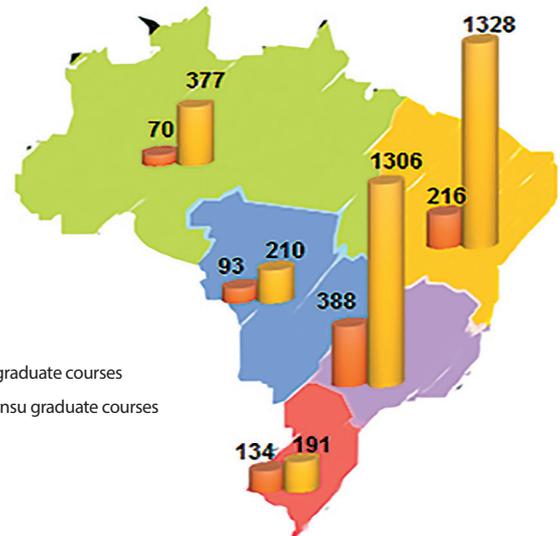


Figure 3 – Undergraduate courses and nursing Lato Sensu Graduate Courses by geographic region - Brazil 2015, Salvador, Bahia, Brazil, 2018

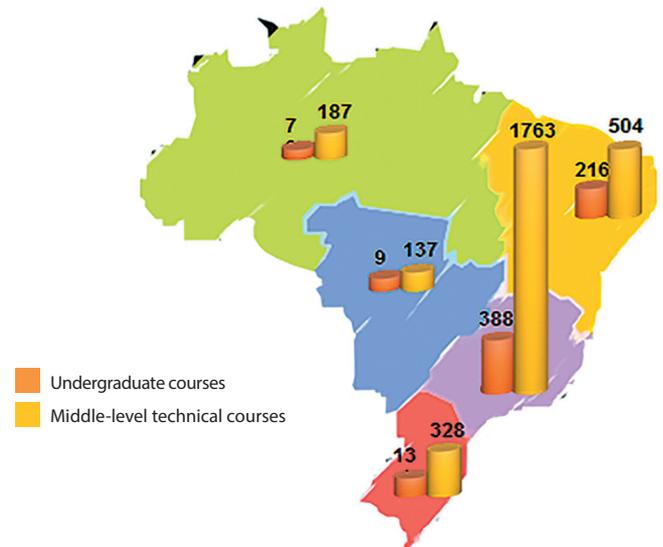


Figure 4 – Undergraduate courses and mid-level nursing technicians by geographical region – Brazil, 2015, Salvador, Bahia, Brazil, 2018

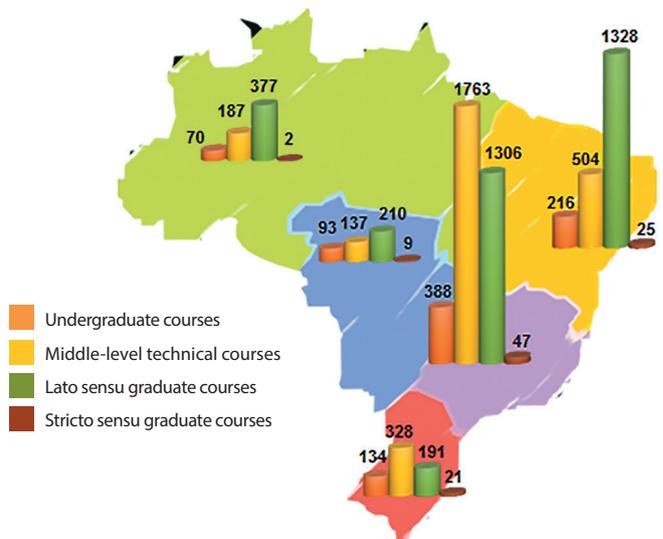


Figure 5 – Mapping of nursing courses by geographic region - Brazil 2015, Salvador, Bahia, Brazil, 2018

DISCUSSION

Considering the method of investigation adopted, that is, theoretical-methodological principle of educational research mapping^(5,6), the 'analysis map' or 'analytical map' is presented here, constituting the analysis, interpretation and discussion of the studied phenomena, establishing connections between the subject addressed, its regularities and contradictions that structure the complexity of the area, without considering its relations with the totality.

Analytical Map of Nursing Education in Brazil

The results showed that in 2015 there were 901 nursing Under courses, of which 388 were in the Southeast, 216 in the Northeast, 127 in the South, 93 in the Midwest and 70 in the North. These data reveal that the regional imbalance is still present in the distribution of these courses, as shown in Figure 1.

Of the total of 901 Under courses, 170 (18.86%) were offered by public institutions and 731 (81.14%) by private institutions, and the latter prevailed numerically in all regions of the country, expressing the predominance of the private network in the supply of nurses to the market, as shown in Figure 1.

This regional inequality reflects the economic development of the regions, which, in turn, favors a greater presence of private initiative in the offer of higher education in the regions of the country's largest Gross Domestic Product⁽¹¹⁾.

Regarding the number of enrollments, the 2015 Education Census, available on the INEP website, registered a total of 261,215 enrollments in 901 Under nursing courses, of which 35,110 (13.44%) were in the public network and 226,105 in the private network (86.56%). The number of tickets in 2015 was 151,846, of which 9,303 (6.12%) in the public network and 142,543 (93.87%) in the private network. The number of enrollments and entry into the private network was significantly higher than in the public network, that is, a public network enrollment of 6.44 in the private network.

Expansion was carried out, therefore, not only in the number of courses, but also in the number of registrations, predominantly in the private network.

A research conducted by the *Conselho Federal de Enfermagem/Fundação Oswaldo Cruz* (COFEn/FIOCRFUZ - Federal Nursing Board and Oswaldo Cruz Foundation)⁽¹²⁾, corroborates these data when explaining that of the total of 414,712 registered nurses, 35.6% were trained in public institutions and 57.4% in private institutions. This tendency in NE at the undergraduate level is also repeated in the area of SSGC, LSGC and at the middle level.

Although the PNP 2005-2010 has presented proposals for the reduction of regional asymmetries, these remain in the SSGC of nursing, which, like Under, still presents an unequal distribution in the supply of this level of education among the regions, as shown in Figure 2. In all geographic regions, the number of Under courses is unusually higher than those of SSGC. This disproportion reaches 901 from Under to 104 of the SSGC, and can lead to the inference that the SSGC has not yet been able to meet what was recommended by the UR of 1968. In other words, meet the demand to qualify top-level faculty and researchers in the area, to cover the need for teacher training to attend to the number of Gr courses that expands vertiginously.

Figure 2 also shows that 45.20% of the SSGC is located in the Southeast region, 24.03% in the Northeast, 20.20% in the South, 6.73% in the Center-West and only 3.84% in the North of the country, indicating the same regional inequality in Under. It is worth mentioning, however, that unlike Under, the SSGC presents a predominance of the public network.

With regard to the LSGC, in 2015, the same tendency of Under, with 3,412 courses in 344 HEIs distributed in the regions of Brazil were observed. Figure 3 shows the great disproportion in relation to the quantitative of these two education levels. In all geographic regions, the number of LSGC courses is unusually higher than those of Under. This disproportion reaches 901 from Under to 3,412 from the LSGC, which may lead to the inference that there is a demand for nurses for this level of education, in search of better training.

This regional distribution evidences a new data, that is, the Northeast region surpassing the Southeast region, regarding the supply of courses at this level of education. The Northeast with 1,328 courses and the Southeast with 1,306 courses, followed by the North with 377 courses, the Center-West with 210 and the South with 191, as shown in Figure 3.

Interest in investing in LSGC courses in the Northeast may be related to the local economy, with the recent migration of industries from the Center-South of the country towards this Center-West, attracted mainly by the fiscal incentives offered by local governments, particularly in Bahia, due to the greater capital intensity in petrochemicals and, more recently, in the automobile industry⁽¹³⁾.

Although the Northeast has the highest number of LSGC courses, the state with the highest number of courses was São Paulo, with 193 courses and 115,074 registered nurses in 2015.

LSGC courses have great flexibility of accomplishment, many of them offered at weekends, which facilitate the entrance of the nurse with little availability of time and time, mainly in the private network. This flexibility reflects the greater demand and supply of these courses⁽¹³⁾.

LSGC shows the same tendency of Under regarding the administrative category, that is, 95.95% are offered by the private network, with predominance in the Northeast and the Southeast. In all regions, the highest number of LSGC courses was in the DE modality, with 60.02% of the courses. The classroom modality offered 32.03%. The others were offered in the blended mode.

A study conducted by COFEn/FIOCRUZ⁽¹²⁾ revealed that we have 454,463 nurses in the country. Of these, 80.1% have GR, of which 51% are nurses specialized, reflecting the nurses' search for professional qualification through specialization.

This same expansionist tendency was also found among nursing courses, shown in Figure 4, which reveals the regional imbalance in the distribution of these courses. The Southeast leads the number of courses, with 1,763, followed by the Northeast with 504 of them. Center-West had the lowest number of courses, 137.

The proportion of Under courses compared to the mid-level technical courses, as shown in Figure 4, reveals that the latter totaled 2,919, while Under's totaled 901 courses. This represents 1 Under course to 3.24 at the middle level.

Like Under and LSGC, the network of technical training schools in the country is characterized mainly by the strong concentration

in the private sector in all regions of the country, most evidenced in the Southeast. These data are corroborated by a study developed by COFEn/FIOCRUZ⁽¹²⁾, out of a total of 1,389,823 professionals, 16.0% were trained in public institutions and 72.0% in private courses.

Comparing the mapping of courses in the Under levels, SSGC, LSGC and middle level, Figure 5 shows the same dynamics in relation to the regional distribution imbalance. In the regions considered to have the highest per capita income, the highest quantity of offer is of middle-level courses followed by the offer of LSGC courses. In all regions, the lowest supply was of SSGC courses, in which the public sector predominates.

The results presented allowed the inference that the expansion movement of NE, already installed in the country, in its various coverage levels, did not reach what was foreseen in the documents and laws of educational planning, that is, it did not solve the problem of regional inequality. The smaller expansion of the public sector and the great growth of the private sector are largely explained by the State's lack of responsibility for the reduction of funding to the Federal Institutions of Higher Education (FIHE) and the creation of private HEI, especially with profit-making purpose⁽¹⁴⁻¹⁵⁾.

This expansionist reality can be perceived as positive by expanding opportunities for the population to access education. However, one must take into account some perverse effects of this process, particularly with regard to the impairment of the quality of teaching and the subjects involved. One cannot think of quantity, alone, without its articulation with quality, since both dimensions are part of the same educational system. One cannot think of increasing the supply of professionals to the market, in a disjointed way of the quality in the preparation of professionals for the attention to the health of the population. Supply expansion of professionals is necessary, but with a guarantee of quality standards, particularly with regard to the link between the world of work and the world of training. One cannot think quantity/quality and NE only by adding or juxtaposing institutions and increasing vacancies.

Study limitations

It was not intended to exhaust the entire scope of the phenomenon studied. However, the adoption of the theoretical-methodological framework, which presents structure points different from those established by the journal, as well as the limitation of the number of pages, did not favor further deepening of the theoretical analytical instruments, making it difficult to expand the possibilities of building new perspectives in the actions of change in training and new knowledge of the area.

Another point to highlight is the difficulty in collecting information from *lato sensu* graduate courses and mid-level technical courses in nursing, justified by the absence of a regulatory, control and inspection body, as well as a reliable database to monitor the training overview at these education levels.

Contributions to the field of Nursing

The study sought to elucidate the construction of technological, scientific and academic contributions. In the technological area, a database was constructed that constitutes a relevant work tool that will support the elaboration of other studies that advance in the analysis,

diagnosis, evaluation and proposition of strategies that lead to the sustainability of the changes in NE. In the scientific area, construction and socialization of a body of innovative knowledge was carried out, as well as the development of a methodological and technological proposal for the area. In the academic field, the study contributed to the construction of new social subjects and new ways of perceiving the professionals' training, besides offering subsidies for the public policies of education and health, particularly those that touch the nursing. In addition, the effort to obtain a nursing education *map* brings with it the search for strategies to strengthen this area.

FINAL CONSIDERATIONS

The results presented confirm that the disorderly expansion of courses/vacancies in nursing has been occurring in a disorganized, asymmetric way and directed to the distancing of the State in the assistance to the educational sector, as well as the consequent privatization of education and reaffirmation of social imbalance of regions with the lowest economic power.

Expansion of courses/vacancies in NE through actions that seek to recreate the system, point out guidelines to be followed, without specifying measures of induction to improve the quality of teaching and/or its transformation, without a control of its quality, presenting itself far from the best way to train professionals qualified for the population's health care.

In addition to the technological, scientific and academic contributions already reported, the present study covers a gap in the literature on the subject, subsidizing studies aimed at improving the training process in NE and the consequent attention to the quality of health care and user satisfaction. The study also points out the need to establish strategies that promote actions that seek parameters to strengthen the quality of NE and attenuate the regional imbalance in supply of courses and commercialization of NE at all education levels, in all regions, guaranteeing educational equalization worthy for the population; to seek actions for a NE quality standard compatible with the demands of the contemporary world and with the scientific, technological and innovative development of the area; to promote integration between the education levels (Under, SSGC, LSGC and middle level), articulating knowledge to establish mutual cooperation and articulation consolidation between them in the perspective of integral training of NE subjects.

Attention must be paid to the close relationship between the quality of training of nursing professionals and the quality of service delivery in the SUS, since these professionals represent more than 60% of health workers. Qualified professionals imply better quality of care for the population, that is, investment in quality education reflects on the quality of health care and user satisfaction.

Expansion of professionals supply is necessary, but with a guarantee of quality standards, particularly with regard to the articulation between the world of work and the world of training.

FUNDING

This study was supported by the *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (National Council for Scientific and Technological Development) through Process 303875/2013-5, in the form of Research Productivity.

REFERENCES

1. Fernandes JD, Teixeira GAS, Silva MG, Florêncio RMS, Silva RMO, Rosa DOS. Expansion of higher education in Brazil: increase in the number of Undergraduate Nursing courses. *Rev Latino-Am Enfermagem*. 2013;21(3):670-8. doi: 10.1590/S0104-11692013000300004
2. Teixeira E, Vale EG, Fernandes JD, De Sordi MRL. Trajectory and trends of Brazilian nursing diploma courses. *Rev Bras Enferm*. 2006;59(4):479-7. doi: 10.1590/S0034-71672006000400002
3. Teixeira E, Fernandes JD, Andrade AC, Silva KL, Rocha MEMO, Lima RJO. Overview of Nursing Graduation Courses in Brazil in the National Curriculum Guidelines decade. *Rev Bras Enferm*. 2013;66(spe):102-10. doi: 10.1590/S0034-71672013000700014
4. Erdman AL, Fernandes JD, Teixeira GA. Overview of nursing education in Brazil: graduation and post graduation. *Enferm Foco [Internet]*. 2011 [cited 2018 June 20];2(1):89-93. Available from: <http://revista.cofen.gov.br/index.php/enfermagem/article/view/91/76>
5. Biembengut MS. Mapeamento na pesquisa educacional. Rio de Janeiro: Ed. Ciência Moderna; 2008.
6. Biembengut MS, Machado AMN. Mapas e mapeamento como recursos para a pesquisa acadêmica. *Rev Araucária*. 2002;2:21-29.
7. Fernandes JD, Rebouças LC. Uma década de Diretrizes Curriculares Nacionais para a Graduação em Enfermagem: avanços e desafios. *Rev Bras Enferm*. 2013;66(esp):95-101. doi: 10.1590/S0034-71672013000700013
8. Sguissardi V. Modelo de expansão da educação superior no Brasil: predomínio privado/mercantil e desafios para a regulação e a formação universitária. *Educ Soc*. 2008;29(105):991-1022. doi: 10.1590/S0101-73302008000400004
9. Scochi CGS, Munari DB, Gelbcke FL, Erdmann AL, Gutiérrez MGR, Rodrigues RAP. The Strict Sense Nursing postgraduation in Brazil: advances and perspectives. *Rev Bras Enferm*. 2013;66(spe):80-9. doi: 10.1590/S0034-71672013000700011
10. Oguisio T. Considerações sobre a legislação do ensino e do exercício do técnico de enfermagem e do auxiliar de enfermagem. *Rev Bras Enferm*. 1977;30(2):168-74. doi: 10.1590/0034-716719770002000013
11. Mancebo D, Vale AA, Martins TB. Políticas de expansão da educação superior no Brasil: 1995-2010. *Rev Bras Educ*. 2015;20(60):31-50. doi: 10.1590/S1413-24782015206003
12. Conselho Federal de Enfermagem (Cofen). Perfil da Enfermagem no Brasil. Banco de Dados [Internet]. Brasília: Cofen; 2016 [cited 2018 Jun 30]. Available from: <http://www.cofen.gov.br/perfilenfermagem/>
13. Fernandes JD, Freitas CM, Silva RMO, Mota LSR, Silva ACP, Silva LS. Mapping of nursing specialization courses in their entirety and contradictions. *Rev Enferm UFPE*. 2017;11(6):2458-65. doi: 10.5205/1981-8963-v11i6a23410p2459-2465-2017
14. Barros ASX. Expansion of higher education in Brazil: limits and possibilities. *Educ Soc*. 2015;36(131):361-90. doi: 10.1590/ES0101-7330201596208
15. Brito CS, Guimarães AR. A expansão da educação superior e a desigualdade regional brasileira: uma análise nos marcos dos planos nacionais de educação. *EccoS Rev Cient*. 2017;44:43-66. doi: 10.5585/eccos.n44.7898