

KNOWLEDGE PRODUCTION ABOUT TEACHING IN NURSING TECHNICAL TRAINING IN BRAZILIAN STRICTO SENSU GRADUATE SCHOOL

PRODUÇÃO DE CONHECIMENTO SOBRE ENSINO NA FORMAÇÃO TÉCNICA EM ENFERMAGEM NA PÓS-GRADUAÇÃO STRICTO SENSU BRASILEIRA

LA PRODUCCIÓN DE CONOCIMIENTO ACERCA DE LA ENSEÑANZA EN FORMACIÓN TÉCNICA EN ENFERMERÍA EN EL POSGRADO STRICTO SENSU BRASILEÑO

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Objective: identifying the production of knowledge generated and disseminated by the stricto sensu Brazilian graduate programs about teaching in technical training of secondary level in Nursing in the Federal Network of Professional, Scientific and Technological Education. Method: this is a descriptive-exploratory, quantitative-qualitative research, which used as data source the Catalog of Theses and Dissertations of the Coordination of Improvement of Higher Education Personnel, the Brazilian Digital Library of Theses and Dissertations and the Virtual Health Library. Results: Twelve productions were identified, one thesis, nine dissertations and two articles, which originated three thematic axes: Relationship theory and practice and the integration between teaching-service; Teaching practices and training for the teaching-learning process; Dimensions, pedagogical proposals and approaches of technical education in nursing. Conclusion: there was a reduced number of studies and a marked

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discrepancy between knowledge production and dissemination to society, corroborating the invisibility of the theme in the context of graduate studies.

Descriptors: Teaching. Nursing. Education Nursing Associate. Nursing Education Research. Knowledge.

Objetivo: identificar a produção de conhecimento gerada e disseminada pelos programas de pós-graduação stricto sensu brasileiros acerca do ensino na formação técnica de nível médio em Enfermagem na Rede Federal de Educação Profissional, Científica e Tecnológica. Método: trata-se de uma pesquisa descritiva-exploratória, quantiqualitativa, que utilizou como fonte de dados o Catálogo de Teses e Dissertações da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, a Biblioteca Digital Brasileira de Teses e Dissertações e a Biblioteca Virtual de Saúde. Resultados: identificaram-se 12 produções, sendo uma tese, nove dissertações e dois artigos, que originaram três eixos temáticos: Relação teoria e prática e a integração entre ensino-serviço; Práticas docentes e formação para o processo ensino-aprendizagem; Dimensões, propostas pedagógicas e enfoques do ensino técnico em enfermagem. Conclusão: notou-se um quantitativo reduzido de estudos e acentuada discrepância entre produção do conhecimento e disseminação para a sociedade, corroborando a invisibilidade do tema no contexto da pós-graduação.

Descritores: Ensino. Enfermagem. Educação Técnica em Enfermagem. Pesquisa em Educação de Enfermagem. Conhecimento.

Objetivo: identificar la producción de conocimiento generada y diseminada por los programas de posgrado stricto sensu brasileños acerca de la enseñanza en la formación técnica de nivel medio en Enfermería en la Red Federal de Educación Profesional, Científica y Tecnológica. Método: se trata de una investigación descriptivo-exploratoria, cualitativa y cuantitativa, que utilizó como fuente de datos el Catálogo de Tesis y Disertaciones de la Coordinación de Perfeccionamiento de Personal de Nivel Superior, la Biblioteca Digital Brasileña de Tesis y Disertaciones y la Biblioteca Virtual de Salud. Resultados: se identificaron 12 producciones, siendo una tesis, nueve disertaciones y dos artículos, que originaron tres ejes temáticos: Relación teoría y práctica y la integración entre enseñanza-servicio; Prácticas docentes y formación para el proceso enseñanza-aprendizaje; Dimensiones, propuestas pedagógicas y enfoques de la enseñanza técnica en enfermería. Conclusión: se notó un cuantitativo reducido de estudios y acentuada discrepancia entre producción del conocimiento y diseminación para la sociedad, corroborando la invisibilidad del tema en el contexto del posgrado.

Descriptorios: Enseñanza. Enfermería. Graduación en Auxiliar de Enfermería. Investigación en Educación de Enfermería. Conocimiento.

Introduction

Nursing education has a dynamic, complex and multifaceted nature permeated by the socioeconomic and cultural situation in which it is inserted⁽¹⁾. Thus, this theme presents itself as a poignant social need in the face of the expansion of courses and vacancies in educational institutions and the growing demands for qualified and reflective professionals⁽²⁾.

In this sense, the National Curriculum Guidelines (NCG) for professional and technological education recommend that training contemplates the articulation and integration of knowledge, skills, attitudes and values essential for the construction of professional competencies. Such aspects are fundamental because they promote critical awareness to respond to the adversities of the world of work and also of society⁽³⁾.

With regard to the high school technical course in Nursing, created to meet the health needs of the population and the market, it is revealed that, historically, in its training process, there has been a fragmented and technicist teaching⁽⁴⁾. Thus, high-school technical professional education in nursing has been facing numerous challenges, especially related to its conception, structure and organization⁽⁵⁾.

One of these more complex challenges is the development of the teaching process itself. Generally, nurses are responsible for the technical training of middle level nursing, as well as the supervision of the activities performed by nursing technicians. However, nurses, throughout their training, are insufficiently prepared for the practice of teaching and teaching⁽⁶⁾.

It is noteworthy that nursing technicians play a considerable part of care practices in health services, directly interfering with the quality of care provided. Thus, they require a robust training⁽⁷⁾, facilitated by professionals with skills and competencies that favor the teaching process.

Although professional education has been changing over the years, with important advances, the Federal Network of Professional, Scientific and Technological Education advocates, since its creation, transcend the technical aspects of teaching, valuing educational work as an instrument of policy and social transformation⁽⁸⁾.

However, despite the role of the public sector, especially at the federal level, in favor of the training of human resources in health, there are still gaps in the literature related to this theme, and studies are needed to boost reflections on this topic. Thus, given the above, it is evident the relevance of this study, which presents as object the production of knowledge from post-graduate programs Brazilian *stricto sensu* graduation related to teaching in technical high school training in Nursing in the Federal Network of Professional, Scientific and Technological Education. The aim is to contribute to the visibility and expansion of this area of knowledge, reflecting improvements in the training process at this level in these spaces.

Therefore, it is questioned: How is the knowledge generated by the *stricto sensu* Brazilian graduate programs about teaching in technical training of high school in Nursing in the Federal Network of Professional, Scientific and Technological Education?

Thus, this study aimed to identify the production of knowledge generated by the *stricto sensu* Brazilian graduate programs about teaching in technical training in nursing at the Federal Network of Professional, Scientific and Technological Education.

Method

This is a descriptive-exploratory study, of a quantitative-qualitative nature, in order to

identify the production of knowledge generated by post-graduate programs Brazilian *stricto sensu* graduation about teaching in technical high school training in Nursing in the Federal Network of Professional, Scientific and Technological Education from 2010. Through this research, we aim to contribute to increasing the visibility of this field of knowledge.

To achieve its objectives, the following steps were followed: idealization of the guiding question; definition of the research objective; creation of the research protocol; data collection; data analysis; interpretation and summarization of the results.

This study presents as a scenario the Federal Network of Professional, Scientific and Technological Education, established through Law n. 11,892⁽⁹⁾, characterized by having institutions of higher education, basic and professional, pluricurricular and multicampi, specialized in offering professional and technological education. Thus, the Federal Institutes seek to reshape the panorama of vocational training by defending education as a means of social transformation. It is noteworthy that this network offered, in 2020, 51 technical courses in Nursing, totaling 3,781 enrollments⁽¹⁰⁾. Due to its breadth, it constitutes itself as a potential producer and disseminator of research in the area.

For the survey of the knowledge generated by the *stricto sensu* graduate programs, evidenced by the scientific productions, the Catalog of Theses and Dissertations of the Coordination of Improvement of Higher Education Personnel (CAPES) were consulted as data sources and the Brazilian Digital Library of Theses and Dissertations (BDTD), which contains the deposit of production generated by Brazilian graduate programs. As a parameter to identify the dissemination of knowledge and research on the subject to society and the scientific community transcendent to postgraduate, the search for publications, in the form of scientific articles, was made on the portal of the Virtual Health Library (VHL) is a platform that integrates sources of information related to health, open access, which promotes the democratization

and expansion of access to scientific knowledge in health.

Initially, there was the definition of the theme and the delineation of the research question and the objective of the study. To determine the search strategy, an exploratory survey of scientific productions on the subject was carried out in order to identify the descriptors that best suited the research question. Thus, the descriptors “education” and “teaching” and “nursing” present

in the Health Sciences Descriptors (DeCS) were selected, and the keywords “federal network” and “federal institute” were used in order to delimit the scenario of the study.

It should be noted that in all data sources associations were established between descriptors, keywords and Boolean operators AND and OR, and the search strategies presented in Chart 1 were elaborated.

Chart 1 – Data sources and the respective search strategies used.

Data Source	Search Strategy
CAPES/ BDTD Portal	(education OR teaching) AND nursing AND “federal institute”
VHL Portal	((education OR teaching) AND Nursing AND (“federal network” OR “federal institute”))

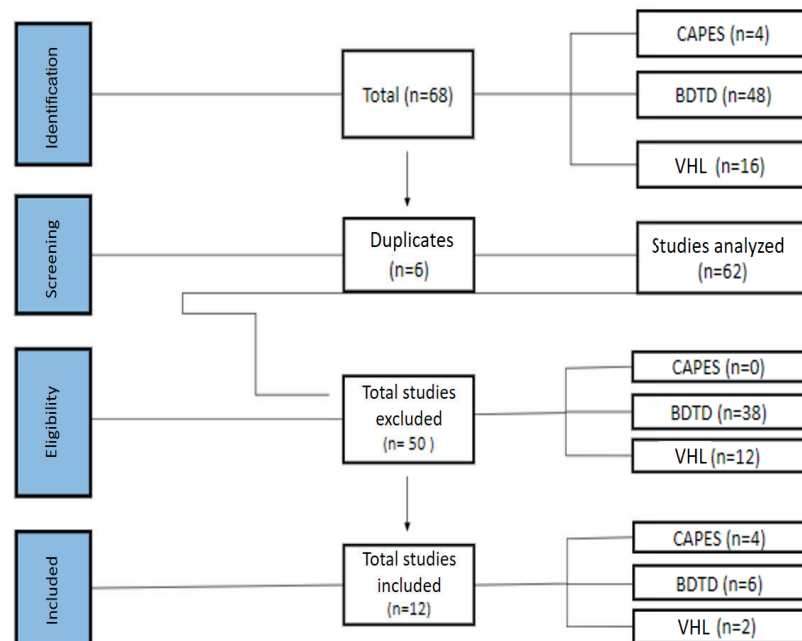
Source: created by the authors.

Theses and dissertations from the *stricto sensu* graduate programs published between 2010 and 2021, related to the theme, as well as articles available in full, in any language and related to the research object, were included. The exclusion criteria were: publications outside the defined period, book chapters, abstracts published in annals and publications not related to the object of this study. As a time cut, it was considered that the creation of the Federal Institutes occurred in 2008, through Law n. 11,892⁽⁹⁾, however, the technical training of middle level in Nursing has an estimated duration of two and a half years, as stated in the National Catalog of Technical Courses⁽¹¹⁾. Thus, it was decided to preserve a time lapse between the creation and settlement of the first classes of technical courses in Nursing in this mold of Federal Network, understanding an essential time to provide ballast for the

emergence of concerns and problems related to the training process, making possible issues for studies from 2010.

Data collection took place in February 2022, with support from Microsoft Excel[®]. After the survey, the publications found in each database were read in the following order: titles, year of publication and abstracts, being excluded the productions that did not meet the inclusion criteria. The choice of data, from the initial survey to the composition of the sample, was performed by two authors of the study, in a double-independent manner. Disagreements between the results were resolved by consensus mediated by a third reviewer.

To guide the selection process of the articles included in the research, a flow with the trajectory was elaborated (Figure 1).

Figure 1 – Flow of identification and selection of studies. Salvador, Bahia, Brazil – 2022.

Source: created by the authors.

For data analysis, a matrix was built in Microsoft Excel[®] containing title, type of production, year of defense or publication, journal, place of publication, objectives and results. Regarding the qualitative analysis, there was a fluctuating reading of the titles and abstracts. To explore the material, each production received a code composed of the initial type of publication (Thesis, Dissertation or Article), followed by an Arabic numeral. After obtaining and aggregating the central themes of the studies, the thematic axes were constructed.

Due to the use of only documentary data sources and available in open access databases, the evaluation and approval by a Research Ethics Committee were waived, however, all ethical and authorial aspects were respected.

Results

Twelve productions related to teaching in technical training of high school in Nursing in the Federal Network of Professional, Scientific and Technological Education published from 2010. Of these, 10 (83.33%) were directly from the *stricto sensu* postgraduate, integrating a thesis and nine dissertations, and two more (16.66%) articles, both resulting from research from the *stricto sensu* postgraduate.

Regarding the years of the publications, there was a highlight for 2016, with five (41.66%) studies, followed by 2015 and 2019; both with two (16.66%) productions each (Table 1).

Table 1 – Year of publication and type of scientific productions about teaching in secondary technical training in Nursing in the Federal Network of Professional, Scientific and Technological Education from 2010. Salvador, Bahia, Brazil – 2022. (N=12)

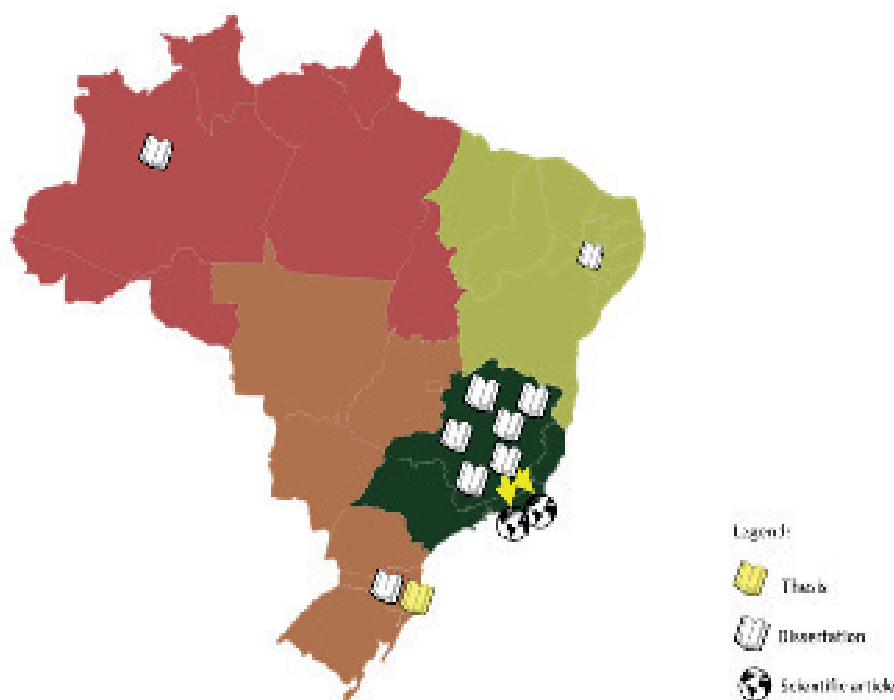
Type of production	Year of Publication						Total
	2011	2012	2015	2016	2019	2020	
Thesis	1						1
Dissertation		1	1	4	2	1	9
Scientific Article			1	1			2
Total	1	1	2	5	2	1	12

Source: created by the authors.

Figure 2 shows the distribution of publications in the Brazilian territory. It is noticeable the predominance of the State of Minas Gerais, in the Southeast Region, with six studies of the dissertation type, which represents 50% of the identified productions; then appears Santa Catarina, in the South Region, with 16.66%, being a dissertation and a thesis. The Northeast and North regions have a production (dissertation) (8.33%) each, in the States of Pernambuco and Amazonas, respectively. No thematic productions were identified in the Midwest Region.

With regard to the dissemination of knowledge generated by graduate programs, this study considered the quantity of scientific articles found. It is noteworthy that the two identified articles originated from a single research (dissertation) carried out in postgraduate studies and were published in the same journal in the State of Rio de Janeiro, Work, Education and Health, in which is characterized by being open access and is edited by the Escola Politécnica de Saúde Joaquim Venâncio, belonging to the Fundação Oswaldo Cruz.

Figure 2 – Distribution of scientific productions about teaching secondary-level technical training in Nursing in the Federal Network of Professional, Scientific and Technological Education. Salvador, Bahia, Brazil – 2022.

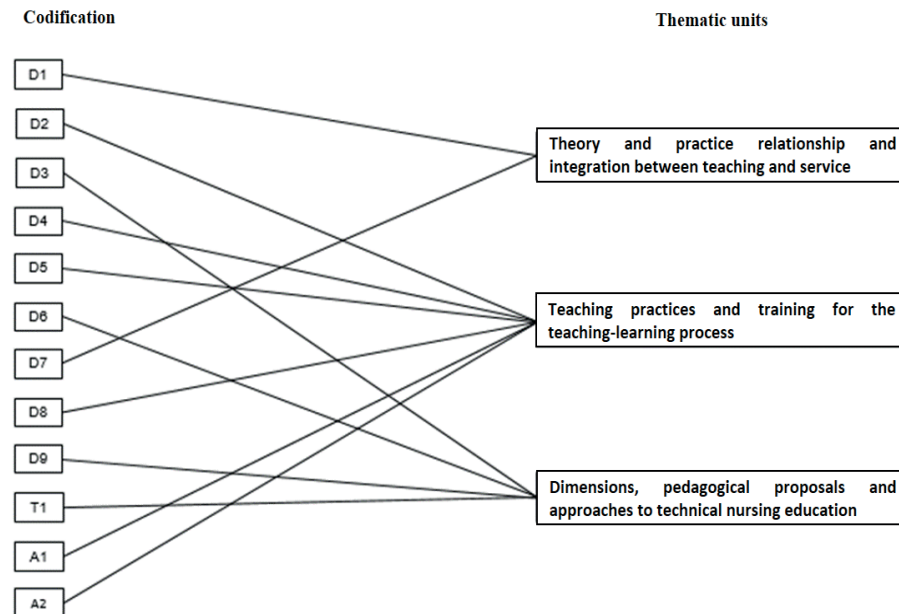


Source: created by the authors.

As for the most discussed topics, based on content analysis of titles and abstracts, three categories emerged, highlighting *Teaching practices*

and training for the teaching-learning process, with six productions (50%), as shown in Figure 3.

Figure 3 – Synoptic representation of the coding and delineation of research categories.



Source: created by the authors.

Discussion

According to data from the Federal Nursing Council (COFEN), there are currently 1,953,915 nursing technicians and auxiliaries, which corresponds to 74.57% of the professionals in the category⁽¹²⁾. However, despite being part of the largest contingent of the health workforce, this study, analogous to other studies⁽¹³⁾, identified a small number of publications on technical professional education of middle level in nursing. It is noteworthy that, although there has been a growth in the quantity of stricto sensu graduate programs in the field of nursing in Brazil⁽¹⁴⁾, resulting in an increase in the number of researches at the master's and doctoral level, the theme of professional education is

still outside the scope of most researchers. However, it is noted that, based on the findings obtained, the lack of knowledge production related to the subject is more significant when it comes to this training within the Federal Network of Professional, Scientific and Technological Education.

The scarcity of studies related to technical professional training in nursing is alarming, given that nursing technicians, being responsible for the provision of most direct health care, directly interfere with the quality of care. Thus, these professionals require robust and quality training^(7,13).

Thus, to support the teaching in technical training in Nursing, it is essential to expand knowledge in this area, with a view to improving the nuances associated with the teaching-learning

process. Regarding the Federal Network, this need is even more poignant given its national scope, structure and educational principles. It is considered that it is up to the federal level to organize the training of human resources in health⁽¹⁵⁾, and this should go through the various stages of the training process, including the production of knowledge.

Currently, the Federal Network has 51 technical level courses in Nursing in 37 units⁽¹⁰⁾. However, the Southeast and Northeast regions are those that have more academic units that offer the referred course, each one with 12 units, which offer 15 and 18 courses, respectively⁽¹⁰⁾.

Regarding the distribution of publications in the Brazilian territory, there is a disproportion between and within the region. The Southeast Region concentrates 50% of the productions, all of the dissertation type and coming from the State of Minas Gerais. It is noteworthy that this region contains the largest number of *stricto sensu* graduate programs in the Country⁽¹⁶⁾, and therefore tends to centralize an expressive part of the productions. However, in a manner that is inconsistent with other studies on professional education of a technical level in Nursing⁽¹⁷⁾, in this research, Minas Gerais gathered all the publications, which can be justified by the delimitation of the environment in which the courses are offered, since this State comprises the largest number of units of education that are part of the Federal Network that offer this training⁽¹⁰⁾.

However, the Northeast, although corresponding to the region with the highest number of courses offered⁽¹⁰⁾, presents a very timid production, restricted to the State of Pernambuco. It should be noted that there were no productions concerning the theme in the Midwest Region.

Regarding the dissemination of knowledge generated by Brazilian graduate programs, only two articles were found from a dissertation developed in Minas Gerais. In this sense, it is noted that the dissemination of knowledge on the subject is still incipient.

It is evident that research is usually based on knowledge gaps and represents the core

of *stricto sensu* graduate studies, which greatly determines the scientific production in the Country⁽¹⁸⁾. However, often, the results of the studies are not disseminated to society and, consequently, they are no longer incorporated in practice, not reflected in transformations, which represents a weakness in the translational perspective of nursing research⁽¹⁸⁾.

Thus, it is worrisome, in addition to the low production generated by the *stricto sensu* Brazilian graduate programs about teaching in technical training of secondary level in Nursing in the Federal Network of Professional, Scientific and the incipience in the propagation of the results of the research carried out. It is noteworthy that the findings could impact on the mitigation of weaknesses and improvements in the teaching process, favoring a more solid training, and therefore a health care of the most qualified and safe population.

Another point is that the Federal Network advocates education as an instrument of social transformation, based on teaching, research and extension⁽¹⁹⁾. Thus, these spaces must also be committed to the production of research and dissemination of evidence.

Regarding the focus of the productions, the themes related to the category *Teaching practices and training for the teaching-learning process were more evident*. In this field, it was noted the presence of studies directed to the understanding of teaching practice, including the preparation for conducting evaluations of the teaching-learning process, biosafety practices and movements aimed at building a new pedagogical praxis. This demonstrates the interest of researchers, although embryonic, due to the reduced number of publications, for the aspects that permeate the teaching and the training process.

Usually, the training of nursing technicians is attributed to nurses; however, the graduation in nursing is predominantly composed of bacharelates. Thus, in general, skills related to teaching are developed in a timid way, since the focus is still on practical assistance. Based on these findings, it is inferred that there is a concern

with the improvement of aspects related to the teaching process, especially given its dynamic character. Moreover, it is increasingly necessary to engage and commit to the search for tools that favor a training that enables the construction of critical-reflective and participatory knowledge⁽²⁰⁾, overcoming technical aspects⁽²¹⁾.

The second category revealed was *Dimensions, pedagogical proposals and approaches of technical education in Nursing*, with four productions (33.33%), which has strong relations with the first category. This category points to the interest in issues associated with teaching, in addition to teaching practice, such as the elements and themes present in the pedagogical projects of the courses, curricular organization and in view of the lack of understanding of didactic-pedagogical topics of most nurses, resulting from their own training processes⁽⁶⁾.

In this sense, considering that the pedagogical dimensions of the course reverberate in the professional profile of the graduate⁽³⁾, they are essential themes within the researchers' agenda, although they are little explored. This knowledge can enable the technical training of middle level in Nursing to align with contemporary needs, surpassing the traditional technicist model and rescuing social, ethical and political principles.

The third thematic unit unveiled was *Relation theory and practice and teaching-service integration*, with two publications (16.66%). It is emphasized that the teaching-service integration, by enabling the practice of theoretical knowledge, assists in the training process of the student, as it provides experiences in real scenarios of practice, and also has the potential to contribute to improvements in the quality of services⁽²²⁾. However, this issue still faces multiple challenges for its effectiveness, since both the theory and practice relationship and the teaching-service integration still occur in a shy way and dissociated from the critical and reflective character. In this perspective, it is considered that only the assistance experience does not guarantee the professional pedagogical experience for the dialogical development between theory and practice in nursing teaching⁽⁶⁾.

Thus, it is noted that the three thematic units are presented in an interrelated way, and that the teaching in technical training of secondary level in Nursing in the Federal Institutes still consists of an area with little visibility within the scope of the researchers.

The limitations of this study are related to possible inconsistencies in the databases due to delays in the deposit of theses and dissertations, as well as the reduced quantity of recovered productions. However, this research contributes to raise reflections on the subject, in order to expand the understanding of teaching in technical training in Nursing, mitigating the weaknesses unveiled and favoring the construction of knowledge about the subject, with potential repercussions on the training processes of nursing technicians.

Conclusion

This study made it possible to identify the production of knowledge generated by the *stricto sensu* Brazilian graduate programs about teaching in technical training of secondary level in Nursing in the Federal Network of Professional, Scientific and Technological Education from 2010. The results showed a reduced number of productions, showing low visibility of the theme. However, there is a considerable discrepancy between what is produced in graduate school and what is disseminated to society.

It is inferred that, even today, the model of concentration of knowledge produced in academia is perpetuated, to the detriment of the expansion and popularization of research, which could foster positive transformations in the practice of training processes and services.

Thus, in this field, the challenges to be faced are noticeable, especially by the Federal Network, since it has a strategic role to provide a more solid training, as well as to arouse interest in technical education in nursing, stimulate research to improve the teaching process and, consequently, a more consistent praxis. In addition, it highlights the potential to make the knowledge generated more accessible

and, consequently, transforming reality, giving a translational character to the research.

It is expected, with this study, after the identification of the production and dissemination of knowledge generated by the *stricto sensu* Brazilian graduate programs about the teaching in the technical training of high level in Nursing in the Federal Network, promote the expansion of visibility and discussions related to the theme, as well as expand this area of knowledge. Associated with this, it is intended to subsidize future reflections and research on the subject, reflecting on improvements in teaching in these spaces.

Collaborations:

1 – conception and planning of the project: Ludmila Anjos de Jesus and Gilberto Tadeu Reis da Silva;

2 – analysis and interpretation of data: Ludmila Anjos de Jesus and Gilberto Tadeu Reis da Silva;

3 – writing and/or critical review: Ludmila Anjos de Jesus, Gilberto Tadeu Reis da Silva, Ingrid Vanessa Santos do Nascimento, Itanna Vytoria Sousa Serra, Luciana Dourado Pimenta Almeida, Ana Lúcia Arcanjo Oliveira Cordeiro and Giselle Alves da Silva Teixeira;

4 – approval of the final version: Ludmila Anjos de Jesus, Gilberto Tadeu Reis da Silva, Ingrid Vanessa Santos do Nascimento, Itanna Vytoria Sousa Serra, Luciana Dourado Pimenta Almeida, Ana Lúcia Arcanjo Oliveira Cordeiro and Giselle Alves da Silva Teixeira.

Conflicts of interest

There are no conflicts of interest.

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