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Nursing process in the pedagogical projects of technical nursing courses: a documentary analysis

Processo de enfermagem nos projetos pedagógicos de cursos técnicos em enfermagem: análise documental

Proceso de Enfermería en los proyectos pedagógicos de los cursos técnicos de enfermería: un análisis documental

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ABSTRACT

Objective: to analyze the presence and approach of the nursing process and its steps in the pedagogical projects of technical nursing courses offered by the Federal Institutes of Brazil. **Method**: documentary, qualitative study with a quantitative descriptive component, based on 23 pedagogical projects. Characterization data were organized and analyzed by descriptive statistics in Excel®. Textual analysis was conducted with the support of the IRaMuTeQ software, aligned with Bardin's content analysis. **Results**: courses in the Southeast region predominate, primarily offered in the in-person and subsequent modalities, with a mean workload above the required minimum. In the course syllabi, the nursing process and its steps receive limited coverage, with an emphasis on the execution of technical procedures and an absence of structural elements, such as nursing prescription, prescription verification, and theoretical frameworks, alongside a non-transversal approach to nursing records. **Concluding remarks**: weaknesses in the approach to the nursing process in technical education are evident, indicating the need for greater integration of its elements into pedagogical projects.

Descriptors: Nursing Process; Licensed Practical Nurses; Education, Nursing, Associate; Teaching Materials; Document Analysis.

RESUMO

Objetivo: analisar a presença e a abordagem do processo de enfermagem e de suas etapas nos projetos pedagógicos dos cursos técnicos em enfermagem dos Institutos Federais do Brasil. **Método:** estudo documental, qualitativo, com componente descritivo quantitativo, baseado em 23 projetos pedagógicos. Os dados de caracterização foram organizados e analisados por estatística descritiva no *Excel®*. Análise textual realizada com apoio do *software* IRaMuTeQ, articulado à análise de conteúdo de Bardin. **Resultados:** predominam cursos na região Sudeste, presenciais e subsequentes, com carga horária média superior ao mínimo exigido. Nas ementas, o processo de enfermagem e suas etapas apresentam abordagem limitada, com ênfase na execução de procedimentos técnicos e ausência de elementos estruturantes, como prescrição, checagem e referenciais teóricos, além de abordagem não transversal das anotações de enfermagem. **Considerações finais:** evidenciam-se fragilidades na abordagem do processo de enfermagem na formação técnica, indicando a necessidade de maior integração de seus elementos nos projetos pedagógicos.

Descritores: Processo de Enfermagem; Técnicos de Enfermagem; Educação Técnica em Enfermagem; Materiais de Ensino; Análise Documental.

RESUMEN

Objetivo: analizar la presencia y el enfoque del Proceso de Enfermería y sus etapas en los proyectos pedagógicos de los cursos técnicos de enfermería en los institutos federales de Brasil. **Método:** este es un estudio documental cualitativo, descriptivo-cuantitativo, basado en 23 proyectos pedagógicos. Los datos de caracterización se organizaron y analizaron mediante estadística descriptiva en *Microsoft Excel®*. El análisis textual se realizó con el apoyo del *software* IRaMuTeQ, articulado con el análisis de contenido de Bardin. **Resultados:** predominan los cursos en la región sureste, tanto presenciales como de nivel postsecundario, con una carga de trabajo promedio que supera el mínimo requerido. En sus programas de estudio, el Proceso de Enfermería y sus etapas se presentan de forma limitada, haciendo hincapié en la ejecución de procedimientos técnicos y careciendo de elementos estructurantes como la prescripción, la verificación y los marcos teóricos, además de adoptar un enfoque no transversal en las notas de enfermería. **Consideraciones finales:** se observan deficiencias en el enfoque del Proceso de Enfermería en la formación técnica, lo que indica la necesidad de una mayor integración de sus elementos en los proyectos pedagógicos.

Descriptores: Proceso de Enfermería; Enfermeros no Diplomados; Graduación en Auxiliar de Enfermería; Materiales de Enseñanza; Análisis de Documentos.

INTRODUCTION

The Nursing Process (NP) is a method that guides the nursing team in the provision of care. Its implementation involves the following steps: assessment, diagnosis, planning, implementation, and evaluation, with diagnosis and prescription being activities exclusive to registered nurses. Nursing technicians and nursing assistants participate in the NP through nursing records, as well as through the implementation of prescribed care and its verification, under the supervision and guidance of the registered nurse[1].

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Nursing technicians represent the largest contingent of professionals in nursing and across the entire health sector[2]. The numerical predominance of this category has been growing in Brazil in recent years, reflecting a strong policy orientation toward expanding technical education in the country[3].

Nursing in Brazil is currently represented by 3,047,907 professionals distributed as follows: 1,830,575 technicians (60.08%), 746,211 registered nurses (24.47%), 470,731 nursing assistants (15.44%), and 390 midwives (0.01%). Among this workforce, registered nurses constitute the only group with a completed undergraduate degree[2]. Regardless of professional category, all nursing workers must orient the care they provide through the NP[4].

The first schools training nursing technicians emerged in Brazil in 1966 as a strategy to address the shortage of professionals capable of working at an intermediate level between nursing assistants and registered nurses[5,6]. Currently, technical education is grounded in Law No. 7,498 of June 25, 1986, which regulates the practice of nursing, and in Decree No. 94,406 of June 8, 1987, which implements its provisions[7,8]. With regard to the provisions of these regulations relating to the technician's role in the NP, Art. 12 of the aforementioned law stipulates that this professional may participate in nursing care planning, being authorized to perform care activities, except those exclusive to registered nurses. Complementarily, Decree No. 94,406/1987, in its Art. 10, establishes that the nursing technician performs auxiliary activities at the intermediate technical level within the nursing team and is responsible, among other duties, for assisting the registered nurse in the planning, programming, guidance, and supervision of care activities. Accordingly, in order to participate effectively in care planning, the technician must have comprehensive knowledge of the NP, including the steps exclusive to the registered nurse[7,8].

Training institutions are responsible for ensuring that students in technical nursing programs develop skills and competencies aligned with the professional regulatory frameworks, which establish the technician's participation in the NP. In contrast, the literature points to a recurrent pattern of omission or superficial coverage of the NP in technical education, as demonstrated by the studies described below.

A study conducted in the city of João Pessoa, PB, analyzed the Course Pedagogical Projects (CPP) of five nursing technician training schools, one federal public school, and four private schools, with respect to the teaching and application of the NP. The study found that the NP is underutilized and inadequately addressed in the curricula of technical nursing programs, and revealed that technical education tends to prioritize operational aspects at the expense of a thorough and critical understanding of the elements of the NP[9].

A study conducted in a technical nursing program affiliated with a public university in the Northeast region of Brazil found that faculty members recognize the relevance of incorporating NP instruction into technical education; however, they expressed uncertainty and insecurity regarding the appropriate timing and pedagogical strategies for doing so. These difficulties were attributed to limited practical experience with the NP at clinical training sites and to the perception that students lacked the necessary theoretical background[10].

In the city of Januária, MG, the superficial coverage of the NP in a technical nursing program at a Federal Institute was identified as a training gap related to the technical and social division of labor in nursing and to the lack of content mastery among nursing faculty[11].

The studies described above highlighted that the consolidation of NP instruction in technical education has the potential to improve care quality and promote change in healthcare practice settings[9-11].

Despite the findings of individual studies on NP instruction in technical nursing programs, there is a notable scarcity of nationally scoped research analyzing the presence of this content in curricula. Furthermore, no studies have examined the approach to, and integration of, the NP steps in the pedagogical projects of these programs. These gaps hinder a broader understanding of the educational landscape in Brazil and limit the development of more effective pedagogical strategies. It is therefore pertinent to investigate, at a national level, how NP-related content is addressed in the syllabi of curricular components in technical nursing programs.

In this regard, technical nursing programs offered by the Federal Institutes (FI) represent a privileged setting for analysis, as they are part of the Federal Network of Professional, Scientific, and Technological Education, characterized by the provision of free, public education at a national scale[12]. These programs are distributed across the five regions of Brazil, totaling 28 offerings affiliated with the FIs, which underscores their reach and relevance in training nursing technicians in the country. In this context, analyzing the CPP of these institutions proves to be a strategic approach for understanding how the NP has been addressed in technical education.

Given the above, this study aimed to analyze the presence and approach of the Nursing Process and its steps in the pedagogical projects of technical nursing courses of the Federal Institutes of Brazil.

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METHOD

This is a documentary, qualitative study with a quantitative descriptive component. The intentional sample comprised the pedagogical projects of the 28 technical nursing courses offered by the FIs in Brazil. Of these, CPP with an update date after 2020 were included, totaling 25 documents. CPP for courses inaugurated after January 2024 were subsequently excluded, yielding a final sample of 23 CPP.

A five-year update window was adopted as an inclusion criterion on the grounds that, although no legally defined deadline exists for the revision of these documents, CPP should be periodically updated to ensure that courses remain aligned with social and professional changes, as well as with contemporary educational demands[13].

The exclusion criterion based on the year a course was inaugurated was adopted on the grounds that CPP analysis was understood as the expression of an active pedagogical project, not merely a formal document. Accordingly, newly inaugurated courses, having not yet completed their training cycle, may still be in the initial phase of CPP implementation. A decision was therefore made to include only those courses with cohorts at more advanced stages of their training.

Furthermore, this study is part of a broader investigation that includes interviews with faculty and students in the final phase of their training. Accordingly, courses that would not have graduating cohorts during the data collection period were excluded. This procedure was intended to ensure the feasibility of the subsequent empirical phase, as well as the temporal consistency of the study.

The analysis context pertains to the FIs, in which all technical nursing programs are classified under the Environment and Health technological axis, as established by the National Catalog of Technical Courses (CNCT)[14].

Data were collected in four stages: 1) Identification of FI campuses offering technical nursing programs; 2) Download of technical program CPP via online access to institutional websites; 3) Characterization of courses across two dimensions: general data and aspects related to the presence and approach of the NP and its steps; 4) Extraction of the syllabi of the curricular components in the CPP for subsequent textual analysis.

All study stages were conducted between February and June 2025. Stages 1 and 2 were completed via internet access to the Ministry of Education (MEC) website. Stage 3 was carried out with the support of the Kobotoolbox® application.

The validity of the CPP was confirmed by contacting program coordinators via institutional email.

The characterization of courses in the general data dimension included the variables: geographic location, mode of program delivery, type of program offering, and total workload. This characterization was performed by reading the program identification data found on the opening pages of the CPP.

The characterization of courses in the dimension of aspects related to the presence and approach of the NP and its steps included the variables: instruction on nursing records, instruction on the implementation of prescribed care, instruction on the verification of care performed, and instruction on nursing theories, as well as the presence or absence of the following terms: nursing diagnosis, nursing prescription, Nursing Process, and Nursing Care Systematization (NCS). This characterization was performed by reading the syllabi of the curricular components contained in the CPP. It should be highlighted that, for the terms nursing diagnosis, nursing prescription, NP, and NCS, the aim was not to determine whether these contents are taught, but only whether they appear in the syllabi, so that students are introduced to them. This delimitation is justified by the fact that diagnosis and prescription are activities exclusive to registered nurses. Nevertheless, it is essential that nursing technicians understand these concepts and recognize their role within the work context of the multiprofessional team.

The selection of variables for characterizing aspects related to the presence and approach of the NP and its steps was guided by the regulatory frameworks governing professional nursing practice and the NP, namely: Law 7,498 on the Professional Practice of Nursing[8], the document Recommendations for Nursing Records in Professional Practice[15], and the Resolutions of the Federal Council of Nursing (COFEN) numbered: 564/2017, which approves the new Code of Ethics for Nursing Professionals[16]; 358/2009, which addresses the NCS and the implementation of the NP in public or private settings where professional nursing care is provided[17]; 429/2012, which addresses the recording of professional actions in patient records and other nursing-specific documents[18]; and 736/2024, which addresses the implementation of the NP in all socioenvironmental contexts where nursing care is provided[1].

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It should be noted that Resolutions No. 358/2009[17] and No. 429/2012[18], both revoked by Resolution No. 736/2024[1], were considered in the analysis, given that the inclusion criterion adopted the cutoff date of CPP updated from 2020 onward. These resolutions were therefore still in effect at the time some of the documents were drafted.

Course characterization data were organized and analyzed in Microsoft Excel®, using descriptive statistics. For the textual analysis phase, course syllabi were structured into a textual corpus. The corpus content was analyzed with the support of the Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires (IRaMuTeQ®) software by Pierre Ratinaud[19].

The construction of the textual corpus involved the selection and organization of relevant sections from each of the 23 CPP analyzed. Each document was treated as a textual unit within the corpus. The syllabi of the curricular components were extracted, excluding bibliographic references. All content was compiled into a single text file, prepared in Microsoft Word® and encoded in UTF-8 format. To assess the representativeness of the material and the lexical saturation of the corpus, the utilization rate and the hapax coefficient were verified.

These indicators are useful for validating the quality and consistency of the results obtained in the textual analysis. The literature recommends that the corpus utilization rate be equal to or greater than 75% and that the hapax coefficient fall between 40% and 60%[19].

Each course was identified in the corpus by means of a command line comprising four asterisks, an identification number, and the abbreviation of the region of the course being analyzed. The content was reviewed to standardize necessary terms (e.g., diagnósticos_de_enfermagem) and eliminate grammatical, typographical, and punctuation errors.

After this process, the corpus was entered into the IRaMuTeQ® software for textual analysis. The standard Portuguese language dictionary was used, and the size of the text segments (TSs) was set to 40 words. In the initial processing stage, the software generated an automatic diagnostic report containing the total number of TSs and occurrences (words).

The open-source IRaMuTeQ software is designed for the processing of textual data, offering various analysis techniques[19]. In this study, the techniques of Descending Hierarchical Classification (DHC) and similarity analysis were used. The DHC organizes TSs based on lexical proximity, resulting in the formation of thematic classes.

The resulting thematic classes were analyzed following Bardin's proposal[20], considering three stages: 1) Pre-analysis. In this stage, a floating reading of the TSs grouped in each class by the DHC was performed, with the aim of grasping the general content and identifying initial units of meaning; 2) Exploration of the material. In this stage, the TSs were examined considering their distribution across the classes generated by the software, with the aid of the colored corpus resource, which allows visualization of excerpts according to their classification. The most representative excerpts from each class were selected and the predominant meaning cores identified; 3) Interpretation. In this stage, the identified meaning cores were analyzed in an integrated manner, enabling the naming of the classes and the construction of thematic categories.

Following this stage, similarity analysis was performed, which identifies connections between words based on the co-occurrence of terms in the textual corpus.

Since this study involves the analysis of publicly accessible institutional documents, ethics committee review is not required, as provided for in Resolution No. 510/2016 of the National Health Council[21]. However, the study is part of a broader investigation that includes interviews with faculty and students, which necessitated submission to and approval by an ethics committee. The study was therefore approved under a Certificate of Presentation for Ethical Consideration on February 10, 2025.

RESULTS

The characterization of the technical nursing programs provided by the FIs in the general data dimension revealed the following geographic distribution: of the 23 courses identified (100%), eight are located in the Southeast region (34.78%), six in the South (26.09%), three in the Northeast (13.04%), four in the North (17.39%), and two in the Central-West region (8B.70%). Regarding mode of delivery, 21 courses are offered in the subsequent modality (91.3%) and two are of the Youth and Adult Education (EJA) type (8.7%). No course is offered in the concurrent modality. As for the format of the courses, 14 are entirely in-person (60.87%) and nine are hybrid (39.13%). No course is offered in the distance learning (EaD) modality. Courses include theoretical curricular components, supervised internships, and complementary activities, with a mean total workload of 1,718.04 (±276.51) hours (minimum = 1,600 hours; maximum = 2,820 hours).

The distribution and approach of topics related to the NP and its steps in the syllabi of the FIs' technical programs are presented in Table 1.

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Table 1: Distribution and approach of topics related to the NP and its steps in the syllabi of the FIs' technical programs. Niterói, RJ, Brazil, 2025.

Topics identified.	Approach to topics in the syllabi	n	f (%)
	Addressed transversally	2	8.7
Nursing records	Addressed in specific curricular components	21	91.3
Implementation of prescribed care	Approach associated with a nursing diagnosis or prescription	-	-
	Approach associated with a physician's diagnosis or prescription	6	26.1
	Approach associated with the execution of technical procedures	17	73.9
Prescription verification	Absent	22	95.7
	Present	1	4.3
Nursing diagnosis	Absent	3	13.0
	Present	20	87.0
Nursing prescription	Absent	22	95.7
	Present	1	4.3
Nursing theory	Absent	22	95.7
	Present	1	4.3
Nursing Process	Absent	19	82.6
	Present	4	17.4
Nursing Care Systematization (NCS)	Absent	15	65.2
	Present	8	34.8

The results indicate that the NP and its steps have limited integration and are addressed in a predominantly fragmented manner in the syllabi analyzed, with an emphasis on content oriented toward the execution of technical procedures and the absence or limited incorporation of structural elements, such as prescription, prescription verification, and theoretical frameworks. A non-transversal approach to nursing records and the presence of the term Nursing Care Systematization or the abbreviation NCS were also observed, suggesting conceptual imprecision in relation to the NP.

The textual corpus was entered into the IRaMuTeQ® software with a segmentation of 3,274 TSs. A total of 99,370 occurrences emerged, of which 7,008 were distinct words. Saturation, according to the hapax coefficient, was 1.87%. Following application of the DHC technique, a retention rate of 87.26% was obtained (2,857 TSs), distributed across four thematic classes with a mean of 30.35 forms per ST.

The analysis of the textual corpus through DHC enabled the organization of TSs based on the thematic proximity of subjects. The material was accordingly distributed into four classes: class 1 with 1,165 TSs (40.78%), class 2 with 460 TSs (16.1%), class 3 with 499 TSs (17.47%), and class 4 with 733 TSs (25.66%). Based on the structuring of the classes obtained by DHC, the groupings were named according to the themes that emerged from the thematic analysis, as detailed in Figure 1.

Classes	Class names	Thematic categories identified in the syllabi
1	Regulation and educational purpose of supervised internships	Supervised practical learning; nursing procedures in distinct care settings; norms; and institutional regulations.
2	Technical nursing practice in clinical, surgical, urgent, and emergency care units	Nursing care provided to individuals affected by clinical and surgical conditions; infection control and biosafety; technical procedures and hospital routines in urgent and emergency care units.
3	Comprehensive and humanized care across the life cycle	Nursing practices for the care of neonates, children, and adolescents, considering clinical and developmental aspects of each stage; comprehensive care for women's health and reproductive health; nursing care for adults and older adults in the context of comprehensive health care; nursing care for critically ill individuals across the life cycle; nursing procedures observed in intensive care.
4	Technical nursing education for primary care, public health, and mental health	Health education and health promotion in primary care; public policies and organization of health services in the SUS; nursing actions in the promotion and provision of mental health care in primary care.

Figure 1: Classes obtained from the content analysis of CPP syllabi. Niterói, RJ, Brazil, 2025.

The class analysis revealed the absence of content explicitly related to the NP and its steps. A predominance of content oriented toward procedural practice and the organization of health services was observed, with an emphasis

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on technical and care-related aspects. This configuration indicates that instruction, as expressed in the syllabi, does not systematically incorporate the methodological framework of the NP.

The thematic analysis revealed aspects concerning the theoretical and practical instruction provided in the programs. Practical instruction under faculty supervision emphasizes nursing techniques and procedures, as well as structural and organizational aspects of the institutions where supervised internships are conducted. Theoretical instruction addresses technical care practice in hospital units, highlighting care provided to individuals with clinical conditions or undergoing surgery in hospital admission and urgent and emergency care settings. Protocols for infection control and biosafety are also addressed in this context. In the theoretical component, themes related to the provision of care across different phases of the life cycle emerged, encompassing care for women, children, and adolescents and care for adults and older adults, including settings of greater clinical complexity. Topics related to primary care and public health were identified, with an emphasis on educational practices, the organization of health services within the Unified Health System (SUS), and specific nursing actions in mental health care.

The similarity tree represented a subsequent analysis derived from the textual corpus. An image was generated comprising 1,093 words with a frequency equal to or greater than ten. Of these, 99 words were selected based on their thematic relevance to NP instruction (Figure 2).

Figure 2: Similarity tree related to the pedagogical projects of technical nursing programs. Niterói, RJ, Brazil, 2025.

The similarity analysis confirmed the absence of the term nursing process in the syllabi, as well as words designating three of its steps: assessment, nursing diagnosis, and planning. The absence of terms related to the conceptual aspects of the NP and to nursing theories was also noted.

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The arrangement of words in the similarity tree identifies the terms nursing, patient, and medication administration as central hubs of important lexical co-occurrences. This indicates that these terms are the most strongly connected to relevant words in the semantic field of the curricular organization of technical nursing programs.

Although the term designating the implementation step was not explicitly identified in the tree, this dimension is expressed through words such as nursing techniques and nursing procedures. Other terms associated with this step were also observed, such as vital signs, venipuncture, and wound dressing, among others. These terms appear connected to the central hubs of patient and medication administration, as well as to terms designating diseases and biosafety measures.

The terms nursing records and nursing notes, both related to the NP step corresponding to evaluation, appear associated with the nursing hub, but without establishing connections to other terms in the corpus. Similarly, the term systematization appears associated with the nursing hub and is equally devoid of connections to other terms in the corpus.

DISCUSSION

The concentration of FI technical nursing programs in the Southeast region reflects the unequal distribution of the nursing workforce in Brazil. Despite the growth of nursing evidenced over the past five years, nearly half of all professionals are located in the Southeast[3]. This situation is related to the greater availability of technical programs in states with higher population density, higher per capita income, and greater contribution to the national Gross Domestic Product (GDP), reflecting the economic and social disparities across the different regions of the country[22].

The predominance of the subsequent mode of delivery for technical nursing programs corresponds to the current national situation, with 1,229 courses registered in this modality and 258 offerings in the concurrent modality[23]. The limited presence of EJA-format programs and the absence of the concurrent modality reflect the fragile articulation between basic education and technical training observed at the FIs. In this context, the literature emphasizes the importance of diversifying the forms of public technical program delivery in order to broaden access, serve diverse student profiles, and promote greater equity in professional education[24].

Although still underrepresented numerically in this study, the integrated high school and technical nursing program modality, particularly when linked to EJA, stands out as a relevant educational approach. This model proposes an education capable of contributing to the construction of personal trajectories oriented toward professional integration, income generation, and the attainment of social autonomy[25].

The numerical predominance of in-person programs over hybrid offerings, as well as the absence of distance learning (EaD) offerings, underscores the centrality of in-person instruction in nursing education. Regulatory documents consider that the specific requirements of nursing education demand the development of technical skills, relational competencies, and collaborative learning experiences, which reinforces the evidence regarding the importance of in-person instruction[26,27]. Furthermore, although distance learning has grown exponentially (1,285.7% between 2010 and 2022), dropout rates and deficiencies in practical training reduce its effectiveness in nursing education[27].

The courses analyzed have a mean workload above the minimum established by current legislation, which requires 1,600 hours, with 1,200 designated for theoretical components and 400 for supervised internships[14,26,28,29]. However, the increase in workload in technical nursing programs has been identified in the literature as a factor that, in isolation, does not guarantee the quality of the educational process, particularly in the face of recurring limitations at clinical training sites[30].

The present study found that NP instruction receives limited coverage in technical education. This finding is supported by the fact that the NP was addressed in the syllabi of only four technical programs and was not identified in the syllabi of supervised internships, as described in the thematic category pertaining to class 1. This finding contradicts the consensus in literature, which emphasizes the importance of nursing technicians knowing all NP steps. Even though technicians are not responsible for formulating nursing diagnoses and prescriptions, it is essential that they understand that the care they implement derives from those prescriptions, formulated by the registered nurse based on nursing diagnoses[4,31]. This understanding is essential for technicians to implement care within the comprehensive context of the assistance provided and in coordination with the nursing team[31]. In this regard, national evidence attributes the low participation of technicians in the NP to these professionals' lack of knowledge about its constituent steps. These studies indicate that restricting knowledge of the NP to the registered nurse hinders its incorporation as a routine team practice[32].

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The use of NCS as a synonym for the NP in practice, in teaching, and in research constitutes a conceptual error, attributable in large part to COFEN Resolution No. 358/2009[17]. This regulation reinforced the interconnection between the two concepts by defining the NCS as a professional work organization that encompasses elements for the operationalization of the NP. The inseparability of the two concepts has had implications for the training and practice of nursing professionals, insofar as the NCS definition is rooted in nursing management, thereby encompassing administrative aspects rather than the clinical steps of the NP. This emphasis on managerial aspects contributed to a fragmented understanding of nursing practice, in which staff management and institutional documentation tend to overshadow direct patient care[4].

Regarding the approach to the implementation of care, the study findings corroborate the literature, which points to a curricular organization in technical nursing programs centered on operational efficiency at the expense of a holistic conception of care[11,32-34]. Evidence from various educational settings across the country indicates the predominance of a traditional teaching model oriented toward the execution of techniques, with limited emphasis on a comprehensive perspective of care[11,32]. Converging with these findings, studies with graduates of technical nursing programs reveal that care instruction is frequently structured around the systematic repetition of procedures, carried out in isolation and disconnected from real care situations, characterizing a decontextualized form of education[33,34]. Taken together, these findings point to a dissociation between doing and thinking in the training process of nursing technicians.

The separation between manual and intellectual labor fragments care and empties nursing assistance of its clinical meaning[35]. This logic is reflected in technical nursing education, organized around procedural and disease-centered practices that reproduce the social division of labor in the health sector[36]. Historically, technical vocational education has been associated with a lower status in the social hierarchy, owing to the devaluation of manual activities. Traditionally directed at socioeconomically disadvantaged groups, this educational modality remains oriented toward immediate market demands, contributing to the rapid and operational training of a workforce, in keeping with the capitalist logic of production[33].

The implementation of care involves the performance of procedures outlined in the care plan, in accordance with the technical competencies of each professional as defined by specific regulations[1]. Such procedures are addressed in the CNCT[14]. Accordingly, practical activities should not be approached in isolation, but rather integrated into the context of the NP, so as to promote a comprehensive understanding of care.

The complexity of nursing work requires that the training of nursing technicians go beyond the mere execution of procedures, incorporating the development of analytical capacity and the adaptation of care to the needs of patients[37]. In settings characterized by standardized routines, the possibility of providing individualized care is limited[37]. In this regard, students must be prepared to work in coordination with the registered nurse, facilitating the implementation of the NP, which contributes to professional strengthening and to greater effectiveness of the care provided to individuals, families, and communities[38].

The emphasis on the execution of disease-centered procedures, observed in the approach to the implementation of care, reflects the influence of the biomedical model in these programs. The influence of the biomedical model on technical education is described in the literature as a factor associated with the reproduction of historically consolidated hierarchical relationships[36]. This aspect may undermine the autonomy and identity of nursing in the construction of care by disregarding its own body of knowledge[36,39,40].

The frequent use of medical terminology in nursing was reported as an expression of the influence of the biomedical model in studies analyzing NP instruction in technical nursing programs in the Northeast and Southeast regions of Brazil[9,11].

It is recognized that technical education should encompass knowledge of prevalent diseases in order to meet the health needs of the population[41]. However, it is important that this approach does not result in the devaluation of nursing's own language and body of knowledge.

The approach to the implementation of care associated with nursing diagnoses or prescriptions was not identified in any syllabus. Although nursing diagnoses were cited in the majority of the documents analyzed, no connections with other content were observed, indicating weakness in their integration into the educational process. This finding contrasts with the international landscape, in which Brazil stands out as the country with the highest number of scientific publications on the clinical applicability of nursing diagnoses from NANDA International (NANDA-I) and the International Classification for Nursing Practice (ICNP)[42,43]. In the domain of technical education, however, a study conducted at a school in the Northeast region of Brazil found that half of the graduating students were unfamiliar with the concepts of nursing diagnosis and nursing prescription, although the majority recognized these as relevant to professional practice[31].

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The limited inclusion of nursing prescription in the syllabi confirms the pattern observed in previous studies, which highlight the omission of this step in programs in the field[9-11,32]. Similarly, the limited presence of prescription verification in the syllabi indicates weaknesses in technical education, related to the absence or insufficient coverage of this content.

Verification is a step dependent on the existence of a formal prescription, and when this prescription is not clearly addressed during training, instruction on verification is also compromised. This gap reflects a chain of omissions that can affect patient safety and the professional autonomy of practitioners in carrying out prescribed actions[44]. Accordingly, the absence of written prescriptions undermines the development of verification practices, transforming this essential care step into an informal, nonexistent, or invisible activity within the profession.

The recurrence of terms associated with biosafety suggests an instructional concern with the protection of both patients and professionals. This focus is compatible with the requirements of health services regarding patient safety[45]. It should be noted, however, that for learning about patient safety to result in quality care practices, it is essential that students understand this topic in an integrated manner within the health work process[34]. In this regard, the inclusion of the NP as a structural axis in the curricular organization of technical programs is essential for guiding and qualifying the work of nursing technicians with respect to patient safety across different care settings[26].

Students in technical nursing programs must be prepared to work in an integrated manner within health teams, developing a sense of belonging and protagonism in the execution of interprofessional activities[26]. To this end, nursing must incorporate knowledge of the NP into technical training schools[46].

The approach to nursing records was found to be restricted to specific curricular components and disconnected from the other NP steps. This curricular organization may promote generic learning of this content, failing to account for the specificities of technical terminology used across the various settings where nursing care is provided. This configuration contrasts with the recommendations of regulatory documents, which provide guidance on nursing records appropriate to distinct practice areas, supporting the need for a transversal approach to this content[15]. Nursing records are fundamental elements for the implementation of the NP, as they support the formulation of nursing prescriptions, the analysis of patient responses to the care provided, and the evaluation of outcomes achieved[15]. Training programs must therefore ensure that students understand the role of nursing records and develop the competencies to produce them within the context of the NP.

The absence of content related to nursing theories in the training of nursing technicians, identified in this study, corroborates previous findings[9,11]. The instruction of nursing theories has been a subject of ongoing debate in the field. Some authors point out that, when present, such instruction is often limited to broad conceptual models that are poorly applicable to care practice, which compromises its usefulness in clinical settings[47]. Furthermore, a study conducted by members of the Global Alliance for Nursing Education and Sciences (GANES) identified divergences in recommendations for the inclusion or exclusion of this content in curricula, highlighting the absence of consensus on its relevance to professional training[48].

Some scholars in the field argue that the NP would be reduced to a purely mechanistic approach in the absence of a theoretical foundation. In this regard, this theoretical foundation must be built upon the profession's own body of knowledge, making the incorporation of nursing theories indispensable in both the training of registered nurses and the training of nursing technicians[4].

Study limitations

This study presents limitations inherent to the documentary approach, as it is based exclusively on the analysis of syllabi available in the CPP of technical nursing programs. This strategy allows for an understanding of only the formal curriculum, without accounting for the enacted curriculum developed in pedagogical practice. In this regard, it is acknowledged that the educational process is not exhausted by institutional documents and may include aspects not formally stated, such that the absence or weakness of the NP in the CPP does not necessarily reflect its complete absence in teaching and learning. Future studies that include the participation of faculty and students, as well as direct classroom observations, may complement and deepen the reflections presented here.

FINAL CONSIDERATIONS

The approach to the nursing process in technical programs affiliated with the Federal Institutes occurs in a limited and poorly articulated manner, with gaps in the incorporation of its structural steps and absence of integration in the components related to supervised internships. The approach to the implementation of care, associated predominantly

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with the execution of technical procedures disconnected from nursing diagnoses and prescriptions, as well as the non-transversal approach to nursing records and the absence of theoretical frameworks, indicate a curricular organization that does not incorporate the nursing process as a structural axis of care.

These aspects, combined with the persistence of conceptual imprecisions, suggest weaknesses in the way this content is presented in technical education. In this regard, the study contributes by highlighting gaps in the approach to the nursing process in technical nursing education in Brazil, providing inputs for the improvement of pedagogical projects. More than a curricular revision, the integration of the nursing process steps into pedagogical projects may contribute to the recognition of nursing as a science and social practice, as well as to the acknowledgment of nursing technicians as essential professionals in health care.

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Authors contributions

Conceptualization, F.M.S. e R.F.S.; methodology, F.M.S. e R.F.S.; software, F.M.S. e R.F.S.; validation, F.M.S. e R.F.S.; formal analysis, F.M.S. e R.F.S.; investigation, F.M.S. e R.F.S.; resources, F.M.S. e R.F.S.; data curation, F.M.S. e R.F.S.; manuscript writing, F.M.S. e R.F.S.; review and editing, F.M.S. e R.F.S.; visualization, F.M.S. e R.F.S.; supervision, R.F.S.; project administration, F.M.S. All authors read and agreed with the published version of the manuscript.

Data availability

Authors declare that the research dataset is available in the Figshare® repository at the following URL: https://figshare.com/s/c68dadfcf6fff7da1285.

Use of artificial intelligence tools

Authors declare that no artificial intelligence tools were used in the composition of the manuscript "*Nursing process in the pedagogical projects of technical nursing courses: a documentary analysis*".