RESEARCH

ANALYSIS OF PATIENT SAFETY TERMS AND REQUIREMENTS IN NURSING CURRICULA AT BRAZILIAN FEDERAL UNIVERSITIES*

*ANÁLISE DOS TERMOS E REQUISITOS DE SEGURANÇA DO PACIENTE NOS CURRÍCULOS DE ENFERMAGEM EM UNIVERSIDADES FEDERAIS BRASILEIRAS**

*ANÁLISIS DE LOS TÉRMINOS Y REQUISITOS DE SEGURIDAD DEL PACIENTE EN LOS PLANES DE ESTUDIOS DE ENFERMERÍA DE LAS UNIVERSIDADES FEDERALES BRASILEÑAS ***

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ABSTRACT

Objective: to analyze tracer terms and patient safety teaching requirements in undergraduate nursing curricula at Federal Higher Education Institutions. **Method:** an exploratory study with a quantitative approach and documentary analysis, in which the Pedagogical Course Projects (PCP) and curricular matrices of four undergraduate nursing courses from different Brazilian regions were examined in accordance with the World Health Organization's Patient Safety Curriculum Guide, assessing the description of these terms in the PCPs and curricular matrices, as well as verifying the degree of the results' reliability. Data collection involved a search for 153 tracer terms and their link to the 11 topics proposed by the guide using descriptive statistics, with absolute and relative frequency distributions for categorical variables. The correlation of the tracking terms was calculated using Cronbach's alpha. **Results:** a total of 18 checklist terms were used, distributed over eight topics in the Curriculum Guide. The topics 'What is patient safety?', 'Being part of an effective team' and 'Learning from mistakes to prevent harm' were not mentioned in the documents analyzed. The internal consistency of the terms in the PCP was moderate (α=0.728), as was that of the curricular matrices (α=0.620). **Conclusion:** reviewing the curricula of federal universities is crucial to aligning teaching programs with the recommendations of the National Patient Safety Program and the World Health Organization Curriculum Guide, ensuring the training of health professionals committed to safe and quality practices.

Keywords: Patient Safety; Curriculum; Education; Higher Education; Nursing.

RESUMO

Objetivo: analisar os termos rastreadores e os requisitos de ensino da segurança do paciente nos currículos de graduação em Enfermagem de Instituições Federais de Ensino Superior. Método: trata-se de um estudo exploratório, de abordagem quantitativa e análise documental, no qual foram examinados os Projetos Pedagógicos de Curso (PPC) e as matrizes curriculares de quatro cursos de graduação em Enfermagem, de diferentes regiões do Brasil. Esta análise foi feita conforme o Guia Curricular de Segurança do Paciente da Organização Mundial da Saúde, avaliando-se a descrição desses termos nos PPC e matrizes curriculares, além de verificar o grau de confiabilidade dos resultados obtidos. A coleta de dados envolveu a busca de 153 termos rastreadores, analisando sua vinculação com os 11 tópicos propostos pelo referido guia por meio de estatística descritiva, com distribuições de frequências absolutas e relativas para as variáveis categóricas. A correlação dos termos rastreadores foi calculada pelo coeficiente alfa de Cronbach. Resultados: foram identificados 18 termos da lista de verificação, distribuídos em oito tópicos do Guia Curricular. Os tópicos 'O que é segurança do paciente?', 'Ser um participante de uma equipe eficaz ' e 'Aprender com os erros para evitar danos ' não foram mencionados nos documentos analisados. A consistência interna dos termos nos PPC foi moderada (α=0,728), assim como nas matrizes curriculares (α=0,620). Conclusão: a revisão dos currículos das universidades federais é crucial para alinhar os programas de ensino às recomendações do Programa Nacional de Segurança do Paciente e do Guia Curricular da Organização Mundial da Saúde, garantindo assim a formação de profissionais de saúde comprometidos com práticas seguras e de qualidade.

Palavras-chave: Segurança do Paciente; Currículo; Educação; Ensino Superior; Enfermagem.

RESUMEN

Objetivo: Objetivo: analizar los términos desencadenantes y los requisitos de enseñanza de la seguridad del paciente en los planes de estudio de pregrado en enfermería en Instituciones Federales de Educación Superior. Método: se trata de un estudio exploratorio, con enfoque cuantitativo y análisis documental, en el que se examinaron los Proyectos de Curso Pedagógico (PPC) y las matrices curriculares de cuatro carreras de graduación en enfermería de diferentes regiones de Brasil. Este análisis se realizó de acuerdo con la Guía Curricular de Seguridad del Paciente de la Organización Mundial de la Salud, evaluando la descripción de estos elementos en el PPC y matrices curriculares, además de verificar el grado de confiabilidad de los resultados obtenidos. La recolección de datos implicó la búsqueda de 153 términos de seguimiento, analizando su conexión con los 11 temas propuestos por la guía mencionada mediante estadística descriptiva, con distribuciones de frecuencia absoluta y relativa para las variables categóricas. La correlación de los términos de seguimiento se calculó utilizando el coeficiente alfa de Cronbach. Resultados: se identificaron 18 términos de la lista de cotejo, distribuidos en ocho

*temas de la Guía Curricular. Los temas '¿Qué es la seguridad del paciente?', 'Ser un miembro eficaz del equipo' y 'Aprender de los errores para evitar daños' no fueron mencionados en los documentos analizados. La consistencia interna de los términos en los Proyectos de Curso Pedagógico fue moderada (α=0,728), así como en las matrices curriculares (α=0,620). **Conclusión:** la revisión de los planes de estudio en las universidades federales es crucial para alinear los programas de enseñanza con las recomendaciones del Programa Nacional de Seguridad del Paciente y la Guía Curricular de la Organización Mundial de la Salud, asegurando así la formación de profesionales de la salud comprometidos con prácticas seguras y de calidad.*

***Palabras clave:** Seguridad del Paciente; Plan de Estudios; Educación; Educación Superior; Enfermería.*

INTRODUCTION

Concern about the quality of care and patient safety has been widely discussed in healthcare systems in recent years. From the time they graduate, the training of professionals in the multi-professional team must seek to strengthen their awareness of the systemic problems that harm caused to patients by unsafe care generates, and the potential for management strategies to eliminate avoidable risks[1].

It is imperative to recommend that training in patient safety should be part of professional training, at undergraduate and postgraduate levels in the health sector. The National Patient Safety Program (*Programa Nacional de Segurança do Paciente*, PNSP) and the World Health Organization (WHO) indicate the need to problematize and discuss with students issues related to the prevention of adverse events and a culture of safety in healthcare organizations[2,3].

Comprehensive and integrated training in patient safety leads to a culture of safety, openness to learning from failures, continuous improvement and quality health care in the various professional settings[4].However, even with the incentive to include the subject in training, the PNSP does not specify guidelines on how to implement it in practice[4]. In this direction, the WHO implemented the Multiprofessional Edition of the Patient Safety Curriculum Guide in 2011, improving patient safety education for patient-centered, quality and safe care[4].

The guide, which has a Portuguese version, provides teachers with the essential and applied knowledge to integrate patient safety principles into their practice, covering a wide range of healthcare settings and systems. The Multiprofessional Edition is designed to update and enrich patient safety teaching in universities and health schools around the world, with the aim of preparing future health professionals, both undergraduate and postgraduate[4].

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In addition to providing an update of the guidelines, incorporating new recommendations and practices, the guide also promotes the integration of multi-professional perspectives for a more complete and integrated approach to patient safety. It contributes to the improvement of teaching by improving academic curricula and training programs, ensuring that professionals in training receive up-to-date and relevant information. In addition, it seeks to revise institutional policies and practices based on the new guidelines, with a view to promoting safe and effective practices[4].

In general terms, the guide is particularly appropriate during academic training and complements the PNSP guidelines, contributing to the training of qualified professionals committed to safe and quality practices[4].

An integrative review study included 11 articles and showed that the most used strategies for teaching patient safety in nursing were simulation and problem-based learning, recommending their inclusion from the beginning of the nursing course. Thus, in order to achieve these guiding principles for patient safety training, course curricula, especially at undergraduate level, need to incorporate the use of robust methods and strategies for teaching the subject[5].

These can be presented as subjects or transversal contents described in the curricular matrices.In nursing, studies relating to training indicate the subjects in which such content is covered and investigate students' attitudes towards patient safety[6].

In Paraná, a study investigated the 54 undergraduate nursing courses in the state, of which nine (three public institutions and six private ones) offer specific subjects on the topic. In relation to the Patient Safety Curriculum Guide, studies investigating pedagogical projects were identified[7].

The tracer terms have the function of identifying and mapping the concepts and content related to patient safety in undergraduate health curricula. They act as advisors, allowing us to verify the presence of the patient safety theme in academic training, thus facilitating a critical analysis of educational programs[8].

In view of the above, this research is justified by the fundamental role of higher education institutions in training health professionals and promoting a culture of safety. Although the guide has been published

for decades, it has not yet been fully consolidated in teaching. Thus, the guiding question of this research was: How are the tracer terms and requirements for teaching patient safety described in the Pedagogical Course Projects (PCPs) of undergraduate nursing courses? In order to answer this question, the aim was to analyze the description of patient safety terms in the curricular proposals of undergraduate nursing courses and to assess the degree of reliability of the results obtained from searches for these terms.

METHOD

Type and sample of study

This is an exploratory study with a quantitative approach and documentary analysis developed in the "Management of Health and Nursing Services" line of research in the Academic Master's course of the Graduate Program in Nursing at the Federal University of Paraná. The research period was from 2021 to 2023.

The PCPs and curricular matrices of undergraduate nursing courses at Federal Education Institutions (Instituições Federais de Ensino, IFES) were examined, selected on the basis of the information available on the website of the National Registry of Higher Education Courses and Institutions (*Cadastro Nacional de Cursos e Instituições de Educação Superior, e-MEC*), following the following inclusion criteria: be a higher education institution; offer an undergraduate course in nursing or nursing and midwifery; have a bachelor's degree; be a federal public institution; have accreditation for face-to-face teaching; present a Course Concept equal to or greater than 4; have the course in activity; and have delivered the co-participation letter within the established deadline. Courses that did not respond to the invitation by the deadline or that did not make the PCP and curricular matrices available on their websites were excluded.

From the IFES list, a total of 16 institutions were intentionally selected, four from each region of the country. The websites of these universities were accessed to obtain contact details for the course coordinators. The invitation letter, describing the research objectives and requesting the participation of the institutions, was sent by e-mail. The courses were included in the sample in the order in which they were received, respecting the corresponding geographical regions.

To ensure research confidentiality, the institutions were anonymized and coded with the letters A, B, C and D. No institutions in the North responded to the invitation.

Data source and study protocol

The data sources were the PCPs and their respective curricular matrices or syllabuses, retrieved from the websites of the federal universities taking part in the research.

A research protocol was drawn up to ensure uniformity in data collection. This protocol described the 153 tracking terms defined in the WHO guide in its version translated into Portuguese, covering topics relevant to patient safety teaching[4,8].

According to each WHO thematic category, tracer terms were associated according to the justification for approaching the topic (Figure 1).

Data collection and organization

Data collection took place between July and September 2023 and was conducted by two independent reviewers. The PPCs and curricular matrices were stored in the cloud in .doc (Microsoft Word®) and .pdf (Adobe Acrobat®) formats. Using the "find" search tool, the reviewers analyzed the presence of 153 specific terms, considering variations such as singular and plural, different gender inflections, and compound and conjugated forms. However, the analysis focused strictly on the physical presence of these terms, not taking into account the context or the direct relationship with the theme of patient safety. This is due to the subjective nature of the curricular matrices and syllabuses.

For each university, Microsoft Excel® spreadsheets were created in which the terms identified in the documents for each course were entered, following a double-checking process. The answers were recorded as "Yes" (indicated by "1" when the term was found) or "No" (indicated by "0" when the term was not found).

Data analysis

In order to assess the reliability and internal consistency of the measurements, statistical consultants were used to import the data collected into the Statistical Package for the Social Sciences, version 29.0.2.0(20). The data was then subjected to descriptive statistical analysis, using absolute and relative frequency distributions for the categorical variables. Cronbach's alpha coefficient was used to measure the correlation between the responses, limiting the analysis to the screening terms present. Terms that were not identified were excluded from the analysis.

Ethical aspects

Following the principle of ethics from the outset (ethics by design), the research was approved by the

Research Ethics Committee of the proposing institution, under the Certificate of Submission for Ethical Appraisal (CAAE) and of the co-participants, in accordance with Resolution 466/2012 of the National Health Council.

RESULTS

Out of a total of 16 IFES selected and invited, four undergraduate nursing courses located in Brazil's Northeast, Midwest, Southeast and South regions were included. Eight IFES that did not respond to the invitation within the stipulated period were excluded, especially those in the North, which were consequently not represented in the study.

Course A lasts five years full-time, equivalent to ten terms, and its PCP dates back to 2010. It underwent adjustments in 2017, totaling 4,440 hours distributed over 43 compulsory subjects and 15 electives. Course B is offered on a full-time basis for four years, i.e. eight semesters. The PCP was approved in August 2005 and implemented the following year, with a workload of 4,050 hours, 34 compulsory subjects and 13 electives. Course C, with a five-year duration (10 terms), had its PCP approved in 2022, covering 4,400 hours, with 45 compulsory subjects and 15 electives. Course D, also lasting five years (10 terms), saw its PCP approved in 2015, totaling 4,050 hours divided into 34 compulsory subjects and 17 electives.

The PCPs' documentary analysis made it possible to identify the presence of tracer terms that indicate the teaching of patient safety in the undergraduate nursing courses analyzed, in accordance with the Curriculum Guide recommended by the WHO. Of the 153 tracer terms, only 18 (11%) were identified in the PCPs.

The instrument used in the survey, covering 153 screening terms, revealed moderate reliability, with a Cronbach's alpha coefficient of 0.728. This value indicates an acceptable internal consistency, suggesting that the screening terms are effective in assessing the patient safety construct in the PPCs. Thus, the instrument is

Figure 1 – Tracer terms based on the topics of the World Health Organization guide .

WHO topics	Number of thermo--trackers	Justification
Topic 1: What is patient safety?	14 terms	It explores the principles and origins of patient safety, with the aim of enabling students to understand that their practice contributes to reducing adverse events and implementing preventive measures.
Topic 2: Reasons why the application of human factors is important for patient safety	09 terms	It addresses the interaction between human beings, systems and work processes, highlighting the importance of efficiency, job satisfaction and reducing errors in the provision of healthcare.
Topic 3: Understanding systems and the effect of complexity on patient care	10 terms	It explores the concept of systems, emphasizing the individual and collaborative action of professionals with different work processes, constituting the diversity and complexity of the health system.
Topic 4: Being part of an effective teamz	11 terms	It addresses the benefits of teamwork, respect between professionals, communication techniques and conflict resolution, including the participation of patients and their families as members of the team.
Topic 5: Learning from mistakes to prevent harm	09 terms	It reports on the concepts of incidents and other related terms, with special attention to learning from mistakes, reporting systems and analysis for implementing strategies to mitigate new incidents
Topic 6: Understanding and managing clinical riskss	15 terms	It covers learning to identify and report circumstances that expose patients to the risk of incidents and the actions needed to prevent and control them.
Topic 7: Using quality improvement methods to improve care	15 terms	It presents the importance of knowing the methods and tools for improving quality as a way of achieving better results for patients..
Topic 8: Interaction with patients and caregivers	16 terms	It addresses patient-centered care, based on the involvement of professionals, clear communication and the participation of patients and their families in decisions.
Topic 9: Infection prevention and controlo	20 terms	Enfatiza a responsabilidade individual dos profissionais na prevenção de infecções relacionadas à assistência à saúde. Também são discutidas as questões de segurança do profissional de saúde.
Topic 10: Patient safety and invasive procedures	13 terms	It emphasizes the individual responsibility of professionals in preventing healthcare-related infections. Health professional safety issues are also discussed.
Topic 11: Improving medication safety	21 terms	It offers a comprehensive view of safety in the use of medications and discusses communication failures resulting from the involvement of various health professionals, patients and family members.

Note: Prepared by the authors, 2023

reliable for future research, ensuring accuracy in the analysis of curricular content related to patient safety.

At University A, 12 tracer terms were identified (7.84%); at University B, two terms (1.31%); at University C, 11 terms (7.19%); and at University D, 12 terms (7.84%), as shown in Table 1.

It was observed that the most frequent topics were topic 3, present in three PCPs, with 12 tracking terms found, representing 7.84% of the total, and topics 4 and 8, each with ten tracking terms found, corresponding to 6.54% for each topic. Topic 1 had three tracking terms, equivalent to 1.96%, and topic 7 had a single term, representing 1.31%. However, topics 2, 5, 6, 9, 10 and 11 were not identified in any of the PCPs analyzed.

Figure 2 shows the tracked terms found at each university, as well as their frequency, highlighted in superscript.

Analysis of the results revealed distinct patterns between the four universities in relation to the distribution of tracer terms in undergraduate curricula.

At university A, the term "education" was the most frequent in topic 8, suggesting an emphasis on developing practices aimed at patient safety. Although this term was also found in other institutions, University A recorded a higher number of subjects dealing with this topic. Topic 2, associated with the term "systems", was mentioned in four subjects, indicating the approach to the dynamics of health systems, a fundamental aspect for the practice of patient safety. Topic 9, which addresses themes such as "transmission", "cross-transmission", "economic cost associated with infection", "multi-resistant organisms" and "antimicrobial resistance", was identified in three disciplines, reflecting the attention given to infection control, a crucial theme for patient safety.

At university B, topic 2 stood out again, with the term "systems" identified in five disciplines, suggesting a focus on understanding the organization and functioning of health systems. Topic 3, with the terms "health system" and "work processes", appeared in three subjects, indicating a concern with the infrastructure and internal processes that influence patient safety, especially in hospital environments.

At university C, the term "education" was again the most frequently found, reinforcing the tendency observed at the other universities to include educational practices aimed at patient safety.

At university D, the term "education" was also prevalent, followed by "indicators" in topic 7, in one discipline, and "teamwork" in topic 10, highlighting the importance of multidisciplinary collaboration in creating a safe environment for the patient.

The internal consistency of the terms in the PCPs was moderate ($\alpha=0.728$), as was that of the curricular matrices ($\alpha=0.620$). These results indicate that although the universities share an emphasis on topics such as "education" and "health systems", the way in which these terms are approached in the curricula varies significantly. Some institutions prioritize topics related to infection control and antimicrobial resistance, while others emphasize education in work processes and the importance of teamwork.

Table 1 – Absolute and relative frequencies of the tracer terms found in the Pedagogical Course Projects in the nursing courses of the co-participating universities. Curitiba, PR, Brazil, 2023

WHO topics	A N%	B N%	C N%	D N%
1. What is patient safety?	- -	- -	31,96	- -
2. Reasons why the application of human factors is important for patient safety	- -	- -	- -	- -
3. Understanding systems and the effect of complexity on patient care	53,27	- -	31,96	- -
4. Being part of an effective team	42,27	1,311	0,65	31,96
5. Learning from mistakes to prevent harm	- -	- -	- -	- -
6. Understanding and managing clinical risks	- -	- -	- -	- -
7. Using quality improvement methods to improve care	10,65	- -	- -	10,65
8. Interaction with patients and caregivers	21,31	- -	42,61	42,61
9. Infection prevention and control	- -	- -	- -	- -
10. Patient safety and invasive procedures	- -	- -	- -	- -
11. Improving medication safety	- -	- -	- -	- -

Note: Prepared by the authors
Source: Research data

Figure 2 – Distribution of tracer terms found in curricular matrices in nursing courses at co-participating universities. Curitiba, PR, Brazil, 2023.

WHO topic/semester	University A	University B	University C	University D
1.What is patient safety?	-	-	-	-
2.Reasons why the application of human factors is important for patient safety.	Systems[4]	Systems[5]	-	-
3.Understanding systems and the effect of complexity on patient care	Interdisciplinarity[1] -	Health system[4] Work processes[2]	-	-
4.Being part of an effective team	-	-	-	-
5.Learning from mistakes to prevent harm.	-	-	-	-
6.Understanding and managing clinical risks.	Risk management - definitions[1]	-	-	-
7. Using quality improvement methods to improve care.	Indicators[1]	Indicators[2]	-	Indicators[1]
8.Interaction with patients and caregivers.	Education[7] -	Education[2] -	Education[8] Good communication principles[1]	Education[7] -
9. Infection prevention and control.	Transmission, cross-transmission[1] Economic cost associated with infection[1] Multidrug-resistant organisms Antimicrobial resistance[1]	- - - -	Precautions to prevent and control infections[1] Epidemic and pandemic alerts [1]	- - - -
10. Patient safety and invasive procedures.	-	-	-	Teamwork[1]
11. Improving medication safety.	Potential and actual drug-drug, drug-food interaction[1] Administration[1]	Drugs[1] Administration[1]		

Note: prepared by the authors. Source: research data.

The diversity observed in the approaches points to the need to review and possibly harmonize the curricula, ensuring a more integrated and comprehensive training on patient safety in all universities.

DISCUSSION

The survey results revealed that only 18 terms related to traceability were identified in topics 2 (Reasons why the application of human factors is important for patient safety), 3 (Understanding systems and the effect of complexity on patient care), 6 (Understanding and managing clinical risks), 7 (Using quality improvement methods to improve care), 8 (Interaction with patients and caregivers), 9 (Infection prevention and control), 10 (Patient safety and invasive procedures) and 11 (Improving medication safety). A similar study, which analyzed PCPs for undergraduate courses in nursing, pharmacy, physiotherapy and medicine at the Federal University of São Paulo, found that three topics were not covered: "What is patient safety?"; "Reasons why the application of human factors is important for patient safety"; and "Learning from mistakes to prevent harm"[8].

The identification of only 11% of the possible terms suggests a superficial description of teaching practices related to patient safety in undergraduate nursing

curricula and indicates a lack of transversality and inter-disciplinarity in teaching about patient safety.

A similar finding was identified in a study conducted in the state of Paraná, involving public and private educational institutions. The curricular weaknesses highlighted the need to make patient safety explicit in curricular matrices and syllabuses[9,10]. Curricula and teaching programs should offer diverse learning opportunities, allowing students to apply the knowledge acquired and develop the practical skills essential to providing safe, quality care[9].

Learning involves reconstructing and reorganizing experiences, providing students with opportunities to explore different perspectives on patient safety, which allows them to transcend pre-established conceptions and re-evaluate teaching practices. For this approach to be effective, it is essential that educators have a thorough grasp of the subject, lead relevant discussions and deal with unexpected situations[10].

Furthermore, making the subject explicit in the reformulation of curricular matrices meets the recommendations of the guide as a priority action in the search for excellence and safety in health services. In this context, the collaboration of universities is essential to guarantee the training of future professionals in patient safety and to encourage scientific research and the advancement of knowledge in the area[11].

Fragmentation in the teaching of patient safety can compromise the development of the skills needed to ensure safe, quality care. This suggests that professionals may face difficulties in taking on the responsibilities of care practice effectively[4].

In relation to the research findings, this fragmentation was perceived due to the low presence of topic 2 (Reasons why the application of human factors is important for patient safety) and its tracking terms in the curricula analyzed, contributing to adverse events and highlighting the importance of their application to improve patient safety[13].

The absence of topic 4 (Being part of an effective team) in nursing courses reveals a gap in training in communication and collaboration, which are essential for patient safety and improving the quality of care[2,4].

As for topic 5 (Learning from mistakes to prevent harm), it implies a possible lack of emphasis on the importance of learning from mistakes to prevent harm to the patient, which could result, in addition to systemic failures, in reckless or negligent individual behavior, also causing safety incidents[14,15].

The terms 'health system' and 'work processes', related to topic 3, reinforce the importance of understanding the structure and complexity of health systems for patient safety. The lack of collaboration and interdisciplinary interaction affects the quality of care and the training of students, hindering teaching and learning and the development of a proactive attitude[4,16]. The results related to topic 6 (Understanding and managing clinical risks) show a discrepancy between the guidelines of the Curriculum Guide and the current approach in university subjects.

Despite the commitment of institutions and teachers to patient safety and the search for innovative teaching methods, there is still a need to discuss which elements should be addressed and how to integrate methodologies and disciplines in order to adapt pedagogical projects[17].

The WHO emphasizes that quality improvement methods are essential to enable students to apply tools that improve patient safety, highlighting the need to align teaching with best practices and strategies for effective clinical risk management[4].

The presence of the term "indicators" in topic 7 (Importance of specific methods for improving the quality of health care) suggests a concern with measuring quality, which is fundamental for implementing improvement methods such as the PDSA/PDCA (Plan-Do-Study-Act/Plan-Do-Check-Act) cycle. However, the absence of terms such as the PDSA/PDCA cycle and specific tools, together with the difficulties in teaching indicators, due to insufficient knowledge and the exclusion of the content in some institutions, hampers the training of future nurses, compromising patient safety and the effectiveness of care[18,19].

The frequency of the term "education" in topic 8 (Interaction with patients and caregivers) highlights the concern with training nurses in essential skills, such as effective communication, decision-making and teamwork, as recommended by the National Curriculum Guidelines (*Diretrizes Curriculares Nacionais*, DCNs), which are fundamental for patient safety[20]. However, a total of 15 important tracking terms were not identified in the curricular matrices of the universities analyzed, which highlights gaps in training and the need to broaden the discussion on leadership and team management in the training of nurses, covering classic and contemporary approaches[21].

The current emphasis on human factors and communication reflects concern about crucial aspects of patient safety, underlining the importance of these topics for infection control and the impact on the quality of care.

The scarcity of screening terms in topic 9 (Infection prevention and control), save for a few terms in one subject, shows a significant gap in student training. This indicates the urgent need to revise PCPs and strengthen continuing education, integrating infection prevention into the curriculum to ensure safer healthcare[22].

Topic 10 (Patient safety and invasive procedures) highlights the importance of verification processes to ensure safety during surgery and invasive procedures, emphasizing the concept of "teamwork". This approach is crucial to strengthening collaborative practice, which is fundamental to patient safety in surgical settings.

The absence of specific screening terms suggests a gap in pedagogical training, highlighting the need to develop educational resources, such as simulations, games and clinical assessments, focused on perioperative safety. Such resources are essential for reinforcing critical reflection on infection prevention and safety during invasive procedures[23].

Topic 11 (Improving medication safety) highlights the importance of safe medication administration, reflecting the need for teaching that addresses medication safety practices. The incorporation of innovative teaching methods, such as simulations, is a positive step forward in improving the training of healthcare professionals, helping to prevent medication errors and reinforce commitment to safety protocols. The lack of specific strategies to address safe medication administration in curricular matrices reveals a gap in the curriculum, suggesting an urgent need to integrate such topics in a more structured way[24].

The limitations inherent in this research include the difficulty of identifying the relevant terms in the PCPs, given that the subject of patient safety is not yet fully covered in the institutions' objectives. The absence of tracer terms indicates areas that may need to be adjusted in the curriculum to ensure more balanced and comprehensive coverage of topics related to patient safety. In addition, the documentary nature of the research limits access to the content transmitted by teachers in the classroom.

CONCLUSION

The research results point to a significant gap in the PCPs of the universities, revealing a lack of description of the essential topics outlined in the Patient Safety Curriculum Guide. This lack of approach suggests a superficiality in the description of teaching practices related to patient safety, highlighting the urgency of integrating these concepts into undergraduate nursing curricula.

The analysis of the nursing curricula reveals that, of the topics recommended by the WHO, only a few were covered in the PCPs and curricular matrices, while others were completely absent. This finding emphasizes the urgent need for a review of teaching programs to ensure compliance with international and national recommendations.

The study's contributions highlight the urgency of a broader and more integrated approach, representing an opportunity for educational institutions to rethink their educational strategies in relation to patient safety. The focus should be on improving the training of future professionals, guaranteeing safe, high-quality healthcare.

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