

Educational patient safety in graduate nursing in Minas Gerais: a cross-sectional study

Ensino de segurança do paciente na graduação de enfermagem em Minas Gerais: estudo documental

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ABSTRACT | OBJECTIVES: To analyze teaching about patient safety in undergraduate nursing courses in Minas Gerais. **MATERIALS AND METHODS:** Documentary study with a quantitative approach. Higher education institutions that made course syllabi publicly available were included. Descriptive analyses were performed using frequencies. Comparisons were made using the Chi-square or Fisher's Exact tests. **RESULTS:** Twenty-five higher education institutions in nursing were included. Among the 1,462 disciplines analyzed, it was found that the most discussed topic was "interaction with patients and caregivers" (present in 24.8% of them), followed by "improvement in medication safety" (18.8%), "infection prevention and control" (17.8%) and "being part of an effective team" (13.9%). Some terms, such as "culture of blame" and "human fallibility" were not identified in any discipline. **CONCLUSION:** This study makes it clear that many topics that are fundamental to teaching patient safety have been left aside by higher education institutions in Nursing. It is necessary not only to update the curricular syllabuses, but also to review the teaching and learning methods for the development of skills of future professionals.

KEYWORDS: Patient Safety. Professional Competence. Students Nursing. Educational Measurement. Education Nursing.

RESUMO | OBJETIVOS: Analisar o ensino sobre segurança do paciente nos cursos de graduação em Enfermagem em Minas Gerais. **MATERIAIS E MÉTODOS:** Estudo documental de abordagem quantitativa. Foram incluídas as instituições de ensino superior do estado que disponibilizassem ementas das disciplinas publicamente. Foram realizadas análises descritivas por meio de frequências. Comparações foram realizadas pelos testes Qui-quadrado ou Fisher Exato. **RESULTADOS:** Foram incluídas 25 instituições de ensino superior em Enfermagem. Entre as 1462 disciplinas analisadas, constatou-se que o tópico mais abordado foi a "interação com pacientes e cuidadores" (presente em 24,8% delas), seguido por "melhoria na segurança da medicação" (18,8%), "prevenção e controle de infecção" (17,8%) e "ser participante de uma equipe eficaz" (13,9%). Alguns termos como, por exemplo, "Cultura de culpa" e "falibilidade humana" não foram identificados em nenhuma disciplina. **CONCLUSÃO:** Este trabalho explicita que muitos tópicos fundamentais ao ensino da segurança do paciente têm sido deixados de lado pelas instituições de ensino superior em Enfermagem. Faz-se necessário, não somente uma atualização das ementas curriculares, como também uma revisão dos métodos de ensino-aprendizagem para o desenvolvimento de competências dos futuros profissionais.

PALAVRAS-CHAVE: Segurança do Paciente. Competência Profissional. Estudantes de Enfermagem. Avaliação Educacional. Graduação em Enfermagem.

Submitted Aug. 20th, 2024, Accepted Sept. 20th, 2024,

Published Oct. 17th, 2024

J. Contemp. Nurs., Salvador, 2024;13:e5873

<http://dx.doi.org/10.17267/2317-3378rec.2024.e5873> | ISSN: 2317-3378

Assigned editors: Cátia Palmeira, Tássia Macêdo

How to cite this article: Almeida MC, Brugger EBA, Martins JR, Silva ESR, Ignácio SC, Vieira TM. Patient safety teaching in undergraduate nursing in Minas Gerais: a documentary study. J Contemp Nurs. 2024;13:e5873. <http://dx.doi.org/10.17267/2317-3378rec.2024.e5873>



1. Introduction

In the time of Hippocrates (460 to 360 B.C.), at the beginning of the medical sciences, it had already been stated that healthcare should not harm the patient, following the principle of non-maleficence: "Primum non nocere".¹ In the mid-1850s, with the rise of modern nursing led by Florence Nightingale, a new perspective on care emerged. This revisited the concept of non-harmful care, affirming that hospitals should not harm patients but instead provide a conducive environment for healing.²

Despite these early forerunners, it was only in 1999 that patient safety began to be addressed with significance, marked by the publication of the report "To Err is Human", which linked the incidence of care-related errors to the number of deaths at that time. In 2004, the World Health Organization (WHO) created the World Alliance for Patient Safety, aiming to standardize concepts and definitions in the field of patient safety and promote actions to reduce risks and the incidence of adverse events.³ Since then, the concept of patient safety has been defined as the reduction of unnecessary harm associated with healthcare to an acceptable minimum.⁴

In Brazil, as part of this process of disseminating and implementing patient safety, the National Patient Safety Program (Programa Nacional de Segurança do Paciente - PNSP) was established in 2013, aiming to improve healthcare quality with a focus on safety.³ Aligned with this goal of safe care, the Patient Safety Center (Núcleo de Segurança do Paciente - NSP) was created through RDC No. 36/2013 to promote actions aimed at patient promotion, protection, and recovery, as well as healthcare service quality.⁵ Since then, NSPs have been mandatory in Brazilian healthcare services and must be composed of a multidisciplinary team, minimally including a physician, pharmacist, and nurse.⁶

Thus, training in patient safety becomes essential for professionals, as provided by the PNSP itself, which includes this topic in education as one of its pillars. For nursing, this inclusion is particularly important, as these professionals play a key role in ensuring safety, both within and outside NSPs, in the planning

of strategic organizational actions and the direct execution of care, given their presence in healthcare services and their time spent alongside patients.⁷

However, despite the global cascade of initiatives aimed at safer care, failures are still very present in healthcare services. In Brazil, in 2022, 292,961 incidents related to healthcare were reported to ANVISA.⁸ In line with the vulnerability faced by patients and providers, little is known about the inclusion of this topic in education, despite being one of the PNSP's objectives.⁸ Few investigations have been conducted in this regard, but a study conducted in 2016 warned that this topic is still not part of the objectives of pedagogical projects in healthcare courses and, on the contrary, appears in a fragmented and superficial manner.⁹ In that study⁹, conducted at a public university in the state of São Paulo, the approach to this topic in nursing was particularly concerning. What patient safety is, human factors in failures, and the need for learning from errors to prevent harm were not identified in any subject, while other aspects such as infection prevention and control were addressed in several, demonstrating a misalignment in the development of this topic.⁹

In light of the slow process of recognizing patient safety as a crucial topic and the need for more research in other contexts, the present study aimed to analyze the teaching of patient safety in undergraduate nursing programs in the state of Minas Gerais, Brazil.

2. Methods

This was a quantitative documentary study.

Public and private Higher Education Institutions (HEIs) in the state of Minas Gerais, active and recognized by the Ministry of Education (MEC), offering undergraduate nursing programs, were eligible for participation in the study. Institutions were only included if they provided free access to their course syllabi. Institutions whose nursing programs were not recognized by the MEC or did not offer online and public access to their syllabi were excluded. The sample was non-probabilistic.

The study was conducted remotely by accessing the syllabi of undergraduate nursing programs in Minas Gerais publicly available on each HEI's website.

To observe the patient safety topics covered in the syllabi, a data collection tool based on Bohomol's study⁹ was used, which was grounded on the *Patient Safety Curriculum Guide*.¹⁰ The tool consists of a list of 153 tracking terms that identify content related to patient safety education and cover the 11 topics outlined in the Guide, namely: a) what patient safety is; b) reasons why applying human factors is important for patient safety; c) understanding systems and the complexity effect in patient care; d) being an effective team participant; e) learning from errors to prevent harm; f) understanding and managing clinical risks; g) using quality improvement methods to improve care; h) interacting with patients and caregivers; i) infection prevention and control; j) patient safety and invasive procedures; and k) improving medication safety. The terms were tracked in the syllabi of the subjects. For sample characterization, institutional information was collected from the MEC website, including: institution's MEC rating, course and faculty foundation year, total number of subjects offered, including electives, course hours, authorized annual vacancies, administrative category, and city of origin.

In the data collection tool and database, the institutions were identified by codes known only to the research team. Data collection took place between December 2023 and February 2024 and involved the following steps:

a) Remote access to course syllabi, made publicly available on the websites of nursing programs in Minas Gerais, considering inclusion and exclusion criteria.

b) Verification, according to the data collection tool, of the presence of tracking terms in different subjects of the professional training cycle (specific component) using a search tool (Ctrl F).

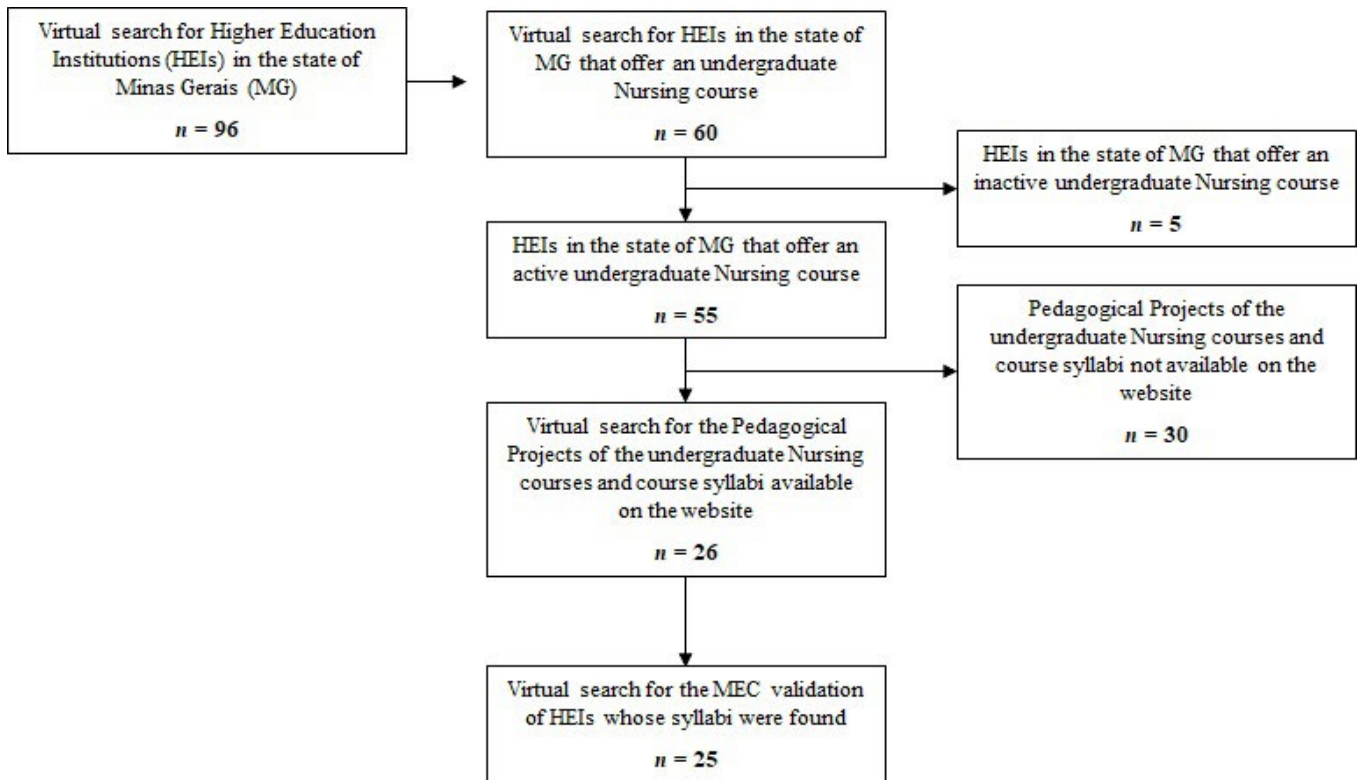
c) Inclusion of information regarding the presence or absence of tracking terms, according to the topics, into the database for analysis.

Since the study used public information freely available on the websites of the included institutions, it was not submitted for ethical review by the Research Ethics Committee. Nevertheless, the names of the institutions included were kept confidential and were identified in the database by codes.

Descriptive analysis of the sample was performed using frequencies for categorical variables and measures of central tendency for numerical variables. For association analyses, categorical variables were compared using the Chi-square test or Fisher's Exact test. A significance level of .05 was adopted for the tests. Analyses were performed using the SPSS® version 17 software.

Between December 2023 and February 2024, a virtual search was conducted to identify nursing programs in Minas Gerais. Among the 96 institutions found, 60 offered undergraduate nursing programs, and 55 were eligible for the study. Five were inactive during the search period for unspecified reasons. Among the eligible institutions, 25 (45.5%) were included due to providing open access to their syllabi on their websites and being recognized by the MEC. Figure 1 shows the flowchart of included institutions.

Figure 1. Flowchart of Higher Education Institutions included in the study



Source: the authors (2024).

3. Results

Among the included nursing programs, most were located in the Metropolitan Region of Belo Horizonte (24.0%), followed by the *Zona da Mata* region, with 6 institutions (20.0%), the South and *Triângulo* regions, both with 4 (6.0%). Some regions had only one institution, while others had none. Of the participating institutions, 14 (56.0%) were private, and 11 (44.0%) were public. The mean time since the nursing programs were established in these institutions was 30.8 years (± 20.5), with one program created just 9 years ago and the oldest established 91 years ago, while most programs had been in existence for 20 to 35 years. The number of subjects offered also varied significantly, with a mean of 58.5 (± 16.0). A total of 1,462 syllabi were examined from the same number of subjects. While one program condensed the professional training cycle content into 20 subjects, another offered as many as 87. Of the 142 terms comprising the list of patient safety topics recommended by the WHO, each program covered an average of 30.6 (± 16.0). Information characterizing the institutions and their courses can be found in Table 1.

Table 1. Characteristics of the undergraduate nursing programs included. Minas Gerais, 2024

	N = 25	
	n or Mean	% or SD
Region in MG		
Center-West	-	-
Jequitinhonha/Mucuri	-	-
Metropolitan Region of Belo Horizonte	6	24.0%
Northwest	1	4.0%
North	1	4.0%
West	2	8.0%
South	4	16.0%
Triângulo	4	16.0%
Vale do Mucuri	1	4.0%
Vale do Rio Doce	1	4.0%
Zona da Mata	5	20.0%
Time since establishment (years)	30.8	20.5
Number of subjects	58.5	16.0
Source of funding		
Public	11	44.0%
Private	14	56.0%
Course workload	4290.5	467.5

Source: the authors (2024).

Regarding the patient safety topics analyzed in each of the 1,462 courses through their syllabi, it was found that the most addressed topic was “interaction with patients and caregivers” (present in 362 of the 1,462 courses, 24.8%). Next were “medication safety improvement” (18.8%), “infection prevention and control” (17.8%), and “being part of an effective team” (13.9%). Other topics were addressed, though in less than 10% of the courses, such as “understanding systems and the effect of complexity on patient care” (8.2%), “understanding and managing clinical risks” (7.7%), “the reasons why the application of human factors is important for patient safety” (6.7%), and “what patient safety is” (6.3%). The least cited topics in the syllabi were “using quality improvement methods to improve care” (4.8%), “patient safety in invasive procedures” (4.5%), and “learning from mistakes to avoid harm” (1.0%). Table 2 lists the terms not identified in any syllabi as well as the most identified ones for each topic.

Table 2. Component terms of patient safety topics most and least addressed in Nursing undergraduate courses in Minas Gerais, 2024

Topic from the WHO Guide	N = 25	
	n	%
What is patient safety		
Concepts	18	72.0
System failures	0	-
Difference between failure, violation, and error	0	-
Swiss cheese model	0	-
Blame culture	0	-
Reasons why the application of human factors is important for patient safety		
Communication strategies in the workplace	19	76.0
Concepts of human fallibility and perfection	0	-
Process redesign	0	-
Understanding systems and the effect of complexity in patient care		
Healthcare system	14	56.0
Interdisciplinarity	0	-
Defenses and barriers in systems	0	-
Being part of an effective team	0	-
Effective communication and communication tools	17	68.0
Listening skills	0	-
Learning from mistakes to prevent harm		
Errors	3	12.0
Adverse event analysis	3	12.0
Situations that increase the risk of errors	0	-
Understanding and managing clinical risks		
Communication and miscommunication	18	72.0
Reporting near-misses	0	-
Error reporting	0	-
Sentinel events	0	-
Use of quality improvement methods for care improvement		
Variation, quality improvement methods	10	40.0
Deming concepts	0	-
Continuous improvement, PDSA cycle	0	-
Compensation measures	0	-
Failure modes and effects analysis	0	-
Interaction with patients and caregivers		
Education	24	96.0
The consumer's voice	0	-
Complaints	0	-
Communication tools	0	-
Apology	0	-
Open disclosure process	0	-
Infection prevention and control		
Precautions to prevent and control infections	18	72.0
WHO Program: Clean Care is Safe Care	0	-
Patient safety and invasive procedures		
Teamwork	15	60.0
Adverse events associated with surgical and other invasive procedures	0	-
Medication safety improvement		
Administration	22	88.0
Medication errors and their types	0	-

Source: the authors (2024).

The terms indicative of the approach to patient safety were, on average, fewer in HEIs established more than 30 years ago compared to those founded more recently (64.2 vs. 77.4); in private institutions compared to public ones (55.5 vs. 81.1); and in those with a lower total course load (62.1 vs. 90.5). However, none of these comparisons showed statistical significance. Table 3 clarifies this point.

Table 3. Comparison of the number of terms included according to different characteristics of HEIs in Minas Gerais, 2024

	Patient safety terms identified	p-value
Time since course establishment (years)		
< 30 years	77.4	.495
≥ 30 years	64.2	
Source of funding		
Public	81.1	.114
Private	55.5	
Course workload		
< 4290.5	62.1	.140
≥ 4290.5	90.5	

Source: the authors (2024).

4. Discussion

When analyzing patient safety education in undergraduate Nursing programs, it is evident that, despite the growing focus on the subject since the early 2000s and the direct relationship between patient safety and nurses' work, the theme is still underrepresented in Nursing education. Of the 142 terms prescribed by the Curriculum Guide¹⁰, only 30 were covered, on average, in each course, which does not even reach 50% of what is recommended by the WHO.

When observing the topics, in which the different prescribed terms are grouped, some were covered by less than 5% of the 1462 subjects, notably "learning from errors to avoid harm," addressed in 1% of them. Of the 25 HEIs included, only three mentioned the term "adverse event analysis" in their syllabi. "Blame culture" and "human fallibility" were not identified in any syllabus.

By proposing a transversal approach, the Curriculum Guide does not intend for patient safety to be included in all subjects, but for its various aspects to be addressed across different ones, which does not appear to be happening. The Curriculum Guidelines for Nursing courses in Brazil, as well as in other courses, are outdated, dating back to 2001¹¹, which may be one of the reasons for the lack of identification of different terms. Although an update to the National Curriculum Guidelines for the course is expected, it is still necessary to emphasize the need for discussions around the pedagogical projects of each course to ensure more coherent incorporation of the current reality.

To ensure safe care with lower rates of adverse events, it is essential to consider and address the potential harm-causing factors.¹² However, harm-causing factors are scarcely discussed, and tools for incident analysis and methods for quality improvement are not addressed. Addressing patient safety in education is not aimed at training specialists in the field, but generalist professionals who understand the value of their role in providing safer care, for example, by reporting observed incidents not just as a rule but with an understanding of the purpose of that information.

The correlation between what is covered during Nursing education and competence in professional practice, especially concerning errors in the healthcare system, has also been the subject of study. There is evidence that the more it is covered during undergraduate education, the better the performance in situations involving errors.¹³ However, despite the clear need for this prioritization, the development of competencies related to this theme does not appear to be occurring.¹²

In this study, the topics “infection prevention and control” and “being part of an effective team” were the most covered and also the most evenly cited across the syllabi among the different terms that comprise them. Among the 21 terms related to “infection prevention and control,” only one was not covered by any subject, while the others (such as precautions, types of transmission, personal protective equipment, and sterilization and disinfection methods) were addressed in various subjects.

In contrast, the most frequently addressed topic, “interaction with patients and caregivers,” had the “education” term covered 96% of the time, while other terms such as “complaints,” “communication tools,” “apology,” and “open disclosure process” were not addressed at all. It is worth reflecting on how one can aim for disclosure in practice when, in reality, this and other related concepts are not even covered in academic settings, which are meant to be spaces for reflection. It is crucial to ensure that superficiality does not masquerade as transversal integration, perpetuating the status quo.

Investing in the pursuit of quality through the development of critical thinking is important, which can be facilitated by innovative teaching methods.¹² Given the emphasis on safety, a study that measured self-reported competency in patient safety among students using a validated tool found an increase in systemic thinking and overall competency development after participation in a specific patient safety course.¹⁴ Considering the findings of this study¹⁴, the implementation of mentorship programs and courses, such as the Fuld Fellows Program developed at the Johns Hopkins University School of Nursing, becomes a relevant path to consider.

The Commission on Education of Health Professionals for the 21st Century, though not primarily focused on patient safety, addressed precedents for the problems related to professional training and its weaknesses, such as rigid curricula, exclusively technical focus without a holistic and integrated view, and a static teaching approach.¹⁵ The importance of addressing the subject throughout undergraduate education, integrated into curricular activities, was being discussed before the publication of the Guide¹⁶,

and is based on the development of skills, attitudes, and behavioral change, in addition to knowledge and concepts, to become ingrained in professional practice. It is the responsibility of HEIs to change the way curricula are constructed, moving beyond mere knowledge acquisition to work on interdisciplinary approaches, aiming to reduce adverse events, which continue to occur.¹³

The acquisition of knowledge about patient safety will not occur in isolation, with few opportunities for interprofessional collaboration and integration between different educational, practical, and political contexts. However, it cannot occur solely as a superficial or rhetorical discourse.¹⁷

As a limitation of this study, it is worth considering that course syllabi may not fully reflect the reality of a classroom, as they are often presented in an objective and sometimes superficial manner. On the other hand, they are the foundation on which the teaching offered to students during their undergraduate studies is based, and given the current scenario of patient care in which healthcare providers have acted in unsafe and risky ways, the need to update traditional curricula at HEIs is reinforced.

The inclusion of 25 HEIs from Minas Gerais allowed for a broad observation of patient safety education in the state, across different regions. However, despite the variety of HEIs and possible variations in teaching associated with some of their characteristics, such as establishment time, funding source, and course load, the lack of statistical significance in these comparisons was possibly impacted by the sample size.

5. Conclusion

This study highlighted that patient safety education in HEIs is still incipient considering the importance of the theme. The integration of the theme across different subjects was rarely observed, challenging the transversal nature of the teaching. Notably, there was a pedagogical superficiality and predominantly theoretical exposure, often not linked to clinical practice.

Additionally, there is a need to update curricular syllabi and pedagogical projects, considering better teaching strategies that ensure the retention and application of the covered content, so that it becomes intrinsic to professional thinking. Accordingly, the curricular syllabus must be a source of assurance of the proposed education, both for HEIs and students.

Authors' contributions

The authors declared that they made substantial contributions to the work in terms of the conception or design of the research; acquisition, analysis, or interpretation of data for the work; and drafting or critical revision of the content for intellectual relevance. All authors approved the final version to be published and agreed to take public responsibility for all aspects of the study.

Conflicts of interest

No financial, legal, or political conflicts involving third parties (government, companies, private foundations, etc.) were declared for any aspect of the submitted work (including, but not limited to, grants and funding, advisory board participation, study design, manuscript preparation, statistical analysis, etc.).

Indexers

The Journal of Contemporary Nursing is indexed in [DOAJ](#) and [EBSCO](#).



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