

Perioperative nursing education in Brazil: reviewing the past to survive the future

Educação em enfermagem perioperatória no Brasil: rever o passado para sobreviver ao futuro
Educación de enfermería perioperatoria en Brasil: revisando el pasado para sobrevivir al futuro

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ABSTRACT

Objectives: to summarize historical aspects related to perioperative nursing education in Brazil and to outline future perspectives. **Methods:** a descriptive-reflexive essay about the historical process of Brazilian perioperative teaching at undergraduate and graduate levels. **Results:** the reflection addresses the historical axes of perioperative nursing, teaching perioperative nursing, curriculum changes, graduate studies and relationship with the perioperative period and trends in perioperative nursing education. Curriculum changes reduced time available for teaching and learning, with a focus on the perioperative period, and diluted contents of surgical nursing in other subjects, which could cause irreversible losses for generalist nurses' training. **Final Considerations:** when reviewing historical aspects of national nursing curricula, it was found that the nomenclature perioperative nursing was never used in the curriculum, however, the surgical area has always been contemplated in undergraduate and graduate studies. Future trends indicate the need to integrate themes and prepare professionals with perspectives focused on global health and technology. **Descriptors:** Perioperative Care; Education, Nursing, Baccalaureate; Education, Nursing, Diploma Programs; Education, Nursing, Graduate; Brazil.

RESUMO

Objetivos: sumarizar aspectos históricos relacionados ao ensino de enfermagem perioperatória no Brasil e traçar perspectivas futuras. **Métodos:** trata-se de um ensaio descritivo-reflexivo acerca do processo histórico do ensino perioperatório brasileiro no âmbito da graduação e pós-graduação. **Resultados:** a reflexão aborda os eixos histórico da enfermagem perioperatória, ensino da enfermagem perioperatória, mudanças curriculares, pós-graduação e relação com o perioperatório e tendências do ensino de enfermagem perioperatória. Alterações curriculares reduziram o tempo disponível de ensino-aprendizagem, com enfoque no perioperatório, e diluíram os conteúdos de enfermagem cirúrgica em outras disciplinas, podendo causar perdas irreversíveis para a formação de enfermeiros generalistas. **Considerações Finais:** ao rever aspectos históricos dos currículos nacionais da enfermagem, constatou-se que a nomenclatura enfermagem perioperatória nunca foi utilizada nos currículos, contudo a área cirúrgica sempre foi contemplada na graduação e pós-graduação. Tendências futuras assinalam a necessidade de integrar temáticas e preparar profissionais com perspectivas direcionadas à saúde mundial e tecnologia. **Descritores:** Assistência Perioperatória; Educação em Enfermagem; Educação Superior; Educação de Pós-Graduação em Enfermagem; Brasil.

RESUMEN

Objetivos: resumir aspectos históricos relacionados con la educación en enfermería perioperatoria en Brasil y esbozar perspectivas futuras. **Métodos:** se trata de un ensayo descriptivo-reflexivo sobre el proceso histórico de la enseñanza perioperatoria brasileña a nivel de pregrado y posgrado. Los cambios curriculares redujeron el tiempo disponible para la enseñanza y el aprendizaje, con foco en el período perioperatorio, y diluyeron los contenidos de enfermería quirúrgica en otras disciplinas, lo que podría ocasionar pérdidas irreversibles para la formación de enfermeros generalistas. **Resultados:** la reflexión aborda los ejes históricos de la enfermería perioperatoria, la enseñanza de enfermería perioperatoria, los cambios curriculares, los estudios de posgrado y la relación con el período perioperatorio y las tendencias en la formación de enfermería perioperatoria. **Consideraciones Finales:** al revisar aspectos históricos de los currículos nacionales de enfermería, se encontró que la nomenclatura enfermería perioperatoria nunca fue utilizada en los currículos, sin embargo, el área quirúrgica siempre ha sido contemplada en los estudios de grado y posgrado. Las tendencias futuras indican la necesidad de integrar temas y preparar profesionales con perspectivas centradas en la salud global y la tecnología. **Descriptorios:** Atención Perioperatoria; Educación en Enfermería; Educación Superior; Educación de Postgrado en Enfermería; Brasil.

INTRODUCTION

Nursing education in Brazil must be understood as a historical process marked by social, ideological, political and economic aspects⁽¹⁻³⁾. The first attempt at formal education for nurses has its historic landmark in 1890 in Rio de Janeiro. From there, new schools emerged, meeting the interests of each historical moment, and in the 1920s, the one considered the first modern nursing school in Brazil emerged, called *Escola de Enfermagem do Departamento Nacional de Saúde Pública* (Brazilian National Department of Public Health Nursing School), currently *Escola de Enfermeiros Anna Nery* (Anna Nery School of Nurses), created following the Nightingale assumptions⁽⁴⁾. From its foundation, due to the Carlos Chagas Reform that took place at the time, the country began to train nurses in the Nightingale model, with university education and a focus on an autonomous science^(1-3,5).

Since then, the courses and training of nurses in Brazil have undergone changes, meeting historical, local, regional needs and educational curriculum proposals, which seek to modernize the nursing curriculum in relation to commitments to the Health Reform and, more recently, to the Unified Health System (SUS - *Sistema Único de Saúde*)⁽⁴⁾.

The teaching of skills necessary for developing nursing activities in the surgical center (SC), anesthetic recovery (AR) and material and sterilization center (MSC), called perioperative nursing, followed the nursing's historical process in the country and was based on the management-care dimension⁽²⁾.

In this context, there is a worldwide movement aimed at meeting the demands of new generations and their learning needs, making content attractive, while preparing professionals to meet the professional market's needs, strongly affected by the lack of qualified labor, due to the aging of specialists in the area and the absence of adequate replacement for retirement⁽⁶⁻⁷⁾.

It is necessary to consider the different health conditions of a population present in a country with continental dimensions like Brazil, where the demands for professional training need to meet different contexts, with inequitable distribution of human and financial resources and, still, different cultural aspects. Brazilian nurses are often required to take care of, or even manage, different areas or units. This requirement points to the need for professionals to know the local epidemiology, at the same time, with a broader view of global health conditions. For this, a generalist training is necessary, but which also includes the main areas of nursing practice, such as perioperative nursing.

In Brazil, the quest to train a "generalist professional" has diluted contents related to perioperative nursing in undergraduate nursing curricula, an aspect that can compromise the ability of recent graduates to enter a constantly evolving job market. Thus, Brazilian universities and health institutions are already beginning to feel the effects of this training gap, aspects also observed at a global level⁽⁸⁾.

In this way, understanding the historical perspectives related to the teaching of theoretical-practical skills related to perioperative nursing can strengthen the aspects necessary for the discussion of adjustments to the teaching curricula in undergraduate nursing, the modern training demands and to prevent Brazil from facing the crises related to the replacement of specialized labor that Europe and North America have been facing. The historical

trajectory of nursing education has shown the content focused on the perioperative period and MSC diluted in the curricula, with almost no specific curricular components in the area, nor professors at universities who can meet this demand.

Furthermore, considering the Nursing Now campaign initiatives, which seek to strengthen nursing, and understanding that rescuing the historicity of the construction of specialized knowledge in nursing is supported by associative entities, more specifically the *Associação Brasileira de Enfermagem* (ABEn - Brazilian Nursing Association) and the Brazilian Association of Surgical Center Nurses, Anesthetic Recovery and Material and Sterilization Center (SOBECC - *Associação Brasileira de Enfermeiros de Centro Cirúrgico, Recuperação Anestésica e Centro de Material e Esterilização*), it is possible to critically analyze the processes, verifying their effects in the medium and long term. Finally, at the national level, no similar recent studies were found or that make equivalent approaches to the present study.

OBJECTIVES

To summarize historical aspects related to perioperative nursing education in Brazil and to outline future perspectives.

METHODS

This is a descriptive-reflective essay about the historical process of Brazilian perioperative teaching in the scope of graduation, *stricto* and *lato sensu* graduate (master's degree and doctoral degree/specialization) and future trends.

To this end, a search for relevant materials was carried out in the databases (PubMed, CINAHL, LILACS, SciELO, Scopus and Web of Science) and gray literature (academic Google and websites of official Brazilian teaching and education bodies), with controlled and uncontrolled descriptors, as appropriate. In the search in the databases, descriptors selected from DeCS and MeSH were used, interspersed with Boolean operators, namely: (Education, Nursing OR Teaching) AND Perioperative Nursing AND (Surgicenters OR Perioperative Period). The search considered articles published in the last five years (2016-2021), available in full, in English/Portuguese/Spanish, with 170 articles found, distributed as follows: 15 in PubMed, 41 in CINAHL, 81 in LILACS, four in SciELO, 18 in Scopus and 11 in Web of Science. After reading the title and the article in full, 22 articles were selected that met the proposed objective.

However, during the article elaboration, there was a need to substantiate certain aspects addressed not substantiated in selected articles, with the need to carry out a new search in the gray literature, without considering the recency (last five years), directing the topic to be developed, increasing the amount of consulted material. Topics to be developed were defined, such as the history of perioperative nursing, teaching in perioperative nursing and Brazilian curriculum changes, graduate studies in nursing and the relationship with the perioperative period and trends in teaching in perioperative nursing.

PERIOPERATIVE NURSING HISTORY

Perioperative nursing history begins with the need for a surgical assistant at the beginning of rudimentary practices. For

centuries, surgery was marked by high rates of failure, high rates of mortality and infection. Only from the 17th and 18th centuries onwards, a more promising development was noticed, linked to a greater depth of anatomical research, the beginning of the development of public health, surgical cleaning and statistics⁽⁹⁻¹⁰⁾.

In the 19th century, training programs began, and surgical nursing is recognized as the first specialty coated with prestige and responsibility, with nurses' work directed to the preparation of patients, environment, materials, assistance with procedures and anesthesia, in addition to the supervision of patients in the postoperative period⁽¹⁰⁾.

The world was marked nursing, bringing demographic, social and economic repercussions, in addition to technological advances that impacted the performance of nurses, with the inclusion of sterilization services in hospitals between the 1950s and 1960s⁽¹⁰⁾.

From the 1950s onwards, nurses began to fear the loss of newly conquered spaces after the war period and began to organize themselves into professional societies, with the Association of Operating Room Nurses (AORN), in the United States of America (USA), being the first to represent nurses in the care of surgical patients, followed by specialized society in the United Kingdom⁽¹⁰⁾.

Finally, the perioperative nursing term is coined, based on the principle that surgical care goes beyond the operating rooms, as it permeates the entire patient experience in pre-, trans and postoperative periods⁽¹⁰⁾. In Brazil, since the 19th century, the training of nursing professionals was based on a curative, doctor-centered model, with their training taking place in hospital environments and subjects often taught by doctors who addressed topics of medicine and surgery. Nurses' role was aimed at service administration and organization, as well as hygiene, cleaning and feeding patients. Subsequently, political, economic and social changes boosted a more scientific development of Brazilian nursing, which was reflected in education and strengthening of nursing specialties⁽¹¹⁻¹²⁾.

The strengthening of discussions in the Brazilian specialty took place in 1982, when a group of SC nurses began to discuss practice and research in perioperative nursing, officializing the creation of a society of experts in 1991, initially known as the *Sociedade Brasileira de Enfermeiros de Centro Cirúrgico* (Brazilian Society of Surgical Center Nurses) and later as *Associação Brasileira de Enfermeiros de Centro Cirúrgico, Recuperação Anestésica e Centro de Material e Esterilização* (Brazilian Association of Surgical Center Nurses, Anesthetic Recovery and Material and Sterilization Center), keeping its acronym, SOBECC⁽¹³⁾.

EDUCATION IN PERIOPERATIVE NURSING AND BRAZILIAN CURRICULAR CHANGES

Nursing education in Brazil has undergone several curricular changes influenced by political, economic and social transformations⁽⁴⁾. In the period from 1890 to 2009, there was a predominance of a medical/hospital model in undergraduate nursing teaching, with the training of a curative nurse being valued, focused on hospital care⁽²⁻³⁾. The first undergraduate nursing curriculum was proposed in 1890, with changes to minimum curriculum in 1923, 1949, 1962, 1972 and 1994⁽²⁾. In 1996, the Brazilian National Education Guidelines and Bases Law (LDB - *Lei de Diretrizes e Bases*

da Educação Nacional) was published, and the curricula began to be guided by the Brazilian National Curriculum Guidelines (DCNs - *Diretrizes Curriculares Nacionais*) for undergraduate nursing courses⁽²⁾.

PERIOPERATIVE NURSING IN THE CURRICULUM FROM 1890 TO 1972

Although the perioperative nursing nomenclature has never been included in the curricula, there is the presence of subjects with related contents, i.e., focus on surgical nursing, processing of health products and prevention and control of infections, in general, included in the national curricula with the name surgical nursing.

In 1890, in the first nursing school's curriculum, some subjects were found, such as hospital hygiene, dressings and minor surgery⁽⁵⁾.

In 1923, the *Escola Anna Nery* curriculum consisted of thirty-five subjects, thirty-one of them medical specialties and, among them, one surgical specialty⁽²⁾. At that time, the country was experiencing the industrialization process and it was necessary to train professionals to work in the hospital area⁽²⁾. The course lasted two years and four months, and required a Normal School Diploma as a prerequisite for admission. In the second year, students should comply with the SC's technical subject, therefore, with perioperative teaching in the undergraduate course. Moreover, in this curriculum model, there was a final phase in training, in which students could elect specialization in clinical nursing and public health⁽⁵⁾.

The publication of Bill 775/49, of 1949, provided for nursing education in Brazil. This project was seen by ABEn as an attempt to contain the increase in the number of new nursing courses in the country, dividing teaching into two categories, nursing course and nursing assistant, lasting 36 to 18 months, respectively⁽⁵⁾.

From 1962, nursing was legally recognized as a higher education through Opinion 271/62 of the Federal Council of Education (CFE - *Conselho Federal de Educação*), establishing the first minimum curriculum for nursing courses lasting three years^(2,5). Regarding the subjects, medical nursing and surgical nursing were present⁽⁵⁾, highlighting the focus on the training of a professional with minimal skills for perioperative care.

In the 1970s, marked by the focus of curative and technical assistance, Opinion CFE 1659 o 163/72 was published, which reformulated the minimum nursing curriculum. There was the inclusion of qualifications in public health, medical-surgical nursing and obstetrics, taken as an option during graduation, reducing generalist focus of training and changing the name of bachelor's degree in nursing and midwifery^(1-2,5).

The changes instituted in the curriculum of 1949, 1962 and 1972 were small, demonstrating a predominantly curative and technical training, based on the biomedical, hospital-centered model and on a nursing focused on disease treatment⁽⁵⁾.

PERIOPERATIVE NURSING IN CURRICULUM FROM 1994

In 1994, Ordinance 1,721 was published, which established the workload (WL) for the minimum contents of the four thematic areas of undergraduate nursing courses, as follows: biological and

social bases of nursing (25% WL), fundamentals of nursing (25% WL), nursing care (35% WL) and nursing administration (15% WL)⁽¹⁴⁾. Within the thematic area of nursing care, there were subjects related to the specificity of child, adult and elderly care, including clinical-surgical nursing.

With the publication of LDB 9.394, of 1996, innovations and changes were introduced. There was extinction of minimum curricula and adoption of curriculum guidelines for each course⁽¹⁵⁾. Article 53 provides autonomy for universities to create and terminate courses and curricula, as long as that the relevant general guidelines⁽¹⁵⁾ are observed.

In 2001, CNE/CES Resolution determined the Brazilian National Curriculum Guidelines (DCNs - *Diretrizes Curriculares Nacionais*) to be followed by the Undergraduate Nursing Courses, curricular structures outlined by the institutions of the country's higher education system⁽¹⁶⁾. Article 3 defines the profile of graduates/professionals as generalist, humanistic, critical and reflective nurses. Article 6 establishes three essential content topics, such as biological and health sciences, human and social sciences, and nursing sciences. This last topic is divided into nursing fundamentals, nursing care and nursing administration⁽¹⁶⁾. It is noteworthy that the topic nursing care is composed of generic contents, which no longer contemplate the surgical area, as occurred in the previous curricular guidelines.

Since 2001, there has been a movement to update nursing DCNs based on Resolution 573, which approved Technical Opinion 28/2018, containing recommendations from the Brazilian National Health Council to the proposal of nursing DCNs⁽¹⁷⁾. However, until 2020, nursing DCNs of 2001 remain in force. In March 2021, the Brazilian National Education Council (CNE - *Conselho Nacional de Educação*) published the draft of the DCN of bachelor's degree in nursing for assessment and discussion among peers, aiming to present a document for consideration by public consultation, with a view to publication, still in 2021, of the new nursing DCNs.

DCNs measures published in 2001 negatively impacted the teaching of perioperative nursing in different ways, and courses driven by a generalist approach to training reduced content and WL intended for surgical patient care skills or extinguished the subjects that addressed these themes. A study evaluating the provision of content in perioperative nursing in undergraduate courses in São Paulo (SP) observed that, although professors recognize the importance of content in the training of nurses (generalist), WL limitation negatively impacts the approach quality, often limited to a theoretical, and not practical, exposure to the contents⁽¹⁸⁾.

GRADUATE DEGREE IN NURSING AND THE RELATIONSHIP WITH PERIOPERATORY

Lato sensu modality

The first specialization course in nursing in Brazil appeared in 1961, with a focus on pediatrics along the lines of nursing residency at the *Hospital Infantil do Morumbi*, in the city of São Paulo. The second specialization course took place only in 1973, in the medical-surgical area, held at the School Hospital, Nursing School, *Universidade Federal da Bahia*⁽¹⁹⁾.

The university reform, from the enactment of Law 5,540/68, increased the *lato sensu* graduate courses, boosting nursing as a profession, breaking with the submission to the faculties of medicine⁽⁴⁾. From the 1970s onwards, the *lato sensu* modality grew, and nursing residency was developed following the in-service training model, covering several technical specialties, including medical-surgical nursing⁽²⁰⁾.

COFEN Resolution 204/2009, later revoked by Resolution 389/2011, established 42 nursing specialties, allowing generalist nurses to specialize in any of established areas^(4,21-22). Both Resolutions cite as possible specialties the material and sterilization center, SC, surgical clinic and hospital infection⁽²¹⁻²²⁾. When the 2001 nursing DCNs determined the training of generalist nurses, specialization became mandatory for nurses to enter areas that require specific knowledge.

In consultation with the E-MEC, there is an active registration of 163 specialization courses that contain the word SC in their titles (<https://emec.mec.gov.br/>), many of which offer training in SC, MSC and AR or SC and MSC.

Stricto sensu modality

In Brazil, the *stricto sensu* modality in the field of nursing began with the academic master's course in 1972, promoted by the *Escola de Enfermagem Anna Nery* (EEAN) of the *Universidade Federal do Rio de Janeiro* (UFRJ)⁽²³⁻²⁴⁾. It is noteworthy that the search for professional autonomy and definition of specificity of knowledge incited a movement to develop Nursing Theories, started in the USA, in the 1960s, and in Brazil, in the 1970s, coinciding with the beginning of training in *stricto sensu* for Brazilian nursing⁽²³⁾. The *stricto sensu* allows graduate students, together with their advisors, the freedom to develop scientific investigations in any areas of nursing knowledge, and the contents resulting from the investigative processes are produced by a specific group of researchers.

However, currently, there is a significant reduction in the number of permanent professors in graduate programs (GP) who are dedicated to scientific production in the area of perioperative nursing. This circumstance possibly reflects the current political-economic context in which there is a situation of retirements and difficulty in replacing the teaching staff in universities, especially public, an aspect that, if not resolved in the short or medium term, can compromise the quality and quantity of Brazilian scientific production in the area.

In Brazil, according to the report produced resulting from the Mid-Term Seminar in the Nursing Area, held in 2019, there were 54 academic GPs, 16 with a master's degree, 36 with master's and doctoral courses and two with only doctoral courses, totaling 90 GP, and 24 professional GP⁽²⁵⁾. The reflection of this growth in qualified nursing training and the increase in the volume of Brazilian scientific production can be observed, totaling 13,074 documents published in the period between 1996 and 2020, through an analysis of the Scimago Journal & Country Rank⁽²⁶⁾, which places Brazil in third place, behind only the USA and the UK.

EDUCATIONAL TRENDS IN PERIOPERATIVE NURSING

A Brazilian study, conducted in 2011, characterized the teaching of nursing in SC in relation to WL, content and specific curricular

component. At the time, there were 841 establishments with bachelor's degrees in nursing, registered with the Ministry of Education and Culture, but only 29.8% of coordinators of undergraduate courses responded to the survey⁽²⁷⁾. The return of participants was similar among the five Brazilian regions (approximately 20.0%), with the exception of the Northeast (10.5%). It was observed that 67.3% had a specific SC subject, and the average total WL of the content on the subject offered was 94.7 hours (SD \pm 80 hours), with eminently theoretical content, and the subjects' names, where content was inserted, varied. In some courses, the content was dispersed in two or three subjects, and only one of the respondents did not offer the content in the curriculum⁽²⁷⁾. The number of professors to teach content ranged from 1 to 6 (mean 2.5; SD \pm 2.2), being similar between the different regions of the country, with the exception of the northeast and south, where the average is lower than average (mean 2.1; SD \pm 1.2), and from the Southeast (mean 2.9; SD \pm 1.9), where it is higher ($p=0.1653$)⁽²⁷⁾. It was observed that the courses without a specific subject had a higher proportion of a single professor to teach the content⁽²⁷⁾. However, it is noteworthy that this is the only study that portrays perioperative teaching in different Brazilian regions and that no other study of this nature was subsequently identified. Therefore, this picture reflects the reality of perioperative teaching portrayed ten years ago.

A training of general nurses associated with the freedom to define curricula, provided to universities by LDB, of 1996, and the guidance determined by the DCN, of 2021, impacted the teaching of nursing in different ways, resulting in variable workloads for teaching perioperative nursing in the various Brazilian baccalaureates⁽²⁷⁾. Many courses chose to reduce WL or eliminate some subjects on perioperative care, more specifically SC and MSC, as they are understood as a specialization and, consequently, they diluted the contents aimed at surgical patients in other subjects. In this way, students missed the opportunity to be exposed to a field of great importance, without arousing interest in developing their knowledge to work in this area. However, through the analysis of the documents retrieved by the present study, a more conservative approach is observed in the national curricula that maintained the name surgical nursing.

Specialists in the subject perceive the current precarious scenario in the offer of subjects that address the perioperative part of the nursing curriculum. However, an even darker perspective could be outlined for the future, if the preliminary proposal of DCNs for undergraduate nursing course, presented by the Brazilian National Education Council (CNE - *Conselho Nacional de Educação*) in early 2021, is approved. On April 20, 2021, the representative institutions of ABEn National Nursing and the Federal Nursing Council (COFEN - *Conselho Federal de Enfermagem*) published official letters sent to the president of the Commission for the Review of DCNs of CNE's Nursing Course of the CNE's Chamber of Higher Education and to its rapporteur, refuting this proposal. This fact highlights the controversial and difficult moment experienced in Brazil in relation to the updating of nursing DCNs. If this proposal is not improved, it could profoundly impact the teaching and construction of this area of knowledge in a negative way⁽²⁸⁻²⁹⁾.

SC is an environment in constant technological innovation, with an increase in the use of several hard technologies, such as robotics and high-tech equipment, in favor of less invasive

procedures, aspects that require constant updating from nurses, ensuring skill in handling these new technologies⁽¹³⁾. In this way, research and teaching in perioperative nursing followed the progress of the area, marked by interprofessional work and rapid incorporation of various types of technologies (soft, soft-hard and hard) into care practice, notably after the creation of the first class associations and their respective journals.

Currently, there is a crisis in relation to the nursing workforce in the world that, possibly, will increase in the post-pandemic phase. The United Nations estimates that there will be a shortage of nine million nurses and midwives to meet the population's health needs by 2030 and, concerned about this situation, launched the Nursing Now campaign⁽³⁰⁾. In Brazil, the current nursing workforce, according to the Federal Nursing Council (2018), is composed of 23% of nurses and 77% of nursing technicians or assistants, predominantly women (85.1%). Among nurses, only 10.5% are dedicated to the areas of critical intensive care and SC and 0.1% to the Material and Sterilization Center area⁽³¹⁾.

This decrease in human resources has been an international trend, with the aging of the workforce and lack of replacement of professionals at the same speed, associated with curricular changes with limited exposure to contents related to perioperative nursing⁽³²⁾, compromising the interest of future professionals in the area and the replacement of specialized manpower, in a field that requires professional maturity for nurses to acquire expertise⁽³³⁾.

However, perioperative nurses have been mobilizing in an attempt to investigate and propose ways to overcome the obstacles faced, including a paradigm shift in relation to specific contents, associated with the training of nurses for the skills necessary to work in the operating room, increasing students' exposure to these concepts from the beginning of the course. It should be noted that in the skills developed in the contents related to surgical nursing, there are basic principles of asepsis and antisepsis, safety culture, possibilities to explore nurses' role as a defender of patients' rights, organizational cultures and interprofessional work, in addition to the possibility of developing various practical skills related to the execution of nursing procedures and skills⁽³⁴⁾.

It is noteworthy that such skills meet what is proposed by the National Council of Education in the DCNs of the undergraduate nursing course, and even expands it, It is noteworthy that such skills meet what is proposed by the CNE in the undergraduate nursing course's DCN, and even expands it, since the expected training proposition in Brazil is linked to the training of a generalist, critical-reflective and humanist nurse, qualified to work with scientific and intellectual rigor, based on ethical principles, capable of recognizing and intervening in the most prevalent health-disease situations in the region in which it is inserted, identifying its determinants, in addition to exercising social responsibility and commitment to citizenship, acting as a promoter of comprehensive care to human beings⁽¹⁶⁾.

In addition, Brazilian nursing education provides for the development of various competencies and skills for the development of prevention, promotion, protection and recovery of health, decision-making, communication and leadership, as well as the administration and management of units and services under their responsibility, in addition to continuing education⁽¹⁶⁾. Finally, skills that are embedded in perioperative nursing work.

It is noteworthy that to contemplate the formation of an assumption as a generalist, it is essential that students have contact with different areas of knowledge of working in nursing, since their choice in the professional area may be based on small experiences obtained during their knowledge construction process. Therefore, it is up to professors to encourage the curiosity of students in search of knowledge, as neophytes or recent graduates of undergraduate nursing courses may have a restricted view of reality or, still, a reduced critical and reflective capacity when putting their knowledge into practice, which may culminate in a limited ability to adapt to different contexts of nursing practice⁽³⁵⁻³⁶⁾.

It is noteworthy that, currently, health professionals, specifically nurses, are required, in addition to critical thinking and decision-making skills, to focus on safe health care, integrated with global perspectives and trends, such as the global challenges proposed by the World Health Organization, which address topics related to patient safety, safe surgeries and global health. Such breadth of knowledge enables nurses to participate in the elaboration of the therapeutic plan and in the elaboration of health policies. The alignment of nursing education to world trends allows professionals, in a scenario that overlaps with the local, to validate their diplomas and practice their profession in other countries, if they wish. This does not mean that a national curriculum guideline should not be based on regional health needs, but it cannot be dissociated from the global context in which they are inserted.

In the context of RGs, the need to conduct studies aimed at the development of nursing concepts focusing on the perioperative area is crucial for the maintenance, recognition and strengthening of this specialty. In this sense, the improvement and development of diagnostic nursing structures, through standardization of language, expands the applicability of the systematization of perioperative nursing care⁽³⁷⁾.

Another aspect that has gained prominence in educational discussions is the ability to enable undergraduate students to develop their work in an articulated manner with other professional categories that share patient care. A recent investigation observed that, when exposed to an integrated course with inter-professional education and simulation, there is a positive impact on the learning of nursing students in relation to the contents covered in the perioperative period⁽³⁸⁾. These initiatives strengthen teamwork and communication, by decreasing the perception of fragmented care and the feeling of little belonging to the area, in

addition to, associated with simulation, favoring critical thinking and decision-making⁽³⁸⁾.

It is noteworthy that a successful educational program in perioperative nursing is directly related to the faculty's ability to arouse students' interest in the subject. It is up to professors to offer didactic quality and practical training, to provide solid theoretical-scientific training that allows students to expand their confidence, competence and professional practice. The institutional support, obtained through partnerships for the development of practice and the presence of dedicated and skilled educators in perioperative teaching, who use innovative methodologies and offer scientifically updated content, can substantially contribute to the training of professionals who seek this specialty.

FINAL CONSIDERATIONS

Regarding the historical aspects of Brazilian perioperative nursing education, it was found that, for a long period, the training of undergraduates was directed towards the curative, technical, biomedical and hospital-centered model. Although the nomenclature perioperative nursing has never been used in national curricula, this field of knowledge has always been present since the first curriculum, established in 1890, until the 1994 curriculum, with one or more subjects aimed at the training of surgical nursing. At the graduate level, both *lato sensu* and *stricto sensu*, perioperative nursing is well established. In the *lato sensu*, there are specialization and residency courses in SC and MSC, allowing nurses to specialize in the area of interest. In the *stricto sensu*, Brazilian nursing stands out in terms of quality scientific production and national and international recognition, which strengthens not only the area of perioperative nursing, but nursing science as a whole.

In terms of trends, through a historical context in which technology permeates all social relationships, including work relationships, it is essential that nursing curricula appropriate themes that involve soft, soft-hard and related hard technologies. when caring, among them the contents of SC and MSC, since these are closely linked to this perspective. Moreover, integrating the national curriculum with global health trends, aimed at patient safety, safe surgeries and global health, allows generalist nurses, trained in Brazil, to be able to practice their profession in different countries.

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