

Perioperative nurses' activities in the brazilian scenario: a scoping review

Atividades do enfermeiro de centro cirúrgico no cenário brasileiro: *scoping review*
 Actividades de los enfermeros de quirófano en el escenario brasileño: *scoping review*

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Abstract

Objective: To map perioperative nurses' main activities in the Brazilian scenario, explained in the current literature.

Methods: This is a scoping review prepared in accordance with current JBI guidelines, using the checklist for conducting and reporting the study. The search was carried out by two independent researchers, between August and December 2021, in six databases in the health area, using the descriptors nurses, nurse role, intraoperative period, perioperative nursing, surgical centers. Articles published between January 2011 and October 2022, in English, Portuguese or Spanish, were part of the sample. The information was extracted, classified, synthesized and presented descriptively.

Results: Eighteen were included in the research synthesis. The analysis of results made it possible to highlight the implementation of surgical safety measures as prevalent activities in care (50%); in management, material, input and equipment (72%) and room preparation (39%) management; in teaching, permanent nursing education (50%). No studies related to researcher activity were identified.

Conclusion: In the Brazilian scenario, perioperative nurses' activities range from management to assistance with a smaller proportion in teaching, highlighting their strategic position in mobilizing actions that promote safety and quality in perioperative processes.

Resumo

Objetivo: Mapear as principais atividades do enfermeiro de Centro Cirúrgico no cenário brasileiro, explicitadas na literatura vigente.

Métodos: Trata-se de uma *scoping review* elaborada de acordo com as diretrizes vigentes do *Joanna Briggs Institute*, utilizando o checklist para condução e relatório do estudo. A busca foi realizada por duas pesquisadoras independentes, no período entre agosto e dezembro de 2021, em seis bases de dados da área da saúde, utilizando os descritores: *nurses*, *nurse role*, *intraoperative period*, *perioperative nursing*, *surgical centers*. Fizeram parte da amostra artigos publicados entre janeiro de 2011 e outubro de 2022, nos idiomas inglês, português ou espanhol. As informações foram extraídas, classificadas, sintetizadas e apresentadas descritivamente.

Resultados: Foram incluídos 18 na síntese da pesquisa. A análise dos resultados possibilitou evidenciar como as atividades prevalentes na assistência a implementação de medidas de segurança cirúrgica (50%); na gestão, o gerenciamento de materiais, insumos e equipamentos (72%) e preparo das salas (39%); no ensino, educação permanente da enfermagem (50%). Não foram identificados estudos relacionados à atividade de pesquisador.

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Conflict of interest: nothing to declare.

Conclusão: No cenário brasileiro, as atividades do enfermeiro de Centro Cirúrgico circundam-se entre gerenciais, assistenciais com menor proporção no ensino, destacando-se sua posição estratégica na mobilização das ações que promovem segurança e qualidade nos processos perioperatórios.

Resumen

Objetivo: Mapear las principales actividades de los enfermeros de quirófano en el escenario brasileño mencionadas en la literatura vigente.

Métodos: Se trata de una *scoping review* elaborada de acuerdo con las directrices vigentes del *Joanna Briggs Institute*, utilizando la lista de chequeo para la conducción e informe del estudio. La búsqueda fue realizada por dos investigadoras independientes, entre agosto y diciembre de 2021, en seis bases de datos del área de la salud, utilizando los descriptores: *nurses, nurse role, intraoperative period, perioperative nursing, surgical centers*. Artículos publicados entre enero de 2011 y octubre de 2022, en inglés, portugués y español formaron parte de la muestra. La información se extrajo, se clasificó, se sintetizó y se presentó descriptivamente.

Resultados: Se incluyeron 18 artículos en la síntesis del estudio. El análisis de los resultados permitió evidenciar las siguientes actividades predominantes: en la atención, la implementación de medidas de seguridad quirúrgica (50 %); en la gestión, la administración de material, insumos y equipos (72 %) y la preparación de las salas (39 %); en la enseñanza, la educación permanente de la enfermería (50 %). No se identificaron estudios relacionados con la actividad del investigador.

Conclusión: En el escenario brasileño, las actividades de los enfermeros de quirófano giran en torno de la gestión, la atención con menor proporción la enseñanza, y se destaca su posición estratégica en la movilización de las acciones que promueven seguridad y calidad en los procesos perioperatórios.

Protocol registration on the Open Science Framework platform: <https://osf.io/8jmq6/>

Introduction

The surgical center (SC) is a hospital unit where anesthetic-surgical procedures of different complexities are performed. The context of growing development and technological evolution in work processes in this sector make up a scenario where numerous practices interact and integrate for effective patient care practice.⁽¹⁾

When considering SC's organizational aspects, it is verified that the integration between the management of patient care, material resources, work processes developed by the multidisciplinary team, professionals' permanent education and scientific research development encouragement are attributions of nurses who work in this area.^(1,2)

Although it is possible to point out institutional specificities and particularities that interfere with the role of nurses in the SC, one of their main competences is to manage perioperative care in interrelationship with different professionals and sectors of the institution, including actions that promote the management of available resources in order to improve care quality and safety.^(1,3)

The organization and planning of this unit requires a dynamic professional with the ability to make decisions quickly and assertively to assist in emergency procedures through roster and nursing staff reorganization, dictating the workflow pace.⁽⁴⁾

In Brazil, there is no specific legislation that provides for perioperative nurses' activities. In care practice, the lack of specialization does not prevent nurses from working in the SC, however, there is a recommendation from the professional association for nurses to be specialists in the area in which they work.⁽¹⁾

Therefore, considering the complex system in which the SC is inserted, in the different institutional profiles, the question is: what are the activities carried out by nurses in the Brazilian scenario? The justification for mapping and identifying the performance of nurses in an essential care area for health care is based on the need to base strategies for the elaboration of guidelines and actions related to the performance and visibility of perioperative nurses' role in Brazil.

Thus, this article aimed to map perioperative nurses' activities in the Brazilian scenario, explained in the current literature.

Methods

This is a scoping review structured in accordance with the JBI 2020 guidelines.⁽⁵⁾

The choice for the scoping review was based on the need to explore and seek evidence on the subject in order to identify and analyze existing gaps in

knowledge in the literature. We used the checklist Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) for conducting the study, presenting the results and preparing the final report, with a view to transparency and improvement in the methodological quality of the research.⁽⁵⁻⁷⁾

Thus, from the need to synthesize and disseminate the findings of research developed and available on perioperative nurses' activities in the Brazilian perioperative nursing scenario and based on the JBI guidelines for scoping review, the following steps were taken for the development of this study.⁽⁷⁾

The first stage comprised the definition and alignment of the objective and research question, the research question being: What are the activities performed by perioperative nurses in the Brazilian scenario? It was structured according to the PCC mnemonic process (P - population: nurses; C - concept: role, performance or activities developed by nurses; C - context: SC).

The second stage consists of aligning the inclusion criteria with the objective and research question, and the third stage comprised the search description, selection, data extraction and evidence presentation.

In the fourth stage, searches were carried out in the virtual databases with the help of a librarian in August 2021 and updated in October 2022, with the purpose of covering the most current evidence on the subject. Databases checked were MEDLINE (via PubMed), EMBASE, LILACS, CINAHL, Web of Science and Scopus, using the descriptors/MESH: nurses, nurse role, intraoperative period, perioperative nursing, surgical centers. The general search strategy was as follows: (*enferme** OR nurse*) OR ("*papel do profissional de enfermagem*" OR "nurse* role" OR "*rol de la Enfermera*") OR ("*enfermagem perioperatória*" OR perioperative nursing" OR "*enfermería perioperatoria*") AND ("*centro* quirúrgico**" OR "*centro* quirúrgico**" OR surgicenters OR "*centro* de cirurgia**" OR "*centro* de quirurgia**") OR ("*período intraoperatório*" OR "intraoperative period"). The greyLit.org website was consulted, which provides gray literature resources in health services research as well as analysis of reference lists of select-

ed articles to identify potential literature not identified through the search strategy.

Articles developed in the Brazilian practice scenario, available in English, Portuguese or Spanish, published between January 2011 and October 2022, were included. The choice of this period is justified based on the development of perioperative nursing as well as the development and publications of research of this area. Articles that did not meet the criteria and objectives of this study, theses, dissertations and publications in journals without *Qualis-Periódicos* (a Brazilian journal assessment system) assessment by CAPES were excluded.

Selection was carried out in the fifth stage, by two independent reviewers, based on the inclusion criteria, based on article title and abstract assessment. In the next phase, the results were compared and disagreements were resolved by consensus or by consulting a third reviewer. To assist in selection, organization, filing and exclusion of duplicates of articles, the Zotero reference manager was used. Potentially relevant articles selected at this stage were retrieved in full through access to the databases.

In the sixth stage, data were extracted by two reviewers, using a specific form with the following information: data according to the specific form containing author, article title, year of publication, journal, research design and nurses' activities. Each reviewer informed the reason for excluding the studies. In cases of disagreement, assessment was performed by a third reviewer.

In the seventh step, evidence analysis was carried out, which were not assessed in relation to evidence quality in the articles, as this is not within the scope of this study. Qualitative synthesis and interpretation of results occurred after reading the texts and presenting them descriptively. The eighth stage comprised the presentation of results, and the classification of perioperative nurses' activities was based on Peres' and Ciamponi's assumption, considering their work subdivided into the processes of caring/assisting, administering/managing, researching and teaching.⁽⁷⁾ The ninth and final step covered the summary of evidence regarding the purpose of the review, conclusions and implications of the findings.

Results

A total of 1,198 articles were found in database searches, duplicates were excluded (114 articles), titles were read, and 1,017 did not meet the eligibility criteria, with 67 selected for abstract reading. Of the 35 articles read in full, 19 were excluded, composing a sample of 16 articles. The search in the references of these articles made it possible to include two works, obtaining a final sample of 18 articles. The selection of publications was prepared by two researchers, and is shown in figure 1.

The characterization of the 18 selected articles is described in chart 1 along with the activities carried out by perioperative nurses. Each study received a code between A1 and A18.

The articles' methodological design is arranged as follows: six (33.5%) integrative reviews;^(9,11,14,19,20,23) four (22%) qualitative studies;^(2,10,16, 24) three (17%) experience reports;^(12,13,15) two (11%) methodolog-

ical studies;^(17,18) one (5.5%) reflective study;⁽⁸⁾ one (5.5%) quantitative study;⁽²²⁾ and one (5.5%) theoretical study.⁽²¹⁾ Regarding the time period of publication, it is identified that from 2013 onwards, studies were developed regarding perioperative nurses' activities, highlighting the years 2015, 2016 and 2022 with three (20%) publications in each of them. From the compilation of 18 reviewed articles, the activities developed by nurses were grouped into three major areas that express the lines of action of this professional in the SC, according to the subdivision of Peres and Ciampone (2006),⁽⁷⁾ as shown in chart 2.

Discussion

Based on the definition of nurses' lines of action explained by Peres and Ciampone, the activities found in the articles were classified into three ar-

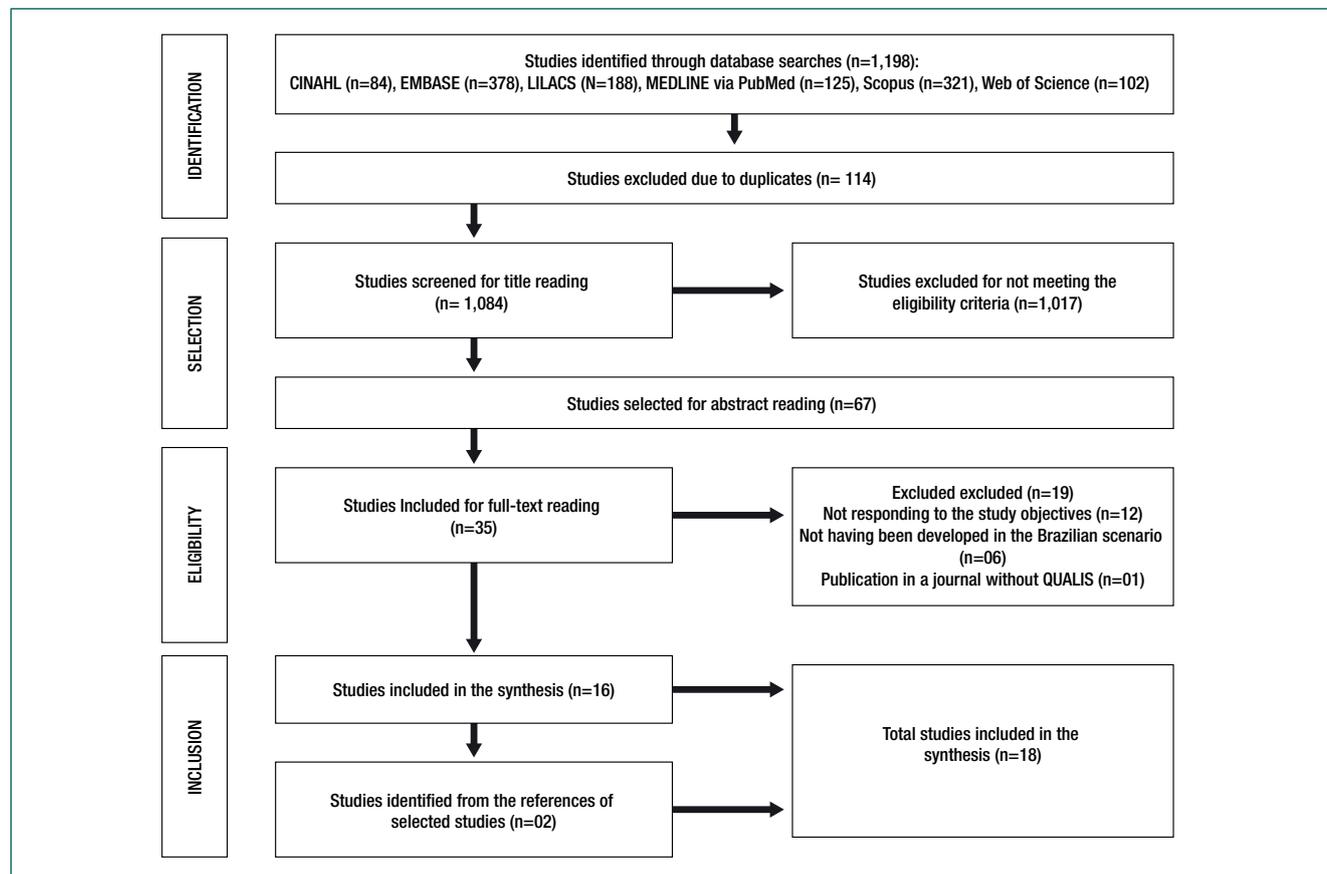


Figure 1. Article search and selection flowchart

Chart 1. Activities developed by perioperative nurses

Article	Author/Year	Activities
A1	Sousa et al, ⁽⁸⁾ 2013	Material forecasting and provision; continuing education; surgical positioning; hypothermia control; infection control; robotic surgery care; sector administration.
A2	Guido et al, ⁽⁹⁾ 2014	Perioperative care: nursing guidelines; hypothermia prevention; skin injury prevention; use of Systematization of Perioperative Nursing Care (SAEP); registration of information; material forecasting and provision; mastery of technologies.
A3	Santos et al, ⁽¹⁰⁾ 2014	Implementation of procedures and routines; bureaucratic activities.
A4	Campos et al, ⁽¹¹⁾ 2015	Surgical center management; material and human resource control and assessment.
A5	Xavier et al, ⁽¹²⁾ 2015	Assessment/nursing diagnoses; guidance to patients; surgical positioning.
A6	Howes et al, ⁽¹³⁾ 2015	Provision of material and human resources; contact teams and sectors involved in the transplant; document checking; records of care provided; handover to ICU nurses.
A7	Miranda et al, ⁽¹⁴⁾ 2016	Prior assessment of patients for positioning planning; SAEP; supervise the nursing staff; continuing education.
A8	Sene et al, ⁽¹⁵⁾ 2016	Scheduling; material forecasting and provision; safety checklist; room assembly; SAEP; record of care provided; shift from shift to ICU nurses.
A9	Martins et al, ⁽¹⁶⁾ 2016	Materials management; nursing staff management; staff training; assistance record; elaborate daily roster; manage the rooms.
A10	Lemos et al, ⁽¹⁷⁾ 2017	Assistance to anesthesiologists in patient monitoring and anesthetic induction; intraoperative control and care after reversal.
A11	Berwanger et al, ⁽¹⁸⁾ 2018	SAEP.
A12	Pinto et al, ⁽¹⁹⁾ 2018	SC preparation with equipment, materials and instruments; handle the robot safely; surgical positioning of patients; preparing the nursing staff for the conversion from robotic surgery to open surgery; guidelines for patients.
A13	Martins et al, ⁽²⁰⁾ 2019	Instrument management; staff organization; patient safety; assess educational and human resource needs; room preparation.
A14	Gomes et al, ⁽²¹⁾ 2021	Risk assessment of patients; help patients; guide patients; manage equipment.
A15	Martins et al, ⁽²⁾ 2021	Inputs and equipment management; sector organization; administrative activities; people management.
A16	Lemos et al, ⁽²²⁾ 2022	Management activities; staff sizing; SAEP; anesthetic induction monitoring; supplies management; surgical positioning; nursing records (intercurrences, drains, dressings); orientation to patients; technical procedures (puncture of venous access, aid in aspiration, transfer of patients from the surgical table) Sellick/BURP maneuvers; checking of consent form; shift change; checking of materials intended for anesthesia.
A17	Souza et al, ⁽²³⁾ 2022	Protocols and adaptations for patient care in the context of the COVID-19 pandemic; readjustment of professionals.
A18	Trevilato et al, ⁽²⁴⁾ 2022	Safe care planning; management of inputs and equipment; assistant admission; assist in the surgical positioning of patients; interprofessional staff's involvement; staff training and guidance; care protocol (ELPO scale) application.

Chart 2. Classification of activities performed by perioperative nurses

Área	Specific activity	Publication
Management	Material, input and equipment management	A1, A2, A3, A4, A6, A8, A9, A10, A12, A14, A15, A16, A18
	Surgical roster management	A6, A8, A9
	SC preparation management	A1, A6, A8, A9, A10, A12, A13
	People management (nursing staff supervision)	A1, A4, A6, A9, A12, A15, A17
	Care indicator management	A12
Care	SAEP	A1, A2, A5, A7, A10, A11, A16
	Nursing guidance to surgical patients	A2, A5, A12, A13, A14
	Nursing records	A2, A6, A8, A9, A10, A12, A16
	Care protocol elaboration and application	A2, A10, A14, A16, A17, A18
	Anesthetic induction monitoring	A10, A16
	Implementation of measures involving surgical safety	A1, A8, A10, A11, A12, A13, A15, A16, A18
	Surgical positioning and injury prevention	A1, A2, A5, A7, A8, A12, A13, A16, A18
	Infection prevention measures	A9, A12
	Technical procedures performed by nurses	A3, A8, A10, A14, A16
	Shift change	A6, A8, A10, A16
	Robotic surgery assistance	A1, A12, A13
Teaching	Nursing staff permanent education	A1, A2, A7, A8, A9, A12, A13, A15, A18

as: management, assistance and teaching.⁽⁷⁾ It was found that the role of perioperative nurse (SC) manager was highlighted in 83.3% of studies, unfolding in five activities: material, input and equipment management;^(8,9-11,13,15-17,19-21,22,24) surgical roster management;^(13,15,16) SC preparation management;^(8,13,15-17,19,20) people management^(2,8,11,13,16,19,23) and care indicator management.⁽¹⁹⁾ In 94.4% of studies, the following care activities were mentioned: SAEP;^(8,9,12,13,17,18,22) nursing guidance for surgical

patients;^(9,12,19-21) nursing records;^(9,13,15-17,19,22) care protocol elaboration and application;^(9,17,21,22,23,24) anesthetic induction monitoring;^(17,22) implementation of measures involving surgical safety;^(8,15,17-20,22,24) surgical positioning and injury prevention;^(8,9,12,14,15,19,20,22,24) prevention measures of infection;^(16,19) technical procedures performed by nurses;^(10,15,17,21,22) shift change as a transfer of care^(13,15,17,22); and robotic surgery assistance.^(8,19,20) As a teaching activity, nursing staff permanent ed-

education stood out^(2,8,9,14-16,19,20,24) in 50% of the articles reviewed.

The findings related to the managerial and care role confirm, in the Brazilian scenario, the magnitude of nurses' performance in care management, evidencing their involvement in all processes of the sector, enabling assistance to surgical patients.^(10,14,17)

Within the SC processes, forecasting material resources and equipment requires nurses' ability to articulate both in support services and with multidisciplinary teams.^(2,8,9,11,16,17,20) This activity is a daily challenge, considering that the quality of care is intrinsically related to the structural, input and work conditions available.⁽¹⁰⁾

Faced with the different socioeconomic realities that make up a veritable health mosaic in Brazil, perioperative nurses find varied conditions for acquiring the necessary supplies for procedures both in the public health system's reality and in private institutions. Their participation is often limited to a part of the material management process within the SC, when, in reality, they should be involved in the entire process, including their selection and purchase.^(1,15) The importance of equipment management was an activity recognized in 13 studies of this work. These findings converge with a North American study on the reduction of errors during the perioperative period, in which it is pointed out that the ability of an individual to perform a job safely and to its full potential depends on the interactions they have with other system users, with equipment, tasks, environments and organization.⁽²⁵⁾

Surgical roster management is a peculiar practice inherent to perioperative nurses, which is guided by planning the agenda of elective, urgent and emergency procedures that demand agility in decision-making with different professional teams and services.⁽¹⁶⁾ In this context, nurses take over a strategic leadership position in institutions for satisfactory outcomes in perioperative care, as they play a leading role in organizing the work rhythm in the SC.

Monitoring environment and material cleaning quality during SC preparation is one of the essential factors for infection prevention and assembly

completeness.^(8,13,15-17) Reducing the time between surgeries is a challenge, due to the complexity of the numerous synchronized processes that involve this activity.⁽²⁶⁾ The management of this condition by nurses has the potential to reduce costs and maintain the flow of care, improving institutional performance.⁽²⁾

The number of insufficient staff requires nurses to articulate the staff to reorganize the staff during procedures and reorganize the scale to cover absenteeism, leave, vacations and days off.⁽¹⁶⁾ A recent study indicates that due to the need to carry out concomitant activities and a shortage of staff, nurses may face difficulties in managing daily activities and providing care to patients.⁽²²⁾ This presented condition finds similar scenarios in the investigated studies, checking elements of the reality of the Brazilian perioperative nursing work organization.

Aiken *et al.* point out that a higher proportion of nurses working in direct care was associated with better outcomes for patients, better working conditions and hospital safety.⁽²⁷⁾ Factors related to the perception of a high workload among perioperative nurses, due to long working hours, may lead to an increase in cases of negligence in SC.⁽²⁸⁾ The need to improve the dimensioning of nursing staff in the SC emerges as a strategy to qualify existing practices and increase the safety of the services offered.

To qualify institutional practices, organizations have sought to focus actions on the safety of patients' experience. For this purpose, the monitoring of care indicators has become an important management tool, in which nurses have performed fundamental activities for data collection and situational analysis. The performance assessment of SC activities through indicators paves the way for the critical review of the main processes, enabling the intervention and development of improvements.⁽²⁹⁾

The implementation of measures to promote the safety of patients through surgery checklist application is also an activity of nurses.^(2,8,17,18,19,21) However, the main difficulties stand out: the imposing approach, the deficiencies in staff organization for new practices, the composition of the instrument and the understanding of the importance by the staff. Actions and strategies are essential for

the implementation process, such as training staff on the subject, feedback on local data, discussions of responsibility and support for leaders and integration of the instrument to existing practices.^(30,31) The implementation of measures involving security in the SC, even in the face of the evolution in the face of investments in recent years, still needs to be improved for its effectiveness in institutions' different realities.⁽³²⁾

Another care activity carried out by nurses deals with the implementation of a protocol for preventing inadvertent intraoperative hypothermia through the use of forced air equipment and also passively, using heated fluids and keeping patients covered.^(1,8,9) This care is of fundamental importance for postoperative complication prevention such as increased morbidity and surgical infection.^(8,9) The incidence of Deep Vein Thrombosis (DVT) is associated with risks related to the transoperative period and the immediate postoperative period. The application by nurses of the Caprini scale to identify patients at greater risk of DVT during surgery allows their intervention in the management of resources and equipment available in the institution for this condition.⁽²¹⁾

Within nurses' care activities, infection prevention demands coordinated actions in all processes: from identifying that instruments are sterilized as well as training the staff and supervising the maintenance processes of the aseptic technique in procedures.⁽¹⁴⁾

It is also perceived, by the multidisciplinary team, as an important factor in patient safety for injury prevention resulting from pressure, nurses' performance within the SC during surgical positioning.^(24,33) Nurses must act in assessing patients for risk of injury and participate in positioning along with anesthetists, surgeons and nursing staff.^(18,21,24,33) The risk assessment scale for the development of injuries resulting from surgical positioning (ELPO) is one of the tools, developed in Brazil, available for nurses to carry out this preventive action, together with specific devices for patients' needs.⁽³³⁾

With a focus on patient care in the perioperative period, SAEP is expressed in the reception and preparation of patients and their families and in clarifying doubts about the perioperative dynamics

that support the identification of nursing diagnoses and necessary interventions for safe and humanized care.⁽³⁴⁾ Care is developed throughout patients' stay in the SC until their referral to post-anesthesia recovery or Intensive Care Unit.

Among the new technologies that involve nurses' care work, robotic surgery demands their presence in the room during the entire procedure, responsibility for setting it up, reviewing equipment, positioning the patient and approaching the robot.^(19,21) This condition requires nurses to have knowledge of equipment and be prepared to deal with an eventual failure in its components and intercurrents, such as bleeding and conversion to conventional surgery.⁽²⁰⁾

In the SC, the nursing care records carried out systematically contribute to the legal documentation of activities and the production of care indicators, by providing information for work process organization.^(1,21) The communication of critical information through the shift handover to the nurses of the unit that will receive patients from the SC allows continuity of care.^(13,15,17,22) The use of an instrument for transfer of care is a recommended good practice as a way to standardize information.^(1,35)

The nursing staff allocation with different professional experiences, the need for ongoing job training as well as turnover and absenteeism rates can also be considered as crucial elements for anesthetic-surgical care. Faced with the technical-scientific evolution and numerous processes present in the SC, it becomes imperative that nurses identify the continuous need for training to provide excellent care.^(8,21) Permanent health education policies have evolved in their implementation, considering the dynamics of work processes and certification and accreditation programs. However, it is worth pointing out some existing gaps related to the teaching of specific knowledge in SC during nursing graduation. A study identifies that students who attended the SC subject in graduation feel more secure in caring for patients, given the complexity of surgical procedures.⁽³⁶⁾

From the review of the literature reviewed, it is identified that the role played by periopera-

tive nurses in the Brazilian scenario approached the bases of their training according to the curricular guidelines: health care, decision-making, communication, leadership, administration and management and permanent educator role⁽³⁷⁾ as well as the classification proposed by Peres and Ciampone in the subdivision of nurses' work process into caring/assisting, administering/managing, researching and teaching.⁽⁷⁾ However, there is still a lack of development of activities related to the role of educator and health researcher, emphasizing that the latter was not found in the results of this study.

It was found that perioperative nurses' managerial activity is not dissociated from direct assistance to patients, giving this professional a strategic leadership position by articulating multiple knowledge and actions in this scenario. This is an invitation to transpose an anachronistic role related to "aseptic isolation" to the role of nurses in mobilizing resources and work processes in the SC for patient-centered care.⁽³⁸⁾

As a limitation of this study, we understand the methodological choice based on the Brazilian scenario, considering that studies referring to international practices could bring attributions that do not belong to this reality, but that could expand the field of discussion and identification of opportunities in different contexts.

Conclusion

Perioperative nurses' activities in the Brazilian scenario predominantly revolve around the management and care areas, and to a lesser extent the teaching area. The findings of this study indicate that the performance of nurses in the surgical center is one of the pillars of support for the processes that involve the implementation of surgical treatment. As a contribution to nursing, this review allows identifying gaps in the literature about nurses' activities in SC in its measurable dimension as well as intervention studies with a view to testing hypotheses about the actions performed by nurses in this area, reverberating opportunities for future research.

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