

NURSING CARE RECOMMENDATIONS FOR ROBOTIC CANCER SURGERIES: SCOPING REVIEW

Recomendações de enfermagem para o cuidado em cirurgias oncológicas robóticas: revisão de escopo

Recomendaciones de enfermería para la atención en cirugía robótica oncológica: revisión del alcance

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ABSTRACT: Objective: To identify and map perioperative nursing care for patients submitted to robotic cancer surgeries. **Method:** This is a scoping review based on recommendations from the Joanna Briggs Institute, held between October and December 2020 in the following databases: Virtual Health Library (VHL), Cumulative Index to Nursing and Allied Health Literature (CINAHL), National Library of Medicine (PubMed), and Scopus. The study time frame spans from 2010 to 2020. **Results:** We identified 84 publications and included eight in the sample. The results indicated the importance of preoperative nursing evaluation and clarification of surgery side effects. Recommendations for the intraoperative period included recording the nursing process, preventing perioperative hypothermia and positioning injuries, as well as continuing education for the team. The findings evidenced the role of nursing in pelvic floor dysfunctions and in identifying deficits in self-care and sexuality, especially in the postoperative period of patients submitted to prostatectomies. **Conclusions:** The recommendations identified can minimize the negative impacts of cancer surgeries and, consequently, improve perioperative nursing care. **Keywords:** Robotic surgical procedures. Nursing care. Oncology nursing. Perioperative nursing.

RESUMO: Objetivo: Identificar e mapear os cuidados de enfermagem no período perioperatório para com o paciente submetido a cirurgias oncológicas robóticas. **Método:** Revisão de escopo, com base nas recomendações do Joanna Briggs Institute, realizada entre outubro e dezembro de 2020 nas bases de dados Biblioteca Virtual em Saúde (BVS), *Cumulative Index to Nursing and Allied Health Literature* (CINAHL), *National Library of Medicine* (PubMed) e Scopus. A delimitação temporal dos estudos foi de 2010 a 2020. **Resultados:** Foram identificadas 84 publicações, tendo-se incluído oito na amostra. Os resultados apontaram a importância da avaliação de enfermagem pré-operatória e do esclarecimento dos efeitos colaterais da cirurgia. No transoperatório, houve recomendações acerca do registro do processo de enfermagem, da prevenção da hipotermia perioperatória e de lesões relativas ao posicionamento, bem como da educação continuada da equipe. Os achados evidenciaram o papel da enfermagem nas disfunções do assoalho pélvico e na identificação de déficits no autocuidado e no domínio sexual, especialmente no pós-operatório de pacientes submetidos a prostatectomias. **Conclusão:** As recomendações identificadas são capazes de minimizar os impactos negativos das cirurgias oncológicas e, conseqüentemente, melhorar a assistência de enfermagem perioperatória. **Palavras-chave:** Procedimentos cirúrgicos robóticos. Cuidados de enfermagem. Enfermagem oncológica. Enfermagem perioperatória.

RESUMEN: Objetivo: Identificar y mapear los cuidados de enfermería en el período perioperatorio de los pacientes sometidos a cirugía robótica oncológica. **Método:** Revisión del alcance, en base a las recomendaciones del Instituto Joanna Briggs, realizada entre octubre y diciembre de 2020, en las bases de datos Biblioteca Virtual en Salud (BVS), CINAHL, PubMed y Scopus. La delimitación temporal de los estudios fue de 2010 a 2020. **Resultados:** Se identificaron 84 publicaciones, incluidas ocho en la muestra. Los resultados mostraron la importancia de la evaluación de enfermería preoperatoria y el esclarecimiento de los efectos secundarios de la cirugía. Durante el transoperatorio, hubo recomendaciones en cuanto al registro del proceso de enfermería, prevención de hipotermia perioperatoria y lesiones relacionadas con el posicionamiento, así como la educación continua del equipo. Los hallazgos evidenciaron el papel de la enfermería en los trastornos del suelo pélvico y en la identificación de déficits en el autocuidado y en el dominio sexual, especialmente en el postoperatorio de pacientes sometidas a prostatectomías. **Conclusión:** Las recomendaciones identificadas son capaces de minimizar los impactos negativos de las cirurgías oncológicas y, en consecuencia, mejorar la atención de enfermería perioperatoria. **Palabras clave:** Procedimientos quirúrgicos robotizados. Atención de enfermería. Enfermería oncológica. Enfermería perioperatoria.

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INTRODUCTION

During cancer treatment, approximately 80% of patients undergo some surgical procedure¹, whose history is marked by interventions considered invasive and mutilating. Therefore, in addition to the cancer disease process, patients need to deal with the negative effects of surgery on quality of life (QoL)².

In this scenario, even if the main objective of health interventions is to improve QoL, biological heterogeneity and cancer adaptability make it virtually impossible to put an end to oncologic surgeries³. Thus, the advent of the laparoscopic technique can be considered a historical landmark because it has made the procedures less aggressive and enabled the emergence of robotic surgery, which consists of performing the surgical procedure through a robot whose movements are controlled by the surgeon^{3,4}.

In order to overcome the limitations of its precursor, robotic surgery offers a series of benefits to surgeons. Among them, we can mention the three-dimensional view of the operative field, greater motion accuracy, reduced tremors, in addition to ergonomic advantages^{4,5}. As for patients, it allows smaller incisions, blood loss, and postoperative pain, reducing length of stay⁶. Regarding QoL, the literature does not show significant score differences from the laparoscopic technique but highlights that cancer patients submitted to robotic surgery resume their daily activities faster and have better functional, social, and emotional performance⁷.

However, the high cost of materials and specialized professionals is an important obstacle for the implementation of the technology, given the funding difficulty of the Brazilian health system. At the same time, the decrease in length of stay provided by robotic surgery can make it economically feasible for public health systems^{4,8}.

A literature review published in 2019 identified that nursing plays an essential role in care at all stages of robotic surgeries⁹. In the preoperative period, it is responsible for the patient's admission, preparation of the operating room and the robotic system, patient positioning, prevention of injuries related to the procedure, and attachment of the robotic interface to the patient. In the intraoperative period, we highlight the completion and standardization of checklists and the organization of the flow of professionals within the operating room. After the procedure, besides the care provided in hospitalization units, the importance of guiding patients and their families stands out.

Therefore, nursing professionals should be constantly updated on technological innovations that impact their practice. Nevertheless, although the role of the nursing team in robotic surgeries is described in the literature⁹, scientific publications still focus on the medical area, evidenced by the scarcity of reviews and studies available to outline care recommendations for the performance of nursing work. Thus, the present study has as its guiding question: which nursing care activities should be performed in the perioperative period for patients submitted to robotic cancer surgeries?

OBJECTIVE

To identify and map perioperative nursing care for patients submitted to robotic cancer surgeries.

METHOD

This is a scoping review based on the method proposed by the Joanna Briggs Institute, which establishes five steps:

1. identification of the research question;
2. identification of relevant studies;
3. selection of studies for review;
4. data analysis;
5. collection, summarization, and report of results¹⁰.

This modality of review aims to map the main available evidence and gaps in the literature, providing a basis for future research¹¹.

The research question was elaborated using the PCC acronym¹⁰, in which: P (population) refers to cancer patients; C (concept) corresponds to nursing care; C (context) indicates robotic surgery. As a result, the following question was formulated: what are the nursing care recommendations for cancer patients submitted to robotic surgeries?

Searches were carried out between October and December 2020 in the databases: Virtual Health Library (VHL), Cumulative Index to Nursing and Allied Health Literature (CINAHL), National Library of Medicine (PubMed), and Scopus. Search strategies were constructed using selected keywords from the Health Sciences Descriptors (*Descritores em Ciências da Saúde* — DeCS) and Medical Subject Headings (MeSH), as shown in Chart 1.

The inclusion criteria used were: full articles available online in Portuguese, English, Spanish, or Italian,

published between 2010 and 2020. This time frame was chosen because the number of robotic surgeries performed worldwide increased exponentially from 2010 onward⁴. As exclusion criteria, we defined: studies that

addressed robotic surgeries outside the cancer context or conducted in animals, conference abstracts and annals, letters to the editor, review studies, reflections, and free communications.

Chart 1. Database search strategies.

Database	Search strategy
PubMed	(robotics) AND (nursing care) AND (neoplasms) AND (oncology surgery)
CINAHL	(robotics) AND ((nursing care) OR (oncology nursing)) AND ((neoplasms) OR (surgical oncology))
VHL and Scopus	(robotics) AND ((nursing care) OR (oncology nursing)) AND ((oncology) OR (oncology surgery))

PubMed: United States National Library of Medicine; CINAHL: Cumulative Index to Nursing and Allied Health Literature; VHL: Virtual Health Library.

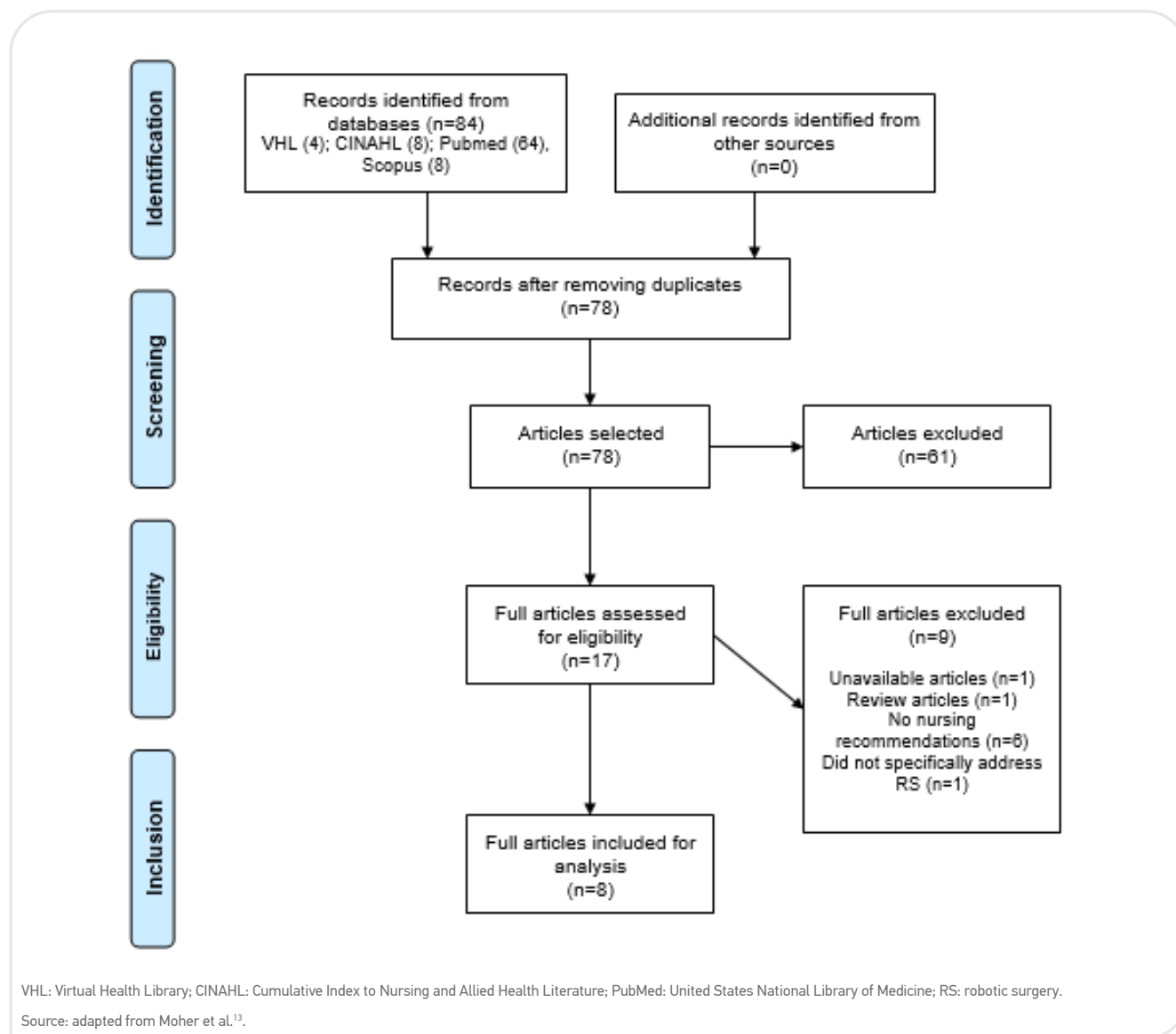


Figure 1. Flowchart of article selection.

Initially, two independent researchers read the title, abstract, and full articles to verify if they met the eligibility criteria. A third researcher analyzed any inconsistencies.

The level of evidence of the recommendations in the articles was classified according to Stillwell et al.¹² as:

- systematic reviews and meta-analyses;

Chart 2. Characterization of the studies selected to compose the sample.

ID	Authors/ journal/study site/year	Language	Authors' background	Objective	Sample	Method	Level of evidence
A1	Wang et al. ¹⁴ , Support Care Cancer, China, 2018.	English	Nursing, Medicine, Chemistry	To explore the effects of continuing nursing care intervention on postoperative urinary control and QoL among patients with prostate cancer submitted to robotic prostatectomy.	74 patients, 37 in the control group and 37 in the intervention group	Randomized clinical trial	II
A2	Sayilan and Özbaş ¹⁵ , Am J Mens Health, Turkey, 2018.	English	Nursing	To determine the effect of pelvic floor muscle exercise training administered to patients who underwent robotic radical prostatectomy on urinary incontinence (UI) problems.	60 patients, 30 in the control group and 30 in the intervention group	Randomized clinical trial	II
A3	Johansson and Von Vogelsang ¹⁶ , J Clin Nurs, Sweden, 2019.	English	Nursing	To describe extremity symptoms reported by patients with bladder cancer after robot-assisted laparoscopic cystectomy.	94 patients	Prospective longitudinal study	V
A4	Dowrick et al. ¹⁷ , Appl Nurs Res, Australia, 2018.	English	Nursing and Medicine	To investigate whether there are any differences in prostate cancer-specific QoL measures between partnered and unpartnered men at baseline and 12 months after robot-assisted radical prostatectomy.	540 patients	Longitudinal cohort study	IV
A5	Luo et al. ¹⁸ , Clinics, China, 2020.	English	Nursing and Medicine	To investigate the efficacy of fluid warming in older adult patients submitted to robot-assisted laparoscopic radical cystectomy.	108 patients with bladder cancer, 53 in the intervention group and 55 in the control group	Randomized clinical trial	II
A6	Waller and Pattison ¹⁹ , J Clin Nurs, United Kingdom, 2013.	English	Nursing	To understand the experience of men regaining urinary continence following robot-assisted radical prostatectomy.	7 patients	Qualitative phenomenological study	V
A7	Ângelo et al. ²⁰ , Rev. SOBECC, Brazil, 2020.	Portuguese	Nursing and Medicine	To report the experience of the first six cases of pediatric robotic surgery and the work of nurses specialized in robotic surgery in a cancer facility.	-	Experience report	VI
A8	Mangham ²¹ , J Perioper Pract, United Kingdom, 2016.	English	Nursing	To report the experience of patient positioning in robotic laparoscopic surgeries for gynecologic and urologic oncology.	-	Experience report	VI

QoL: quality of life.

- randomized trials;
- non-randomized control trials;
- cohort and case-control studies;
- qualitative and descriptive studies obtained systematically;
- expert opinions.

In the stage of collection, summarization, and report of results, the researchers elaborated and used a specific organization instrument. It contained the following items: title, year of publication, study site, language, objective, method, level of evidence, nursing recommendations, and conclusion.

RESULTS

The initial search identified 84 publications. After the exclusion of six duplicates and another 70 articles that did not meet the inclusion criteria for not specifically addressing robotic surgeries and/or offering nursing recommendations, the final sample comprised eight articles. The selection process (Figure 1) followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA Scr) flowchart.

Regarding the characteristics of the selected studies, four had their samples composed of patients diagnosed with prostate cancer, two with bladder cancer, and two with no

tumor specification. The articles identified were published from 2013 to 2020, with 2018 having the largest number of studies (three). With respect to the level of evidence, three studies presented level II, one showed level IV, two had level V, and another two were classified as level VI.

As for study site, China and the United Kingdom stood out, with two works each. Six articles were published in international journals and two in Brazilian journals — one in oncology and three in nursing.

All papers had the participation of nurses. Four studies had physicians among the authors, and one had the participation of a chemist. Chart 2 presents the results.

Chart 3 describes the main nursing care recommendations for patients submitted to robotic cancer surgeries.

DISCUSSION

Despite the high cost associated with robotic surgery, its demand in the cancer context is on the rise worldwide^{4,22}. This review had a predominance of observational studies and experience reports, suggesting the need for research with higher levels of evidence, such as randomized clinical trials. However, in addition to funding, they require more collaboration from participants and from support and logistics services²³.

Chart 3. Summary of nursing care recommendations for robotic cancer surgeries.

Operative period	Focus	Nursing recommendations	Articles
Preoperative	Patient	Clarify doubts about possible complications and side effects of surgery.	A6
	Patient	Encourage the practice of pelvic floor strengthening exercises to prevent urinary incontinence after prostatectomy.	A3, A8
	Nursing team	Assess the risk of skin and peripheral nerve lesions.	A1, A2
Intraoperative	Nursing team	Frequent monitoring of body temperature.	A5
	Nursing team	Infusion of warm fluids (between 37 and 41°C) to prevent perioperative hypothermia.	A5
	Nursing team	Use cushions and other devices to help patient positioning and protect bony prominences.	A3, A7
	Surgical team	Use the smallest Trendelenburg angle possible.	A3, A7
	Nursing team	Redouble attention to avoid traction injuries during docking and undocking.	A7
	Nursing team	Record the nursing process.	A3, A8
	Surgical team	Perform realistic simulations with the surgical team before implementing changes related to patient safety.	A7, A8
	Surgical team	Continuing education for the surgical team.	A7, A8
Postoperative	Patient	Encourage and periodically monitor the practice of pelvic floor strengthening exercises to prevent urinary incontinence after prostatectomy.	A1, A2
	Nursing team	Pay attention to deficits in sexuality, self-esteem, and self-care in patients submitted to prostatectomy and refer them to specialized professionals.	A4

These publications are mostly from international journals, especially from developed countries, with a prevalence of the English language. The adoption of technology by health facilities depends on several factors, such as cost, ease of use, and compatibility with existing systems — significant limitations for the implementation of robotic surgery in underdeveloped countries⁸.

We found one Brazilian study carried out in a reference cancer center in the Southeast region. Although the number of robotic systems in Brazil has increased significantly in recent years, the technology is still incipient in the country and mostly found in large urban centers, like São Paulo and Rio de Janeiro²⁴.

We also underline that most articles are related to prostate and bladder tumors. Prostate cancer is the second most common in men, while bladder cancer is the ninth most frequent worldwide (without gender distinction); for both, the main treatment is surgery^{25,26}.

According to a 2018 mapping, urology is the specialty that most performs robotic surgeries globally, followed by general surgery and gynecology²⁴. Despite the lack of definitive proof of the superiority of robotic surgery over laparoscopic surgery, the literature shows that its use by these specialties is particularly associated with the improvement in cosmetic results, the overcoming of ergonomic limitations, as well as the reduction in postoperative pain^{27,28}.

Preoperative recommendations evidence the importance of informing possible complications and side effects of robotic surgery to reduce anxiety¹⁹. Studies indicate that the nursing visit also elucidates doubts, promotes self-care, helps patients and families deal with possible changes in body image and functionality²⁹, and humanizes the surgical process^{30,31}.

Adequate patient positioning is one of the main indicators of perioperative care quality²⁹. The long duration — compared to conventional surgery —, the positioning, and other specificities of robotic surgery favor the development of iatrogenesis²⁰. In this sense, the elaboration of protocols²¹ and the adoption of scales^{16,20} for risk assessment of skin and peripheral nerve lesions may help nurses identify predisposing factors and implement preventive measures³².

During robotic surgery, one of the main concerns is perioperative hypothermia¹⁸. The reduction in body temperature during surgical procedures is influenced by the type of anesthesia, environmental factors, age, weight, and comorbidities. Estimates indicate that 70% of patients are hypothermic when admitted to the post-anesthesia care unit, which may lead to complications³³. A systematic review³⁴ concluded that the infusion of fluids at temperatures between 37 and 41 °C is more effective in preventing perioperative hypothermia

than at room temperature, in addition to reducing tremors in the immediate postoperative period.

The use of pneumoperitoneum and the Trendelenburg (or reverse Trendelenburg) position, which causes numerous physiological changes, are also particular characteristics of robotic surgical systems³⁵. Thus, we emphasize the challenge of using the smallest possible Trendelenburg angle to favor the surgeon's view with minimum clinical damage to the patient³⁶.

Moreover, certain parts of robotic surgery pose a greater risk of positioning injuries, such as docking (moving the robot to the operating table and attaching it to the patient) and undocking (removing the robot from the patient and moving it away from the operating table)³⁷. In addition to identifying predisposing factors and adopting risk stratification scales³⁸, the use of adhesives in pressure areas in long surgeries, as well as the standardization of the positioning and transfer process, can reduce the rates of skin lesions^{32,39}.

The findings of this review also highlight the importance of nursing team records^{16,21}. Documenting the nursing process adds scientific credibility to the profession and improves the quality of care; however, it requires support and reorganization by health facilities⁴⁰.

Another aspect found in the publications relates to the effective adherence to patient safety protocols — although they should be shared with the entire surgical team, this is not the reality in health facilities^{20,21}. Realistic simulations with the teams before implementing these changes, as well as continuing education actions and on-the-spot guidance, can help minimize this issue⁴¹.

Regarding the postoperative period, the articles offer recommendations mostly for prostatectomies^{14,15,17}. Despite the advances in the surgical technique, post-prostatectomy urinary incontinence (UI) still has a high incidence and negatively impacts QoL. A retrospective study showed that 78.77% of men submitted to robotic prostatectomy recover urinary continence within one year of the procedure; nonetheless, this period may be prolonged depending on age, nerve preservation, and pelvic lymph node dissection⁴².

Pelvic floor exercises before the surgical procedure and during hospital stay produce significant results in urinary continence recovery up to six months after the surgical procedure^{14,19}. Investing in self-care education for patients allows the reconstruction of professional practice and contributes to the quality of care⁴³.

Pelvic floor dysfunctions are an important area of the nurse's work. In addition to having the potential to cure or alleviate the symptoms of all types of UI and a good cost-benefit ratio, the nurse collaborates to the dissemination of evidence-based practice and to professional recognition^{38,44}.

Another recurrent impact of robotic prostatectomies is the deficit in sexuality, self-esteem, and self-care, which requires careful attention from the nursing team, as well as the referral to specialized professionals. The literature also recommends performing psychoeducational actions and clarifying doubts from the patient and their sexual partner⁴⁵.

The search strategy may be considered a limitation of the present study, as it did not include uncontrolled terms and restricted the time frame to articles published after 2010, which might have excluded some evidence available on the subject.

CONCLUSION

The recommendations identified contribute to evidence-based practice by suggesting strategies that can minimize the negative impacts of cancer surgery and, consequently, improve perioperative nursing care and the patient's QoL.

Among them, we highlight the importance of the preoperative nursing visit and of recording the nursing process, as well preventing perioperative hypothermia and patient positioning injuries. Some studies have shown the role of nursing in identifying deficits in self-care and sexuality of patients submitted to prostatectomies, in health education, in addition to the relevance of the professional performance when it comes to pelvic floor dysfunctions and continuing education.

The expressive number of articles aimed at medical practice and the low level of evidence of some publications included in the sample also stand out since research on this subject is still incipient. We found no recommendations regarding the preparation of the operating room — an important task of

the nursing team —, and those related to the postoperative period were restricted to prostatectomies.

This study encourages the reflection on the importance of the nursing team in robotic surgeries, as they participate in all stages of surgical procedures and cancer treatment. The results can substantiate evidence-based practice and, consequently, contribute to improving cancer care. We recommend the performance of new studies on the subject in order to address other interventions that may impact the nursing practice in robotic cancer surgeries.

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CONFLICT OF INTERESTS

There is no conflict of interests.

AUTHORS' CONTRIBUTION

MNS: Conceptualization, Methodology, Formal Analysis, Validation, Visualization, Writing — original draft, Writing — review & editing. **ABS:** Formal Analysis, Validation. **ACOM:** Writing — original draft, Writing — review & editing. **DLZS:** Writing — original draft, Writing — review & editing. **FMDM:** Methodology, Writing — original draft, Writing — review & editing. **LPK:** Conceptualization, Methodology, Project administration, Writing — original draft, Writing — review & editing.

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