



## Nursing care in the anesthetic procedure: an integrative review\*

Assistência de enfermagem no procedimento anestésico: revisão integrativa

Asistencia de enfermería en el procedimiento anestésico: revisión integradora

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### ABSTRACT

**Objective:** To search for the scientific evidence available on nursing professional actions during the anesthetic procedure. **Method:** An integrative review of articles in Portuguese, English and Spanish, indexed in MEDLINE/PubMed, CINAHL, LILACS, National Cochrane, SciELO databases and the VHL portal. **Results:** Seven studies were analyzed, showing nurse anesthetists' work in countries such as the United States and parts of Europe, with the formulation of a plan for anesthesia and patient care regarding the verification of materials and intraoperative controls. The barriers to their performance involved working in conjunction with or supervised by anesthesiologists, the lack of government guidelines and policies for the legal exercise of the profession, and the conflict between nursing and the health system for maintenance of the performance in places with legislation and defined protocols for the specialty. **Conclusion:** Despite the methodological weaknesses found, the studies indicated a wide diversity of nursing work. Furthermore, in countries absent of the specialty, like Brazil, the need to develop guidelines for care during the anesthetic procedure was observed.

### DESCRIPTORS

Anesthesia; Perioperative Nursing; Operating Room Nursing; Patient Safety; Review.

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## INTRODUCTION

In 1984, anesthesiologists developed the concept of patient safety in the United States, at the International Committee for Prevention of Anesthesia Mortality and Morbidity. In the following year, the Anesthesia Patient Safety Foundation was created<sup>(1)</sup>.

In the early 1990s, an international group of anesthesiologists set the development of norms for the practice of anesthesia as their mission, to standardize actions and increase security of anesthetic procedure worldwide. The norms, which included perianesthetic assistance and monitoring, were approved in 1992 at the World Anesthesia Convention and adopted as global standards by the World Federation of Societies of Anesthesiologists. Revisions and updates of these norms occurred in 2008 and 2010, in pursuit of improvements and enhancement of the standards<sup>(2)</sup>.

In 2002, the World Health Organization National Assembly drew up a resolution for care safety during surgical procedures, due to high rates of morbidity and mortality related to them. The defined quality standards for health services were: prevention of surgical site infection; safe anesthesia; safe surgical teams; and surgical care indicators<sup>(3)</sup>.

In 2004, the World Health Organization released the safe surgery manual with the Safe Surgery Saves Lives program, in order to inform healthcare professionals and administrators about the function and surgical safety standards in public health; define measures or indicators for the national and international surveillance of health care; and identify safety standards in the operating room, according to a checklist<sup>(3)</sup>.

The surgical checklist includes actions to run before the anesthetic induction, prior to the surgical incision and before exiting the room. The actions aim to ensure the patient through proper interventions; the presence of a surgical team in room; operation, availability of equipment and supplies needed for the anesthetic and surgical intervention; a complete record of the interventions performed in the transoperative period; and identification of problems with equipment maintenance.

The Ministry of Health, under ordinance no. 1377 of July 9, 2013, approved the protocol for safe surgery developed by the National Health Surveillance Agency<sup>(4)</sup>. This protocol guides the implementation of the checklist in all health facilities that perform procedures inside or outside the surgical center, involving incision in the human body or introduction of endoscopic equipment by any health professional<sup>(5)</sup>.

The type of anesthesia is the responsibility of the anesthesiologist and varies according to the patient's clinical conditions: preexisting diseases; mental and psychological conditions; period of postoperative recovery; presence of postoperative pain; type and duration of surgical procedure; and the position of the patient during surgery<sup>(6-7)</sup>.

Anesthesia is essential for the surgery's safe development. However, there are few data in the national scientific literature addressing safety during anesthesia from the perspective of nurses. The evaluation of nursing actions provided during anesthesia aims to identify the activities of the

nursing staff in the operating room during anesthesia, and how these activities can contribute to patient safety and care planning. Thus, the question of the study was: *What nursing actions are performed during the anesthetic procedure?*

The aim of this study was to make an integrative literature review, searching for scientific evidence available on the actions of nursing professionals during the anesthetic procedure.

## METHOD

This study consisted of an integrative literature review on publications in nursing and anesthesia about care in the operating room, in the anesthetic procedure.

The integrative review consists of six steps, in which summarized previous studies on the subject are, with an analysis of the knowledge produced and notes on questions that can be answered with further research<sup>(8)</sup>.

The first step of the review includes the identification of the theme and selection of the hypothesis or research question: problem definition, search strategies, definition of keywords and descriptors. The second step comprises the definition of the criteria for inclusion and exclusion from the study: use of databases and selection of the studies based on the criteria. In the third step, the identification of the preselected studies is done: through the reading of abstracts, keywords and titles of publications, and organization of the studies. The fourth step involves the categorization of the selected studies: development and use of synthesis matrix, categorization and analysis of information and selected studies. The fifth step covers the analysis and interpretation of the results. The sixth and final step corresponds to the presentation of the review and knowledge synthesis: creation of a document that describes in detail the review and proposals for new studies<sup>(8-9)</sup>.

Currently, the scientific literature reveals that the best health interventions and actions are based on scientific evidence, which allow the development of protocols and care guidelines. The fundamental principles of evidence-based medicine are characterized by the identification of the clinical question that raises doubt, the execution of systematic reviews of contemporary scientific publications, critical analysis of the evidence found in the articles and the decision validated by the systematic reviews of the application in clinical practice<sup>(10)</sup>.

The search for articles was conducted from January to April of 2014. The study inclusion criteria were: publications written in Portuguese, English or Spanish, published between 1978 and 2014, indexed in MEDLINE, CINAHL, LILACS, National Cochrane, SciELO databases, the Virtual Health Library (VHL) and MEDLINE/PubMed portal, about nursing care in the operating room during the procedure for adult patients undergoing general anesthesia. It is noteworthy that the purpose of this polling interval of 35 years was to rescue the start of perioperative nursing care and the action of nurses. This search period also allowed the understanding of how care processes were developed and how practices should be enhanced to improve care and ensure patient safety.

The study exclusion criteria were: studies defined as case reports and clinical cases; pediatric studies, due to singularities in child care; dissertations and theses that did not have articles published in journals, repeated articles in the databases and studies that were not fully published, since the maintenance of the methodological rigor, required for this type of methodology, was prioritized.

The descriptors used to search were selected according to the proposed theme, through the Health Sciences Descriptors (DeCS) and the Medical Subject Heading (MESH).

For search strategy, the Boolean operator AND was used, with the descriptors: nurse role, patient safety, anesthesia induction, anesthesia, nurse anesthesia practice; *anestesia, enfermagem, perioperatório, papel do profissional de enfermagem, segurança do paciente*.

For the location of articles in the CINAHL database, the titles “anesthesia” and “nurse anesthesia practice” were used, related to the proposed topic and the study issue.

Chart 1 illustrates the database and descriptors used for the search of the studies.

**Chart 1** – Database and selected search strategy.

Database and portals	Descriptors and titles
MEDLINE/PubMed	nurse role AND patient safety AND anesthesia induction nurse role AND anesthesia AND patient safety nurse role AND anesthesia induction
CINAHL	anesthesia AND nurse anesthesia practice
LILACS	<i>anestesia AND enfermagem AND perioperatório</i>
National Cochrane	<i>anestesia AND enfermagem</i> <i>anestesia AND papel do profissional de enfermagem AND segurança do paciente</i>
SciELO	<i>anestesia AND papel do profissional de enfermagem</i> <i>anestesia AND papel do profissional de enfermagem AND segurança do paciente</i>
VHL portal	<i>anestesia AND papel do profissional de enfermagem AND segurança do paciente</i> <i>anestesia AND papel do profissional de enfermagem</i>

The articles were selected through the reading of the title and abstract in the databases, relevant to the research question. The publications that did not present abstracts in the databases were selected by the full reading of the study.

The reading procedures for the selection of the articles were performed by three participants with degrees in nursing. In case of divergence on the exclusion or inclusion of an article, new reading would be carried out and, if there was still disagreement, they would take a vote.

To analyze the content of the articles, an adapted form was used<sup>(11)</sup>, called “instrument for data collection of the selected studies”, with the following items: 1) identification (study title, journal title, database, authors, year of publication, language, study site); 2) theme; 3) descriptors or keywords; 4) abstract (introduction, objectives, methods, results, conclusions); 5) introduction (justification, objectives, literature review, hypothesis); 6) method (evaluation of the ethics committee and application of a Free and Informed Consent Form, type of research, study design, population and sample selection, study eligibility criteria, data collection instrument, variables studied, data analysis); 7) results (number of participants and justification of exclusion, sociodemographic description of the participants: graphs, tables, figures, statistical analysis of the data); 8) discussion (discussion of the data obtained in accordance with the proposed objectives, discussion of the results obtained compared to the current literature, study limitations, study implications); 9) conclusions (interpretation according to the justification and objectives of the

study, recommendations); 10) references (standard used).

The analysis of the level of evidence of the selected studies was done through the Oxford classification. This classification categorizes the studies in five domains (therapy, prevention, etiology and damage; prognosis; diagnosis; studies of prevalence and differential diagnosis; economic and decision) and levels of evidence from one to five, which define the recommendation degree of care practices<sup>(12)</sup>.

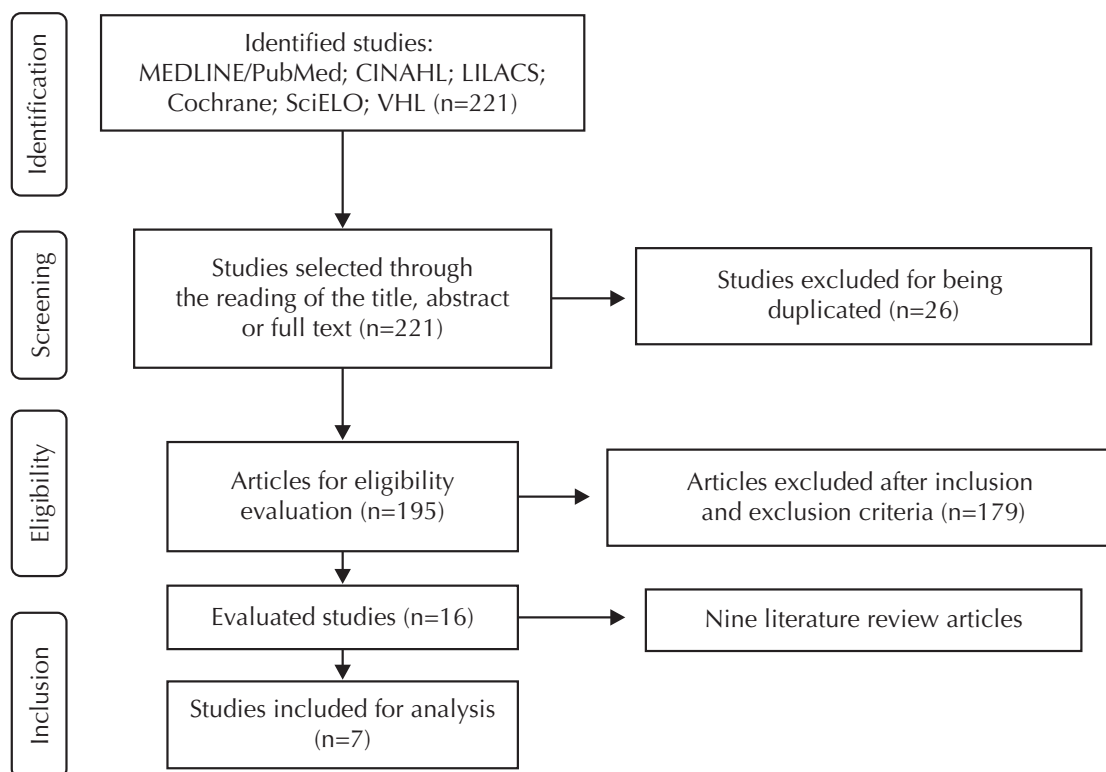
The search in the databases resulted in 221 articles. Fifty-one studies found in MEDLINE/PubMed were excluded from the selected articles for not answering the research question; in the CINAHL database, eight dissertations that did not become articles, 40 studies that did not respond to the research question and three articles that did not have complete texts or abstract available were also excluded. In the databases LILACS and National Cochrane, 14 studies were unrelated to the research question; in the VHL, one of the studies was in Japanese, two were written in French and 60 studies were not related to the research question.

After evaluating the type of study, nine articles were excluded from the analysis for being characterized as literature review studies, thus seven articles remained.

## RESULTS

Figure 1 shows the selection of the studies included in the review.

Chart 2 shows the characteristics of the selected studies. The CINAHL had the highest number of articles in the area of nursing in anesthesia.



**Figure 1** – Flowchart of the study selection process – São Paulo, São Paulo, Brazil, 2015.

**Chart 2** – Characteristics of the selected studies and results – São Paulo, São Paulo, Brazil, 2015.

Study	Reference	Database and portals	Origin	Type of study	Results
S1	Zaglaniczny et al. (1998) <sup>(13)</sup>	CINAHL	United States of America	cross-sectional	<p>Study with nurses from the AANA (clinical; selected) to evaluate the concepts required in the certification test, compared to the daily professional activities:</p> <ul style="list-style-type: none"> <li>- the nurses felt that a moderate to high level of knowledge is required to perform the evaluation of laboratory tests, chest X-ray and ECG; anesthetic systems (vaporizers, flowmeter, soda lime); airway access (endotracheal tube, face mask) and monitoring (ECG, capnography, AP)</li> <li>- the clinical nurses believed that knowledge about the basic principles of anesthesia is the most important for the evaluation in the certification</li> <li>- the selected nurses claimed that basic and advanced principles are equally important in the evaluation</li> </ul>
S2	Mcauliffe et al. (1998) <sup>(14)</sup>	CINAHL	United States of America	cross-sectional	<p>A study carried out in 107 countries, for the evaluation of daily practice, local legislation and training of nurses working in anesthesia:</p> <ul style="list-style-type: none"> <li>- participation of 293 professionals, working mainly in urban areas</li> <li>- 53% of nurses from rural areas worked independently from physicians</li> <li>- daily care: preoperative evaluation; general and regional anesthesia; immediate postoperative care; monitoring: ECG, AP, stethoscope; less use of capnography and pulse oximetry</li> <li>- 43% of the acting institutions did not require medical supervision for nursing work</li> <li>- 62 countries with training course in anesthesia</li> <li>- 93% of the countries required certification in anesthesia</li> <li>- 59% of the professionals reported having regulations for exercising the profession and a practical nursing guide for anesthesia in their countries</li> </ul>

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Study	Reference	Database and portals	Origin	Type of study	Results
S3	Shumway et al. (2000) <sup>(15)</sup>	CINAHL	United States of America	cross-sectional	Study with 1000 nurses from the AANA, working independently and in anesthesia teams, to evaluate the difference of practices between the two groups: - independent nurses worked mostly in rural areas - team nurses: 34% worked in hospitals and 41.5% in medical groups - main procedures: laryngeal mask airway passage, arterial puncture (team nurses); epidural and spinal block, central catheter insertion, pain control and critical care advice (independent nurses)
S4	Moody et al. (2001) <sup>(16)</sup>	CINAHL	United States of America	retrospective	Review and analysis of 223 complaints of insurance companies by eight CRNA. Identification of 22 complaints related to inappropriate actions in the preinduction: - 21 losses or incomplete filling of the preanesthetic assessment - seven incorrect classifications of the ASA - 12 incomplete history records (five fouls of assessment of comorbidities and background) - one absence of the FICF - three fouls of assessment exams - six complaints had no assessment of difficult airway
S5	Seibert et al. (2004) <sup>(17)</sup>	CINAHL	United States of America	cross-sectional	Study with 146 nurses from the AANA, residents of rural areas of the United States, to evaluate the work in anesthesia: - participation of 28 professionals: 17 were independent nurses, acting in small towns - execution of basic monitoring: ECG, AP, O2 analyzer and pulse oximeter; increased use of invasive devices in large communities and institutions
S6	Canet et al. (2006) <sup>(18)</sup>	VHL	Spain	cross-sectional	Study with 140 coordinating professionals (anesthesiologists and nurses) of 70 institutions, to evaluate nursing functions in anesthesia: - participation of 59 health institutions: in 43 institutions execution of the preanesthetic consultation, and in 51% of them nurses assisted the doctor - in 29 institutions, the nurse guided the patient in ambulatory surgicenters - intraoperative monitoring: 80% of nurses believed in the importance of execution, but only 45.5% of anesthesiologists agreed with the nursing role - verification of the preanesthetic assessment: 76% nurses and 36.4% doctors - continuous monitoring: concordance of 56% of nurses and 24.2% of anesthesiologists
S7	Neft et al. (2013) <sup>(19)</sup>	CINAHL	United States of America	systematic review	Literature search of studies on nursing duties or barriers for the practice; sessions with the AANA nurses about the evaluation of the practice. Obtainment of 8739 abstracts, with the selection of 46 qualitative articles, with the main results: importance of the complete operation of the nurse, considering the formation and training; barriers to the practice (medical supervision or performance requirements); variations of skills in different American states. Participation of 55 nurses in the discussion sessions of the AANA, with the following results: - in rural areas, autonomy and direct collaboration of the nurse; in university hospitals and medical residency, reduction of the nurses' activity for training the professionals - nursing work in the health team and recognition of their capacity by anesthesiologists - prescription restricted to a few nurses; political movements in defense of state and national anesthesia - barriers to the practice: medical team, institutional restrictions and health system

Legend: AANA – American Association of Nurse Anesthesia; ECG – electrocardiogram; CRNA – Certification Registered Nursing Anesthetist; AP – Arterial Pressure; FICF – Free and Informed Consent Form.



As per Chart 2, the articles can be considered from domain 1 (therapy/prevention/etiology/damage) with level of evidence 5 (expert opinion with no explicit critical evaluation or evaluation based on studies of physiology or initial principles), in accordance to the Oxford classification.

Study S7 is not part of the classification mentioned above, because, according to the method, it is considered a systematic review (level 1A). Nonetheless, the description and methodological follow-up carried out in the study are not consistent with the definition of levels of evidence used in this study.

## DISCUSSION

The selected studies have shown a wide diversity of nursing work in anesthesia, with different types of legislation, vocational training and working guidelines.

The United States of America and some European countries have a clear legislation that defines the independent work of nurses in relation to the anesthesiologist, with care protocols that allow the development of the anesthetic plan and autonomy for assistance execution during the surgical procedure. The training program is recognized by educational and health institutions, with complete processes of validation and continuous evaluation of the professional. However, over the years, the specialty has experienced political movements from the government and the medical class as opposed to the practice of nursing in anesthesia, under the argument of reducing costs for health systems and failures in the quality of care offered by nurses.

Study S1 investigated the professional performance of American nurse anesthetists, considering the profile of their daily practice and knowledge required for the test of professional certification. Participants were divided into two groups: clinical and selected (directors, council representative, committee members of the American Association of Nurse Anesthetists - AANA).

In the US, the certification test to obtain the title of anesthetic nursing specialist consists of five categories, divided by a percentage of questions: 30% of basic sciences; 5% for equipment, instruments and technology; 30% for basic principles of anesthesia; 31% for advanced principles in anesthesia and 4% for professional issues<sup>(20)</sup>. Clinical nurses consider that basic anesthesia is more important in terms of matters to be evaluated (38%) than the advanced principles (19%) in the certification test. The selected nurses presented longer experience in anesthetic nursing, less professional practice with anesthesia groups composed by physicians, and increased participation in education programs. Thus, these data may suggest that the selected group had greater autonomy in the anesthesia practice, justifying the greater appreciation of the advanced principles of anesthesia when compared to the clinical group.

S1 revealed that, among the activities performed, 87% of the clinical group provided direct patient care and 33% of the selected group worked in activities related to education. This result demonstrated that the clinical group was closer to the daily practice, being able to describe more clearly the principles and actions in the assistance.

The nurses reported performing all types of anesthesia (general and regional); control of airway access with orotracheal intubation or face mask; electrocardiogram basic monitoring, capnography, stethoscope and noninvasive arterial pressure. Patient monitoring during anesthesia is essential to provide parameters that direct the proper conduct of nurse anesthetists<sup>(21)</sup>.

The standards recommended by the AANA calls for the realization of the preanesthetic assessment and preparation of the anesthesia plan by certified nurses, considering that these professionals have sufficient knowledge and competence to perform these activities<sup>(22)</sup>. Article S7 indicated that institutional policies, administrative issues and the work of anesthesiologists are barriers to the full development of nursing skills. S3 showed that group nurses worked mainly in urban areas and had limitations to perform invasive procedures, due to medical work.

Increasing changes in the health policies of the states have hindered professionals from acting with autonomy, being limited to medical supervision or restricted to anesthesia groups<sup>(23)</sup>. A study found low participation of nurses working in anesthesia groups, in the execution of subarachnoid blocks, epidural anesthesia and brachial plexus blockade, revealing a limitation for nursing work when there is participation of the anesthesiologist in the assistance<sup>(24)</sup>. A systematic review evaluated studies comparing the anesthetic procedure performed by nurses and by anesthesiologists and was unable to identify differences in the quality of the services provided<sup>(25)</sup>.

In 1997, the American health care system Medicare determined that each state would decide on the application of the medical supervision rule of work performed by nurse anesthetists. In 1998, eight American states decided not to require medical supervision, followed in 2005 with the accession of 14 rural American states. Study showed no increase in complications or mortality related to anesthesia after these states dispensed medical supervision for the execution of nursing work in anesthesia<sup>(26)</sup>.

Article S5 indicated that rural nurses worked mostly in small communities, independently from health institutions and with little operation of sophisticated monitoring (intracranial pressure, pulmonary artery catheter), due to the types of surgery. S2 revealed a great performance of nurses in rural areas, regardless of supervision or working together with a physician. Nurses from rural areas have a fundamental role in their regions, especially in the United States, where they are responsible for more than three million anesthetic procedures a year, representing two-thirds of the procedures in rural hospitals<sup>(26)</sup>.

The autonomy of the nurse anesthetist in rural areas is not directly related to the recognition of the profession and to clear and defined legislations of the professional practice, but to the small number of physicians in outlying areas. Anesthesiologists are concentrated in urban areas, in institutions with greater complexity medical care and regions with more job opportunities and access to knowledge<sup>(27)</sup>. In S2, it was observed that professionals from European countries worked mostly in groups, with implementation of assistance

in the operating room by nurses, and preanesthetic assessment and planning of the anesthesia by the physician.

A study that evaluated the cost of services provided by independent nurse anesthetists, anesthesiologists and nurses under medical supervision, demonstrated the lower cost of services provided by nurses when compared to anesthesiologists. In addition, there was a 16% increase in expenses on anesthesia when using the model of two to four nurses supervised by an anesthesiologist, and of 30% when one nurse was supervised by an anesthesiologist<sup>(28)</sup>.

The differences cited in S2, between training time and local policies of certification of the nurse anesthetist profession, indicate divergence in the daily practice among professionals and weaknesses in the regulation of the specialty. The study showed that only 40% of the professionals had a training course in anesthesia for more than 22 months, being that the AANA recommends training courses with an average of 28 to 36 months and the International Federation of Nurse Anesthetists recognizes the courses with an average duration of 2 years. The diversity in training and regulation of the profession is present even in countries that recognize the nursing specialty in anesthesia.

Regarding the quality of nursing care in anesthesia, the researchers from S4 evaluated the complaints of American health insurance systems related to adverse events in activities before the anesthesia induction. Therewith, it was possible to detect that the care related to preanesthetic assessment directly influenced nursing work during induction: lack of preparation to deal with a difficult intubation, difficulty in the control of hemodynamic changes and consequent death, associated with inadequate planning of anesthesia and absence of prior assessment of the airway.

Authors in S6 presented the opinion of the institutional coordination of nursing and anesthesiology, which reported a large participation of nurses in medical assistance during the anesthesia. The study showed a strong accordance between anesthesiology and nursing about the significant role of the nursing team in the conference of equipment and in the preparation of materials for care in anesthesia. Checking the functioning of the equipment and conference of the material availability directly influence care safety, preventing failures or unavailability during critical moments of the anesthesia; therefore, promoting better quality of care. A study analyzed the contributing factors to incidents during anesthesia, revealing that 26% of them were related to the failure in checking the equipment and malfunction<sup>(29)</sup>.

In the study S6, nurses and anesthesiologists claimed that, during the intraoperative period, nurses should assist in the anesthetic induction, patient monitoring, positioning for regional anesthesia and central access puncture. But there was a major disagreement among professionals about checking the preanesthetic assessment, intraoperative patient monitoring and ongoing support to the patient, which reveals the lack of autonomy of nurses to influence behaviors, which are planned and defined by physicians.

Europe has a great diversity of nurse anesthetist activities, with or without legislation in different countries, despite the conflicts between physicians and nurses. In Great

Britain, the nursing role is not yet defined, which limits the understanding among other professionals. In addition, the emergence of anesthesia assistants, professionals who are not necessarily from the nursing field, raises the discussion on the real importance of nurses in anesthesia and the degree of autonomy of these professionals<sup>(30)</sup>.

In Brazil, according to article 4 of law no. 12842 of July 10, 2013, the execution of deep sedation, anesthetic blocks and general anesthesia are exclusive medical activities<sup>(31)</sup>. However, Brazilian surgical center nurses may directly assist the anesthesiologist in patient monitoring, anesthesia, intraoperative controls and care after the reversal; but cannot program and control the anesthesia plan, like American nurses can<sup>(32-33)</sup>.

The Brazilian Society of Surgical Center Nurses, Anesthesia Recovery, Sterilization and Center of Material Storage recommends that nurses collaborate in anesthesia if necessary<sup>(34)</sup>, but there is no assistance standard for them. Thus, each institution conducts a different practice, and care depends on the professional interaction between anesthesiologists and the nursing staff.

Some Brazilian studies discuss the nurses' performance possibilities in anesthesia, with the organization of a service<sup>(35)</sup> and the creation of a nursing specialization<sup>(36)</sup>, so that they could act directly in the care before and during surgery. However, it would be necessary to change the curriculum of undergraduate nursing courses and specializations in nursing, as well as reformulate the legislation in nursing and anesthesia councils.

As in some countries in Europe and Brazil, the Chinese ministry of health still does not recognize the nursing profession in anesthesia. The training models are different; some nurses have theoretical training base and others learn about the profession in practical activities. The nurse assists the anesthesiologist in the execution of the anesthesia, in the preparation of equipment and medications, but has little autonomy over patient assessment, elaboration of the anesthetic plans and suggestions<sup>(37)</sup>.

There is strong resistance from government agencies and medical societies in defining the competences of non-medical professionals in anesthesia due to the anesthesiologists' fear of devaluation of the specialty by the growing autonomy of other professionals and the significant reduction in the supply of anesthesiologists, with the consequent decrease in quality of care provided in health services<sup>(38)</sup>.

The absence of nursing practice in anesthesia in our country makes it difficult to carry out experimental studies such as randomized, controlled or well designed clinical trials, systematic reviews or meta-analysis on the subject.

The studies here analyzed showed limitations when considering the methodological design and structure, because the type of study is not well defined according to the Oxford classification. However, the articles offered subsidies for discussion of the nursing role in anesthesia and showed the factors that influence care, opening a new field for prospects of perioperative nurse performance and the possibility of research development with higher level of evidence for the professional exercise.

In countries where the nurse anesthetist profession is

recognized, like in the United States, class councils and specialist societies are challenged to keep their standards of care applicable to local conditions, with continuous assessment programs to improve daily practices and procedures of national certification with reassessment of the competence and appropriate training of professionals.

Regions that do not allow the practice of anesthesia by non-medical professionals, such as Brazil, need to draw up guidelines or protocols to guide professionals on how to assist the anesthesiologist, defining ducts for uniformity of care and acting with scientific knowledge. Hence, violations of the laws governing the professional practice are limited, thus promoting patient safety.

The development of this review may encourage and support further research on the work of surgical center nurses in anesthesia and how professionals can expand their practices.

## CONCLUSION

This integrative review showed weakness in the levels of evidence found in the articles selected for analysis, but

indicated different performances of nurses in anesthesia, from countries with legislations and defined protocols, to regions with assistance and exercise of anesthesia with no process whatsoever to define the competence of nurses and the boundaries of their work.

Given the international scenario and considering the current legislation in Brazil, the nursing work in the anesthetic procedure is essential for planning and organizing materials and equipment, working together with the anesthesiologist during the anesthesia and patient follow-up at the end of the anesthetic-surgical procedure.

The support offered by the nursing staff cannot rely solely on the interaction between nurse and anesthesiologist as auxiliary, but acting with scientific knowledge and guidelines for effective and quality care, promoting patient safety.

The definition of the nursing role in anesthesia, with established protocol for care, would guide the care plan and demonstrate the importance of this professional in operating rooms.

## RESUMO

**Objetivo:** Buscar evidências científicas disponíveis sobre as ações do profissional de enfermagem durante o procedimento anestésico. **Método:** Revisão integrativa de artigos em português, inglês ou espanhol, indexados nas bases de dados MEDLINE/PubMed, CINAHL, LILACS, Cochrane Nacional, SciELO e no Portal BVS. **Resultados:** Foram analisados sete estudos que evidenciaram o trabalho do enfermeiro anestesista em países como Estados Unidos e regiões da Europa, com a elaboração do plano de anestesia e assistência ao paciente no que se refere à conferência de materiais e controles intraoperatórios. As barreiras para atuação do enfermeiro envolveram o trabalho conjunto ou supervisionado por anesthesiologistas, a falta de diretrizes e políticas governamentais para o exercício legal da profissão, o conflito entre o enfermeiro e o sistema de saúde para manutenção da atuação em locais nos quais a especialidade possui legislação e protocolos definidos. **Conclusão:** Mesmo com a fragilidade metodológica encontrada, os estudos indicaram grande diversidade de atuação do enfermeiro. Além disso, em países com a ausência da especialidade, como no Brasil, observou-se a necessidade de elaboração de diretrizes para assistência durante o procedimento anestésico.

## DESCRITORES

Anestesia; Enfermagem Perioperatória; Enfermagem de Centro Cirúrgico; Segurança do Paciente; Revisão.

## RESUMEN

**Objetivo:** Buscar evidencias científicas disponibles acerca de las acciones del profesional de enfermería durante el procedimiento anestésico. **Método:** Revisión integradora de artículos en portugués, inglés o español, indexados en las bases de datos MEDLINE/PubMed, CINAHL, LILACS, Cochrane Nacional, SciELO y en el Portal BVS. **Resultados:** Fueron analizados siete estudios que evidenciaron el trabajo del enfermero anestesista en países como Estados Unidos y regiones de Europa, con el diseño del plan de anestesia y asistencia al paciente en lo que se refiere al chequeo de los materiales y controles intraoperatorios. Las barreras para la actuación del enfermero involucraron el trabajo conjunto o supervisado por anesthesiologists, la ausencia de directrices y políticas gubernamentales para el ejercicio legal de la profesión, el conflicto entre el enfermero y el sistema de salud para el mantenimiento de la actuación en sitios en donde la especialidad tiene legislación y protocolos definidos. **Conclusión:** Aun con la fragilidad metodológica encontrada, los estudios señalaron gran diversidad de actuación del enfermero. Además, en países que carecen de la especialidad, como Brasil, se advirtió la necesidad de elaboración de directrices para la asistencia durante el procedimiento anestésico.

## DESCRIPTORES

Anestesia; Enfermería Perioperatoria; Enfermería de Quirófano; Seguridad del Paciente; Revisión.

## REFERENCES

1. Organização Mundial da Saúde. Aliança Mundial para a Segurança do Paciente. Segundo desafio global para a segurança do paciente: cirurgias seguras salvam vidas. Brasília: OPAS/MS/ANVISA; 2009.
2. Merry AF, Cooper JB, Soyannwo O, Wilson IH, Eichhorn JH. An iterative process of global quality improvement: the International Standards for a Safe Practice of Anesthesia 2010. *J Can Anesth.* 2010;57(11):1021-6.
3. Merry AF, Cooper JB, Soyannwo O, Wilson IH, Eichhorn JH. International Standards for a Safe Practice of Anesthesia 2010. *J Can Anesth.* 2010;57(11):1027-34.



4. Brasil. Ministério da Saúde. Portaria GM. N. 1377, de 9 de julho de 2013. Aprova os protocolos de segurança do paciente [Internet]. Brasília; 2013 [citado 2013 jul. 25]. Disponível em: <http://bvsms.saude.gov.br/bvs/saudelegis/gm/2013/prt137709072013.html>
5. Brasil. Ministério da Saúde; Agência Nacional de Vigilância Sanitária; Fundação Oswaldo Cruz. Protocolo para cirurgia segura [Internet]. Brasília; 2013 [citado 2014 jul. 25]. Disponível em: [http://www.hospitalsantalucinda.com.br/downloads/protocolo\\_cirurgia\\_segura.pdf](http://www.hospitalsantalucinda.com.br/downloads/protocolo_cirurgia_segura.pdf)
6. Cangiani LM, Slullitel A, Potério GMB, Pires OC, Posso IP, Nogueira CS, et al. Tratado de anestesiologia. 7ª ed. São Paulo: Atheneu; 2011. v. 2.
7. Auler Junior JOC, Carmona MJC, Torres MLA, Ramalho AS. Anestesiologia básica. São Paulo: Manole; 2011. p. 437-40.
8. Mendes KDS, Silveira RCCP, Galvão CM. Revisão integrativa: método de pesquisa para incorporação de evidências na saúde e na enfermagem. *Texto Contexto Enferm*. 2008;17(4):758-64.
9. Botelho LLR, Cunha CCA, Macedo M. O método da revisão integrativa nos estudos organizacionais. *Gestão Soc*. 2011;11(5):121-36.
10. Medeiros RL, Stein A. Níveis de evidência e grau de recomendação da medicina baseada em evidências. *Rev AMRIGS*. 2002;46(1-2):43-6.
11. Ursi ES. Prevenção de lesões de pele no perioperatório: revisão integrativa da literatura [dissertação]. Ribeirão Preto: Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto; 2005.
12. Centre for Evidence-Based Medicine. Levels of evidence [Internet]. Oxford; 2009 [cited 2013 July 25]. Available from: <http://www.cebm.net/oxford-centre-evidence-based-medicine-levels-evidence-march-2009/>
13. Zaglaniczny K, Healey T. A report on the Council on Certification 1996 Professional Practice Analysis. *AANA J*. 1998;66(1):43-62.
14. McAuliffe MS, Henry B. Survey of nurse anesthesia practice, education and regulation in 96 countries. *AANA J*. 1998;66(3):273-86.
15. Shumway SH, Risco JD. A comparison of nurse anesthesia practice types. *AANA J*. 2000;68(5):452-62.
16. Moody ML, Kremer MJ. Preinduction activities: a closed malpractice claims perspective. *AANA J*. 2001;69(6):461-5.
17. Seibert EM, Alexander J, Lupien AE. Rural nurse anesthesia practice: a pilot study. *AANA J*. 2004;72(3):181-90.
18. Canet J, Gomar C, Castro A, Montero A. Encuesta sobre las funciones de enfermería en anestesiología, reanimación y tratamiento del dolor en Cataluña. Análisis de la situación actual. *Rev Esp Anestesiol Reanim*. 2006;53(6):337-45.
19. Neft M, Okechukwu K, Grant P, Reede L. The revised scope of nurse anesthesia practice embodies the broad continuum of nurse anesthesia services. *AANA J*. 2013; 81(5):347-50.
20. Plaus K, Muckle TJ, Henderson JP. Advancing recertification for nurse anesthetists in an environment of increased accountability. *AANA J*. 2011;79(5):413-18.
21. Hawks SJ. Clinical aspects of nurse anesthesia practice: monitoring and decision making. *Nurs Clin North Am*. 1996;31(3):591-605.
22. Neft M, Quraishi JA, Greenier E. A closer look at the standards for nurse anesthesia practice. *AANA J*. 2013;81(2):92-6.
23. Garde JF. The anesthesia profession. *Nurs Clin North Am*. 1996;31(3):567-80.
24. Alves SL. A study of occupational stress, scope of practice, and collaboration in nurse anesthetists practicing in anesthesia care team settings. *AANA J*. 2012;73(6):443-52.
25. Lewis SR, Nicholson A, Smith AF, Alderson P. Physician anaesthetists versus non-physician providers of anaesthesia for surgical patients. *Cochrane Database Syst Rev*. 2014;(7):CD010357.
26. Dulisse B, Cromwell J. No harm found when nurse anesthetists work without supervision by physicians. *Health Aff*. 2010;29(8):1469-75.
27. Orkin FK. Rural realities. *Anesthesiology*. 1998;88(3):568-71.
28. Hogan PF, Seifert RF, Moore CS, Simonson BE. Cost effectiveness analysis of anesthesia providers. *Nurs Econon*. 2010;28(3):159-69.
29. Williamson JA, Webb RK, Sellen A, Runciman WB, Van Der Walt JH. The Australian Incident Monitoring Study. Human failure: an analysis of 2000 incident reports. *Anaesth Intensive Care*. 1993;21(5):678-83.
30. Vickers MD. Anaesthetic team and the role of nurses--European perspective. *Best Pract Res Clin Anaesthesiol*. 2002;16(3):409-21.
31. Brasil. Lei n. 12.842, de 10 de julho de 2013. Dispõe sobre o exercício da Medicina [Internet]. Brasília; 2013 [citado 2014 out. 22]. Disponível em: [http://www.planalto.gov.br/ccivil\\_03/\\_Ato2011-2014/2013/Lei/L12842.htm](http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2013/Lei/L12842.htm)
32. Stein RH. The perioperative nurse's role in anesthesia management. *AORN J*. 1995; 62(5):794-804.
33. Curi C, Peniche ACP. Enfermeiro anestesista: uma verticalização do enfermeiro perioperatório. *Rev SOBECC*. 2004;9(3):8-13.
34. Sociedade Brasileira de Enfermeiros de Centro Cirúrgico, Recuperação Anestésica e Centro de Material e Esterilização. Práticas recomendadas. 6ª ed. São Paulo: SOBECC; 2013.
35. Souza BHBP, Magdaleno VH, Araújo IEM. Organização de um serviço de enfermagem em anestesia. *Rev SOBECC*. 1999;4(1):20-3.
36. Sposito D, Gerdrat MCS. Anestesia: um campo possível para o enfermeiro no Brasil? *Rev SOBECC*. 1999;4(2):13-7.
37. Hu J, Fallacaro MD, Jiang L, Wang H. A view from China: scope of practice of the Chinese anesthesia nurse and a proposal for an evolving role. *AANA J*. 2013;81(1): 15-8.
38. Vickers MD. Non-physician anaesthetists: can we agree on their role in Europe? *Eur J Anaesthesiol*. 2000;17(9):537-41.