# NURSING DIAGNOSES IN THE PERIOPERATIVE PERIOD: CROSS MAPPING

*Diagnósticos de enfermagem no período transoperatório: mapeamento cruzado*

*Diagnóstico de enfermería en el período transoperatorio: mapeo cruzado*

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**ABSTRACT: Objective:** To map nursing diagnoses of the North American Nursing Diagnosis Association International (NANDA-I) taxonomy in patients during the perioperative period. **Method:** This is a cross-sectional and documentary study on nursing records covering the perioperative period of a hospital part of the private healthcare system of Niterói, Rio de Janeiro, developed by the cross-mapping methodological tool. **Results:** 65 medical records were evaluated. Most of the sample consisted of women with a mean age of 50.1 years and who underwent elective surgeries. Regarding the surgical specialty, the most performed procedures were general and urological surgeries. The most found terms were electric scalpel, scalpel plate, general anesthesia, and intubation. From the group of specialists, the prevalent diagnoses obtained were: risk for surgical site infection (84.6%), risk for impaired skin integrity (78.5%), impaired tissue integrity (63.1%), and risk for aspiration (58.5%). **Conclusion:** Nursing diagnoses that are primarily of risk were observed. Therefore, they lack early identification and interventions to avoid damages and prevent complications such as delayed surgical recovery.
**Keywords:** Nursing diagnosis. Perioperative nursing. Standardized nursing terminology.

**RESUMO: Objetivo:** Mapear os diagnósticos de enfermagem da taxonomia North American Nursing Diagnosis Association International (NANDA-I) em pacientes no período transoperatório. **Método:** Estudo do tipo transversal, documental, dos registros de enfermagem no período transoperatório de um hospital da rede suplementar de saúde do município de Niterói, Rio de Janeiro, desenvolvido por meio da ferramenta metodológica mapeamento cruzado. **Resultados:** Foram avaliados 65 prontuários. A maior parte da amostra foi composta de mulheres com média de idade de 50,1 anos e submetidas a cirurgias eletivas. Quanto à especialidade cirúrgica, os procedimentos mais realizados foram gerais e urológicos. Os termos mais encontrados foram bisturi elétrico, placa de bisturi, anestesia geral e entubação. Pelo painel de especialistas, obtiveram-se como diagnósticos prevalentes: risco de infecção de sítio cirúrgico (84,6%), risco de integridade da pele prejudicada (78,5%), integridade tissular prejudicada (63,1%) e risco de aspiração (58,5%). **Conclusão:** Os diagnósticos de enfermagem encontrados são prioritariamente de risco. Logo, carecem de identificação precoce e de intervenções para evitar danos e prevenir complicações, como o retardamento na recuperação cirúrgica.
**Palavras-chave:** Diagnósticos de enfermagem. Enfermagem perioperatória. Terminologia padronizada em enfermagem.

**RESUMEN: Objetivo:** Mapear los diagnósticos de enfermería de la taxonomía NANDA-I en pacientes en el período transoperatorio. **Método:** Estudio documental transversal de registros de enfermería en el período transoperatorio de un hospital de la Red de Salud Complementaria de la ciudad de Niterói, Río de Janeiro. Fue desarrollado utilizando la herramienta metodológica de mapeo cruzado. **Resultados:** se evaluaron 65 historias clínicas. La mayor parte de la muestra estaba compuesta por mujeres, con una edad media de 50,1 años y sometidas a cirugía electiva. En cuanto a la especialidad quirúrgica, los procedimientos más realizados fueron generales y urológicos. Los términos más comúnmente encontrados fueron bisturí eléctrico, placa de bisturí, anestesia general e intubación. El panel de expertos obtuvo los siguientes diagnósticos frecuentes: riesgo de infección del sitio quirúrgico (84,6%), riesgo de integridad de la piel deteriorada (78,5%), integridad del tejido deteriorada (63,1%) y riesgo de aspiración (58.5%). **Conclusión:** los diagnósticos de enfermería encontrados son principalmente de riesgo, por lo que necesitan identificación e intervenciones tempranas para prevenir daños y complicaciones, como la recuperación quirúrgica tardía.
**Palabras clave:** Diagnóstico de enfermería. Enfermería perioperatoria. Terminología normalizada de enfermería.

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## INTRODUCTION

In the Manual for Safe Surgery[1] (from Portuguese, *Manual de Cirurgia Segura*), based on data from 56 countries, is highlighted that the annual volume of major surgeries was estimated between 187 and 281 million, which approximately represents one surgery for every 25 people per year. This consists in a considerable volume, which has been increasing in recent decades due to the high incidence of traumatic disorders, population aging, and the consequent increase in the prevalence of chronic diseases, factors which imply the increasing need for surgical interventions[2]. However, these advances have also significantly increased the occurrence of errors that may result in damages to patients and, consequently, lead to significant public health implications.

Therefore, nursing processes must be systematically implemented in order to early identify existing and potential problems in such a way to intervene and reduce damages. Hence, the Brazilian Nursing Council (Cofen) has been legislating the competencies of nursing professionals and notes that should be documented. According to Resolution No. 358/2009, the nursing care systematization (NCS) is deemed a method for the work process that highlights the nurses' contribution to the population's health care, increasing their visibility and professional recognition[3].

The NCS aims to guide the activities of the nursing team and is responsible for organizing the team's work regarding the method to be adopted, the personnel, and the required instruments to ensure the operationalization of the nursing process (NP). Until the 1960s, nursing in the Surgical Center (SC) predominantly consisted of instrumentalization, compliance with requests of the medical team, and administrative initiatives related to the proper development of the anesthetic-surgical act. However, in 1990, Castellanos and Jouclas proposed the implementation of the NP in the care of surgical patients, aiming at promoting comprehensive, continuous, participatory, individualized, and documented care. In this healthcare model, each patient is individually considered, and nursing interventions aim to promote the continuity of care, in addition to providing the participation of the patient's family and enabling the evaluation of the care provided. Its creators named this process as perioperative nursing care systematization (PNCS)[2].

Hence, we must differentiate NCS from NP: the first exists only within the Brazilian context, and the second is internationally recognized as the *modus operandi* of the nurses' work process. NP is a private activity of the nurse, which includes "data collection, nursing diagnosis, planning, implementation, and evaluation"[3].

A nursing diagnosis provides the basis for the selection of nursing interventions, in order to achieve results for which nurses are responsible[4]. The North American Nursing Diagnosis Association International (NANDA-I) has formalized a classification system aimed at describing and developing a scientific foundation to provide the basis for the nursing team to select interventions suitable for each patient[5]. Therefore, NANDA-I suggests a way to classify and categorize nursing-related areas of concern, featuring 244 diagnoses, grouped into 13 domains, which are subdivided into 47 classes[4].

However, there are still few studies on the nursing diagnoses valid for the perioperative period in the literature, and, hence, its use in clinical practice has still been insignificant.

Thus, to address the benefits of the NP implementation, it is paramount to establish the nursing terms based on records already found in the patients' medical records, in such a way, henceforth, we can compare them with nursing taxonomies in order to identify the prevalence of diagnoses in the daily life of the nursing practice. Standardizing the nomenclature of nursing practice can favor the communication between members of the nursing and healthcare teams, promote the continuity of care, and foster the development of a nursing practice based on scientific principles, with clinical reasoning.

## OBJECTIVE

To map nursing diagnoses of the NANDA-I taxonomy in patients during the perioperative period.

## METHOD

This is a cross-sectional and documentary study on the nursing records contained in medical charts of patients in the perioperative period of a hospital of the private healthcare system of Niterói, Rio de Janeiro, Brazil. The study was developed by the cross mapping methodological tool, which aims to compare the terms used in the daily work of nursing and the NANDA-I nursing diagnosis classification system.

A large general hospital of the private healthcare system of the city of Niterói was selected as the study location. The choice of a hospital from this system was due to there being a nurse

inside the operating room, who records and take notes on the patient's progress during the perioperative period.

Data collection was performed using an instrument developed by the researchers to standardize the data to be collected in nursing records, in which information about the patient and the perioperative period were described according to the specificity of each patient.

Patients' medical records in the perioperative period were selected by deliberate and consecutive sampling, and the records of all patients available for data collection were collected on the researcher's available days. Data were collected from August to September 2018, and the researcher attended the unit 12 times, on alternate days, remaining there between four and five hours a day.

Inclusion criteria: patients in intraoperative care at the time of collection and aged over 18 years. Exclusion criteria: medical records that, at the time of internal routines of the hospital, were unavailable; and medical records that did not contain complete and/or legible nursing records during the perioperative period.

In September, 758 surgeries were performed in the hospital of the study, and the sample was limited to 65 patients.

For data collection and analysis, a script was prepared containing:

- patient's characterization data and description of the generic terms found in nursing records during the perioperative period;
- comparison between terms and the NANDA-I classification;
- submission of forms for individual analysis by specialists in order to establish the diagnoses according to the generic terms;

- group of specialists for consensus of diagnoses, according to the generic terms.

The cross mapping was used according to the presentation of the terms to be compared and the necessary adaptations taking into account the rules considered in this study[6] and presented in Chart 1.

After evaluating the records, nursing diagnoses were established based on the terms highlighted by the researcher, which were recorded in the forms and then transcribed into an Excel spreadsheet. Related and risk factors were identified by interpreting associated terms, synonyms, or similar concepts. To do so, we performed an adapted combination analysis, in such a way that, if the term found matched the term of the classification system, the combination was deemed exact. However, if the terms consisted of synonyms, similar, or related concepts, the combination was deemed partial. Terms that were not similar to the classification system and neither combined were collected from the records, although most were not used.

After completing data collection, the forms were forwarded to specialists, in such a way they would establish nursing diagnoses according to the NANDA-I classification. Thus, the third step corresponded to the analysis made by three specialists: the researcher himself, a specialist in nursing diagnosis, and a specialist in SC nursing. Diagnoses were established by the relationship between the terms surveyed in the medical records of patients included in the sample and the terms found in the related factors and the defining characteristics of the diagnoses contained in the NANDA-I classification.

**Chart 1.** Rules for using the cross mapping method.

| |
|---|
| 1 - Map using the context of nursing diagnosis. |
| 2 - Map the meaning of the words, not just the words. |
| 3 - Use the keyword to map the NANDA diagnosis. |
| 4 - Use the descriptor and diagnostic focus as keywords for diagnosis. |
| 5 - Maintain consistency between the NANDA diagnosis that is being mapped, its defining characteristics, and related factors. |
| 6 - Use defining characteristics and the most specific related factors concerning the diagnosis in question. |
| 7 - Map undesirable human responses to a health condition/life process in a person, family, or community in order to detect diagnoses focusing on the issue. |
| 8 - Map vulnerability of individual, family, or community to the development of an undesirable human response in order to detect risk diagnoses. |
| 9 - Map motivation and desire to increase well-being and achieve health-related human potential in order to detect diagnoses of disposition to promote health described in nursing progress notes. |

NANDA: North American Nursing Diagnosis Association.
Source: Lucena and Barros[6].

Furthermore, we chose to perform a fourth step, which consisted of a group of specialists for the consensus on individually identified nursing diagnoses based on generic terms, when the specialists agreed or disagreed with each diagnosis for each patient. In this step, if a diagnosis was only surveyed by one expert, it was classified as a disagreement; when there was consensus between two or three specialists, the diagnosis was classified as an agreement. This step was made by the group and lasted around eight hours.

Finally, data from the group of specialists and their individual evaluation were inserted into a database and forwarded for statistical analysis.

The steps of data collection and analysis are represented in Figure 1.

It is worth mentioning that this project was submitted to evaluation of the Ethics Committee of Hospital Universitário Antônio Pedro, a developer institution, which is associated with *Escola de Enfermagem Aurora de Afonso Costa*, having been approved on June 11, 2018, via Plataforma Brasil, under Certificate of Presentation for Ethical Consideration (CAAE) 89858218.2.0000.5243 and protocol No. 2,705,126.

## RESULTS

Data about the characterization of the study participants' profile (n=65) and the surgical specialties to which they were submitted are presented in Table 1.

Most of the participants were women (37/56.9%), with a mean age of 50.1 years; the youngest participant was aged 19 years old, and the oldest, 85. Regarding surgeries, most were elective (63/96.9%), and the most frequent specialties were general (26/40.0%) and urology (17/26.2%). Surgeries classified as general are those comprising surgeries on the abdominal region (esophagus, stomach, intestines, liver, colon, pancreas, gallbladder, and bile ducts), laparoscopic surgeries, and trauma surgeries.

The generic terms found by the researcher in the patients' nursing records during the perioperative period are presented in Table 2.

It can observed that the most common terms were "electric scalpel" and "scalpel plate" — both were found in the same proportion (51/78.5%). In addition, the terms "general anesthesia" (40/61.5%) and "intubation" (36/55.4%) were frequently found.

Table 3 presents nursing diagnoses according to the consensual agreement reached by the specialists and the researcher.

Moreover, Table 3 shows that, according to the consensus between the specialists and the researcher, the prevalent nursing diagnoses were: risk for surgical site infection, found in 55 (84.6%) patients; risk for impaired skin integrity (51/78.5%); impaired tissue integrity (41/63.1%); and risk for aspiration (38/58.5%).
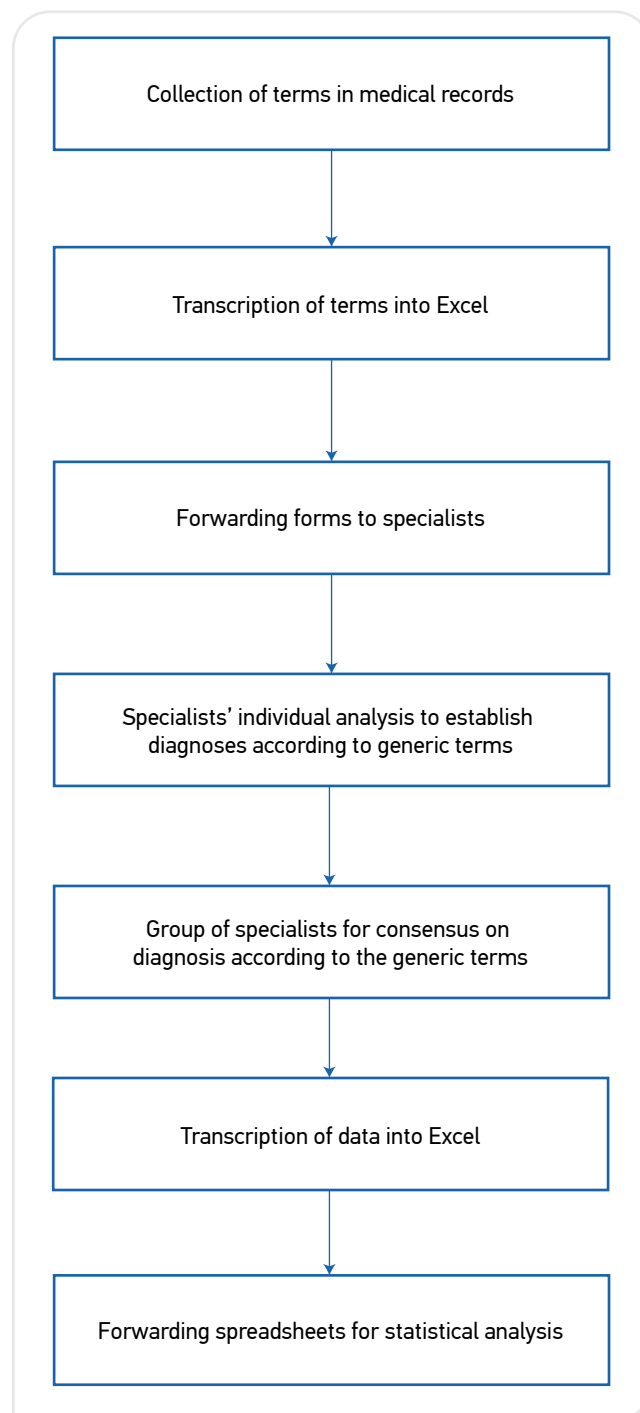


**Figure 1.** Steps of data collection and analysis.

## DISCUSSION

With the collected data, it was possible to demonstrate the most prevalent nursing diagnoses in the perioperative period, which corroborates that, if accurately identified and treated, they can improve quality of care and reduce risks and adverse events to the patient in the intraoperative period.

Based on the consensus between specialists and the researcher, it was found that the most prevalent diagnoses were: risk for surgical site infection, risk for impaired skin integrity, impaired tissue integrity, and risk for aspiration. It is noteworthy that most diagnoses found in the perioperative period were of risk, that is, those with clinical judgment concerning the individual's susceptibility to develop an undesirable response to a health condition[4].

Authors of another study also found a higher number of risk diagnoses in the perioperative period of cardiac surgeries[7]. It is known that a risk diagnosis does not have the same consequences of the actual diagnosis, since it does not have defining characteristics; however, their risk factors, when not treated and neither prevented, may result in their very diagnosis. Hence the importance of a nursing care that seeks to associate the patient's individualities

**Table 1.** Patients who composed the sample, according to biological gender, surgery classification, and surgical specialty.

| Variables | n (%) |
|---|---|
| Biological gender | |
| Female | 37 (56.9) |
| Male | 28 (43.1) |
| Surgery classification | |
| Elective | 63 (96.9) |
| Emergency | 2 (3.1) |
| Surgical specialty | |
| General | 26 (40.0) |
| Urology | 17 (26.2) |
| Neurology | 8 (12.3) |
| Orthopedics | 5 (7.7) |
| Plastic | 4 (6.2) |
| Gynecology | 3 (4.6) |
| Cardiothoracic | 1 (1.5) |
| Vascular | 1 (1.5) |

| Variables | Mean | SD | p |
|---|---|---|---|
| Age | 50.1 | 17.9 | <0.001 |

SD: standard deviation.

**Table 2.** Distribution of generic terms found in the participants' medical records.

| Generic terms | n (%) |
|---|---|
| Electric scalpel | 51 (78.5) |
| Scalpel plate | 51 (78.5) |
| General anesthesia | 40 (61.5) |
| Intubation | 36 (55.4) |
| Foley catheter | 22 (33.8) |
| Protection of bony prominences and base of support | 21 (32.2) |
| ELPO: high risk | 21 (33.3) |
| Allergy | 19 (29.2) |
| Hypertension/Hypotension | 19 (29.2) |
| Noncompliance with antibiotic prophylaxis | 18 (27.7) |
| Venous thromboembolism protocol (VTE): high risk | 13 (20.0) |
| Hair removal | 9 (13.8) |
| Blood reserve | 8 (12.3) |
| VTE Protocol: moderate risk | 7 (10.8) |
| American Society of Anesthesiologists (ASA) III | 5 (7.7) |
| Use of orthopedic cuff | 4 (6.2) |
| Tachycardia/Bradycardia | 2 (3.1) |
| Hypothermia | 2 (3.1) |
| ASA IV | 1 (1.5) |
| ASA V | 1 (1.5) |

ELPO: Risk Assessment Scale for the Development of Injuries due to Surgical Positioning.

**Table 3.** Diagnoses with consensual agreement between the specialists and the researcher.

| Diagnosis | n (%) |
|---|---|
| Risk for surgical site infection | 55 (84.6) |
| Risk for impaired skin integrity | 51 (78.5) |
| Impaired tissue integrity | 41 (63.1) |
| Risk for aspiration | 38 (58.5) |
| Risk for perioperative positioning injury | 24 (36.9) |
| Risk for venous thromboembolism | 22 (33.8) |
| Risk for decreased cardiac output | 19 (29.2) |
| Risk for allergy response | 16 (24.6) |
| Impaired urinary elimination | 16 (24.6) |
| Risk for delayed surgical recovery | 15 (23.1) |
| Risk for bleeding | 8 (12.3) |
| Risk for ineffective peripheral tissue perfusion | 5 (7.7) |
| Risk for urinary tract injury | 4 (6.2) |
| Risk for perioperative hypothermia | 1 (1.5) |
| Ineffective breathing pattern | 1 (1.5) |

with nursing diagnoses, in such a way to implement actions aiming at results that minimize the patients' length of hospitalization and recovery[8].

Other authors[9], during the follow-up of patients in the perioperative period, identified the nursing diagnosis of risk for perioperative positioning injury in 100% of the sample. In another article[10], the same authors of the previous study addressed the patient's care during the perioperative period, seeking to identify the most frequent nursing diagnosis in this period and to describe their risk factors. The sample included ten patients, of both genders, who underwent general surgeries. The most frequent diagnosis was the risk for infection, which was found in 100% of the analyzed patients[10].

The Risk Assessment Scale for the Development of Injuries due to Surgical Positioning (*Lesões Decorrentes do Posicionamento Cirúrgico* – ELPO), created by a Brazilian nurse, consists of seven items, with five subitems each, whose score varies from 1 to 5 points, presenting a total score from 7 to 35 points, in which the higher the score for classifying the patient, the greater the risk of developing injuries due to surgical positioning. The author of ELPO[11] identified the association between the scale and the development of perioperative lesion and showed that, with each additional point in which the subject is classified on the scale, the probability of developing injury increases by 44%.

Moreover, the supine position is more anatomical, and complications related to this position occur due to inadequate positioning and prolonged period of surgery[12]. Conversely, in the lithotomy position, the patient remains in the recumbent position, with abduction of lower limbs, supported on a leg support, and elevated, forming an angle of approximately 90° with the hip joint. This position provides a higher risk of complications due to pressure in the sacral and lumbar regions. Patients in lithotomy position have a higher risk for injury (59.72%) compared with patients placed in other surgical positions[2,11,12].

Regarding the risk of infection, authors of a study[13] showed that being classified as American Society of Anesthesiologists (ASA) II, III, and IV/V increases by 52, 134, and 89%, respectively, the chances of developing surgical site infection (SSI) compared with patients classified as ASA I. On the other hand, authors of a study conducted in a public hospital in the city of Belém (state of Pará, Brazil)[14] showed that the incidence of SSI increased as the ASA index increased. The rate of SSI in ASA I patients was 6.3%; in ASA II, 10.5%; and in ASA III, 100% (p≤0.0001),

which makes the ASA index significantly capable of influencing SSI. Hence the importance of associating the data collected in the instrument with a nursing diagnosis and, consequently, with a nursing intervention, thus systematically seeking to achieve results. This is the actual function of identifying data and recording them.

In all aforementioned articles, the NANDA-I diagnoses identified by the authors were replaced with their referents in the current version of the taxonomy (2018–2020), since the studies were based on older versions of the NANDA-I classification.

It may be observed that most nursing diagnoses found in the perioperative period are of risk, i.e., those that can be avoided through early identification and implementation of interventions performed in the care plan. Thus, nursing care should be focused on the planning of care, considering the diagnostic evidence presented by individuals. Therefore, the importance of the nursing team in using taxonomic classifications at the time of their records, in order to improve the care provided to the surgical patient, should be highlighted.

Finally, the limitations of the study should be stated. Firstly, there are few studies addressing nursing diagnoses in the perioperative period, allowing a considerable discussion. This limitation was expected, considering the specificity of the research object and the lack of publications on the issue. Secondly, there is insufficient evidence of studies with specialists, such as consensus studies, since, for the basis of the pyramid of study quality analysis, this type of research is paramount for practice objects. Nevertheless, statistical analysis measures and individual steps were performed to reduce detection bias. All in all, care was taken in order to minimize selection bias, and data were collected on alternate days and times. Although we do not present a sample size, due to the type of study performed, a larger sample would make the specialist's evaluation expensive and error-prone, and the associations presented show that the sample met the proposed objectives.

## CONCLUSION

There are generic terms of the records of daily nursing practice that refer to the nursing diagnoses proposed by NANDA-I taxonomy and which are significant to organize and direct the quality of nursing care provided to patients during the perioperative period.

It is evident, therefore, that nurses, when performing the evaluation of surgical patients through the NP, should clinically and individually assess the needs and risk factors presented by the patients. As aforementioned in the results and discussion sections of this study, most diagnoses found in the perioperative period were of risk: risk for surgical site infection, risk for impaired skin integrity, impaired tissue integrity, risk for aspiration, and risk for perioperative positioning injury. Thus, early detection measures and damage-related preventive interventions must be implemented.

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