

## RISK FACTORS OF THE NURSING DIAGNOSIS IN THE SAFETY/PROTECTION DOMAIN: INTEGRATIVE REVIEW

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**ABSTRACT:** Integrative review to summarize the available evidence in the literature on the risk factors for the nursing diagnoses in the Safety/Protection Domain and correlated adverse events in hospitalized patients. Undertaken in February 2015 through a search in the databases Cumulative Index to Nursing and Allied Health, Literatura Latino-americana e do Caribe em Ciências da Saúde, National Library of Medicine National Institutes of Health, Scientific Electronic Library Online and Scopus, which resulted in 19 studies. The most prevalent risk factors were: extended hospitalization, advanced age and burden of nursing professionals. The category Risk for injury presented the largest number of risk factors without correspondence in NANDA International (NANDA-I), while the category Risk for falls presented the largest number of equivalents. Thus, the presence of the risk factors cited in the literature without inclusion in NANDA-I indicates the need for more in-depth studies on the theme.

**DESCRIPTORS:** Nursing; Patient safety; Nursing diagnosis; Risk factors; Evidence-based nursing.

### FATORES DE RISCO DOS DIAGNÓSTICOS DE ENFERMAGEM DO DOMÍNIO SEGURANÇA/PROTEÇÃO: REVISÃO INTEGRATIVA

**RESUMO:** Revisão integrativa com o objetivo de sintetizar as evidências disponíveis na literatura acerca dos fatores de risco dos diagnósticos de enfermagem do Domínio Segurança/Proteção e eventos adversos correlacionados em pacientes hospitalizados. Realizada em fevereiro de 2015 mediante busca nas bases de dados *Cumulative Index to Nursing and Allied Health*, *Literatura Latino-americana e do Caribe em Ciências da Saúde*, *National Library of Medicine National Institutes of Health*, *Scientific Electronic Library Online* e *Scopus*, que resultou em 19 estudos. Os fatores de risco mais prevalentes foram: tempo de internação prolongado, idade avançada e sobrecarga dos profissionais de enfermagem. A categoria Risco de lesão apresentou o maior número de fatores de risco sem correspondência NANDA Internacional (NANDA-I), em contraste, a categoria Risco de quedas apresentou o maior número de equivalentes. Deste modo, a presença de fatores de risco citados na literatura sem inclusão na NANDA-I denota necessidade de estudos mais aprofundados na temática.

**DESCRIPTORIOS:** Enfermagem; Segurança do paciente; Diagnóstico de enfermagem; Fatores de risco; Enfermagem baseada em evidências.

### FACTORES DE RIESGO DE LOS DIAGNÓSTICOS DE ENFERMERÍA DEL DOMINIO SEGURIDAD/PROTECCIÓN: REVISIÓN INTEGRADORA

**RESUMEN:** Revisión integradora con objeto de sintetizar las evidencias disponibles en la literatura acerca de los factores de riesgo de los diagnósticos de enfermería del Dominio Seguridad/Protección y eventos adversos correlacionados en pacientes hospitalizados. Desarrollado en febrero del 2015 mediante búsqueda en las bases de datos *Cumulative Index to Nursing and Allied Health*, *Literatura Latino-americana e do Caribe em Ciências da Saúde*, *National Library of Medicine National Institutes of Health*, *Scientific Electronic Library Online* y *Scopus*, que resultó en 19 estudios. Los factores de riesgo más prevalentes fueron: tiempo de internación prolongado, edad avanzada y sobrecarga de los profesionales de enfermería. La categoría Riesgo de lesión presentó el mayor número de factores de riesgo sin correspondencia en NANDA Internacional (NANDA-I). En contraste, la categoría Riesgo de caídas presentó el mayor número de equivalentes. Así, la presencia de factores de riesgo citados en la literatura sin inclusión en la NANDA-I indica necesidad de estudios más a fondo en el tema.

**DESCRIPTORIOS:** Enfermería; Seguridad del paciente; Diagnóstico de enfermería; Factores de riesgo; Enfermería basada en evidencias.

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## ● INTRODUCTION

Examples of nursing process Classification Systems are NANDA International (NANDA-I), Nursing Intervention Classification (NIC) and Nursing Outcomes Classification (NOC). The clinical range of NANDA-I is extensive, focusing on the essential elements of professional practice, covering the nursing diagnoses, arranged in 13 domains, 47 classes and 217 nursing diagnoses (ND). Among these, the Safety/Protection Domain is highlighted, defined as being free from danger, physical injury or damage to the immunological system; preservation against losses and protection of safety and absence of danger. It consists of six classes and 42 ND<sup>(1)</sup>.

In the literature, some of these ND can be correlated with adverse events (AE), which are considered to be any avoidable incidence associated with the care offered during the hospitalization, characterized by the causing of damage to the patient<sup>(2)</sup>.

In this context, considering the relevance of the AE in Brazil, the Ministry of Health (MS) enacted decree 529/2013, which discusses the National Patient Safety Program (PNSP)<sup>(2)</sup>, intended to implement risk management and patient safety centers in all health institutions, prioritizing the following areas: infections, surgical and anesthetic procedures; prescription, transcription, dispensing and administration of medicines, blood and blood derivatives; patient identification; communication in the service environment; prevention of falls and pressure ulcers; patient transfer between care points<sup>(2)</sup>.

When the content of the PNSP is related with the NANDA-I taxonomy<sup>(1)</sup>, in the Safety/Protection Domain, the ND Risk for infection, Risk for falls, Risk for impaired skin integrity, Risk for trauma and Risk for vascular trauma stand out, which were considered highly prevalent in an earlier study<sup>(3)</sup>.

In clinical practice, the nurse can infer these ND with a view to verifying the risks and complications hospitalized patients tend to be exposed to, as well as to manage these AE and elaborate individual interventions for their prevention.

Interventions based on scientific evidence are inherent in the Nursing Process as they help the nurse to make decisions<sup>(1,4)</sup>. Evidence Based Nursing, in turn, is characterized by the detailed and strict assessment of relevant studies on a pre-established nursing problem, the synthesis of expressive data and the collection of information on new interventions, treatments and prevention forms, also considering professional expertise and the patient's will<sup>(5)</sup>.

Nevertheless, there is a lack of context analysis and diagnostic validation studies, which limits the findings of strong evidence to sustain nursing diagnoses<sup>(4)</sup>.

Thus, this study is justified by the recommendations the MS established through the PNSP, revealing the need for studies and research related to patient safety, with a view to strengthening the scientific evidence in order to guide the best care practice and favor the effective management of risks and adverse events.

Therefore, the goal in this study is to synthesize available evidence in the literature on the risk factors for the nursing diagnoses in the Safety/Protection Domain and correlated adverse events in hospitalized patients.

## ● METHOD

An integrative review (IR) was undertaken, a method that permits the inclusion of theoretical and empirical literature and primary studies with different methodological approaches. In addition, it permits the production of an up-to-date knowledge source on the problem and the determination of the knowledge's validity to be transferred to practice<sup>(6)</sup>.

With a view to operating this research, six phases were executed: identification of the theme and selection of the guiding question; establishment of inclusion and exclusion criteria; definition of information to be extracted/categorization of the selected studies; assessment of the studies included in the integrative review; interpretation of the results and presentation of the integrative review.

To operate this review, the following guiding question was established: What evidence is available in the literature on the risk factors for the nursing diagnoses in the Safety/Protection Domain and correlated adverse events in hospitalized patients?

The search was undertaken in February 2015 in the databases Cumulative Index to Nursing and Allied Health (CINAHL), *Literatura Latino-americana e do Caribe em Ciências da Saúde* (LILACS), National Library of Medicine National Institutes of Health (PubMed), Scientific Electronic Library Online (Scielo) and Scopus through the use of the proxy licensed by Universidade Federal do Rio Grande do Norte, accessed through the Capes journal portal. To collect the articles in LILACS and Scielo, descriptors and their respective synonyms were crossed as indexed in DeCS (Health Sciences Descriptors): *segurança do paciente; enfermagem; fatores de risco*. In addition, the following key word was used: *evento adverso*. For the search in CINAHL, PubMed and Scopus, the descriptors and corresponding synonyms from MeSH (Medical Subjects Headings) were used: *Safety patient; nursing; risk factors; adverse effects*. To cross the descriptors, the Boolean operator AND was used.

The following inclusion criteria were established: being a full article reporting on an original research, being available in the selected databases and discussing the risk factors of the nursing diagnoses listed in the Safety/Protection domain or correlated adverse events in patients or health professionals in the hospital context. For this selection, no restrictions were set in terms of language or publication data. Reviews, case studies, letters to the editor, editorials, dissertations and theses were excluded.

Therefore, two research applied the Relevance Test<sup>(7)</sup> in three rounds, including the application of a protocol with the inclusion/exclusion criteria and the guiding question. Any disagreement was solved by consensus. In the first round, the test was used in the reading of the publication title, resulting in 110 articles; 62 abstracts resulted from the second round and, finally, as a product of the third round, 19 articles were selected.

To define the information to be extracted/categorization of the studies, a form was developed with the following information: identification of the original article, methodological characteristics of the study, risk factors (RF) of the AE and their correlation with the RF of the ND in NANDA-I selected for this study. Before the reading to extract relevant information, a list was made of possible synonyms of expressions equivalent to the RF of the ND in the Safety/Protection Domain of NANDA-I.

Next, the extracted information was categorized according to the approach of each ND previously selected during the reading of the text. Thus, four categories emerged: Risk Factors for Risk for infection; Risk Factors for Risk for falls; Risk Factors for Risk for impaired skin integrity; Risk Factors for Risk for injury.

To assess the studies, referring to the correspondence of the identified evidence and RF existing in NANDA-I, the taxonomy was used as a descriptive assessment parameter. To describe the level of the studies' evidence, the classification of The Joanna Briggs Institute was used for reference.

To interpret the results, they were discussed in confrontation with the relevant literature on the study theme and presented in Tables.

## ● RESULTS

A descriptive analysis was undertaken and the synthesis of the selected articles (n=19) is displayed in Table 1 and Table 2 below.

As observed in Table 1, the cross-sectional study was predominant. Likewise, level VI evidence was the most prevalent.

Table 1 – Distribution of the publications according to the level of evidence and study design. Natal, RN, Brazil, 2016

| Evidence level | Design                | Publications | %     |
|----------------|-----------------------|--------------|-------|
| IV             | Cohort study          | 7            | 36.84 |
|                | Case-control          | 1            | 5.26  |
| VI             | Epidemiological study | 3            | 15.79 |
|                | Cross-sectional       | 8            | 42.11 |
|                | Total                 | 19           | 100   |

Table 2 – Distribution of the articles according to the country, year of publication, subjects and study theme. Natal, RN, Brazil, 2016

| Variable  | N  | %     |
|---|----|-------|
| Country   |    |       |
| Brazil  | 12 | 63.16 |
| United States                                   | 3  | 15.79 |
| Others  | 4  | 21.05 |
| Total   | 19 | 100   |
| Year of publication                             |    |       |
| Before 2009                                     | 1  | 5.26  |
| 2009  | 3  | 15.79 |
| 2011  | 5  | 26.31 |
| 2012  | 8  | 42.11 |
| 2013  | 2  | 10.53 |
| Total   | 19 | 100   |
| Subjects  |    |       |
| Elderly   | 12 | 63.16 |
| Adults  | 7  | 36.84 |
| Total   | 19 | 100   |
| Study theme                                     |    |       |
| AE related to medication administration         | 9  | 47.37 |
| AE related to Infection                         | 1  | 5.26  |
| AE related to Falls                             | 3  | 15.79 |
| AE related to the category pressure ulcers (PU) | 4  | 21.05 |
| AE related to PU and Falls or Infection         | 2  | 10.53 |
| Total   | 19 | 100   |

In Table 2, a higher prevalence is identified of studies developed in Brazil, mostly in 2012. The studies mostly consisted of elderly people and the most investigated AE were related to medication administration.

After crossing the evidence with the corresponding risk factors of NANDA-I, it was categorized in Risk for Infection (Table 3), Risk for Falls (Table 3), Risk for impaired skin integrity (Table 4) and Risk for injury and Risk for vascular trauma (Table 5).

In the category Risk for infection, no NANDA-I correspondents were found for the risk factors advanced age, length of hospitalization, excessive sedation and reduced level of awareness. Similarly, no NANDA-I correspondent was found for the RF male sex, lowered bedrails and work burden in the category Risk for falls.

In the category Risk for impaired skin integrity, no correspondent was found for the RF length of hospitalization, hospitalization at surgical clinical ward, professional burden and level of dependence.

As regards the RF of the category Risk for injury/Risk for vascular trauma, the respective NANDA-I correspondents were found for procedure omission, delays in administration times, length of hospitalization, inexistence of protocols, lack of continuing education and errors in notes.

Table 3 – Correspondence between the Risk Factors for infection and falls identified in the literature and the Risk Factors of the Nursing Diagnoses Risk for infection and Risk for falls. Natal, RN, Brazil, 2016

| Diagnosis Risk for Infection              |                |   |
|---|----------------|---|
| Risk factors identified in the literature | Evidence level | Risk Factor of corresponding Nursing Diagnosis Risk for infection |
| Advanced age                              | VI             | No correspondent  |
| Length of hospitalization > seven days    | VI             | No correspondent  |
| Smoker or former smoker                   | VI             | Inappropriate primary defense                                     |
| Excessive sedation                        | VI             | No correspondent  |
| Reduced level of consciousness            | VI             | No correspondent  |
| Diagnosis Risk for Falls                  |                |   |
| Risk factors identified in the literature | Evidence level | Risk Factor of corresponding Nursing Diagnosis Risk for falls     |
| Male sex                                  | VI             | No correspondent  |
| Neurological disease                      | VI             | Reduce mental status  |
| Lowered bedrails                          | VI             | No correspondent  |
| Advanced age                              | VI             | Age over 65 years   |
| Length of hospitalization < 14 days       | IV             | Unfamiliar room   |
| History of falls                          | IV             | History of falls  |
| Work burden                               | IV             | No correspondent  |

Table 4 – Correspondence between the RF for pressure ulcer identified in the literature and the RF of the ND Risk for impaired skin integrity. Natal, RN, Brazil, 2016

| Risk factors identified in the literature | Evidence level | Risk Factors of corresponding Nursing Diagnosis Risk for impaired skin integrity |
|---|----------------|--|
| Length of hospitalization > 7 days        | VI             | No correspondent   |
| Advanced age                              | IV             | Extreme age  |
| Duration of surgery superior to 4h 30min  | IV             | Physical immobilization  |
| Burden of professionals                   | IV             | No correspondent   |
| Severe obesity                            | IV             | Unbalanced nutritional status  |
| Level of dependence                       | VI             | No correspondent   |

Table 5 – Correspondence between the risk factors found in the literature for medication errors and RF for the ND Risk for injury and Risk for vascular trauma. Natal, RN, Brazil, 2016

| Risk factors identified in the literature   | Evidence level | Risk Factors of corresponding Nursing Diagnoses Risk for injury and risk for vascular trauma |
|---|----------------|--|
| Failure to check 9 rights                   | IV             | No correspondent   |
| Inappropriate equipment use (infusion pump) | VI             | Equipment structure and organization   |
| Preparation and/or administration errors    | IV             | Concentration of solution  |
| Procedure omission                          | IV             | No correspondent   |
| Delays in administration times              | IV             | No correspondent   |
| Length of hospitalization > 7 days          | VI             | No correspondent   |
| Inappropriate environment for preparation   | VI             | Room structure and organization  |
| Insufficient knowledge                      | VI             | Cognitive factors  |
| Vascular impermeability                     | IV             | Inappropriate catheter fixation  |
| Reduced professional experience             | VI             | Cognitive factors  |
| Inexistence of protocols                    | VI             | No correspondent   |
| Burden of professionals                     | IV             | Employee hiring standards  |
| Lack of continuing education programs       | VI             | No correspondent   |
| Errors in notes                             | VI             | No correspondent   |

## ● DISCUSSION

The AE are factors that compromise care and have limiting or disabling potential as a consequence of inappropriate risk control. Thus, the need should be emphasized to screen for the risk factors involved in the development of these events and correlate them with the ND for the NANDA-I domain Safety/Protection with a view to preventing their occurrence.

Thus, according to the findings, the length of hospitalization was a risk factor all categories held in common. Concerning this result, in another study<sup>(8)</sup>, the length of hospitalization was related with the prevalence of AE when 77% of the sample developed infection after a mean hospitalization period of five days. Prolonged hospitalization exposes the patient to the risk of suffering from care-related incidents, like in the case of medication errors and infections, pressure ulcers (PU) and others<sup>(9-10)</sup>.

In the context of the prevalence of falls in the hospital context, prolonged hospitalization is a cause and consequence of this events, as the patients hospitalized over a prolonged period are more prone to falls. Similarly, the incident increases the length of hospitalization<sup>(11)</sup>.

Advanced age was a prevalent risk factor for AE among the findings. In this respect, it is known that the physiological alterations of aging can make the organism even more vulnerable to diseases, injuries and complications, especially during the hospitalization<sup>(12)</sup>.

Professional burden was identified as a facilitator for the incidence of AE. According to another study<sup>(13)</sup>, the high patient demand for an insufficient number of nurses considerably increased the occurrence of care-related incidents. This study evidenced that the excessive work burden of the nursing team proportionally increases the incidence of PU, falls and medication errors, as the index between the available nursing care hours and the number of staff is directly related with patient safety and the quality of care<sup>(14)</sup>.

As regards the RF found in the literature without synonyms in NANDA-I<sup>(1)</sup>, the greatest difference was found in the category Risk for injury. Risk for injury is defined as a result of environmental conditions interacting with individual adaptive and defensive resources<sup>(1)</sup> and was associated with studies on medication errors.

It should be highlighted that all hospitalized patients are subject to risk<sup>(15)</sup>. Thus, systemized nursing care is a means to investigate this risk of AE and thus intervene to prevent its incidence. The appropriate identification of the ND and their respective risk factors represents a fundamental step for the efficacy of the interventions and the promotion of patient safety.

In the category Risk for falls, lowered bedrails cause risk for the occurrence of the event, but present no NANDA-I correspondents. Falls have turned into a public health problem and an important patient safety indicator, especially concerning nursing activities. It is estimated that, every year, 424,000 people die of falls around the world. It is the second unintentional cause of death, followed by traffic accidents. Among non-fatal falls in the global context, 37.3 million lack medical care<sup>(16)</sup>.

Hence, falls are AE and require maximum attention when hospitalized patients are involved. The preventive measures of raising the bedrails is effective by reducing the risk and also serves as a nursing care indicator<sup>(17-18)</sup>.

Errors in the preparation, administration and verification of the nine rights were related to care errors. In a study developed at a large hospital to monitor the following of all medication administration phases, it was noticed that most professionals do not verify medication, time or patient<sup>(19)</sup>. Thus, it can be concluded that the AE related to medication are related to nursing care and interfere directly in the hospital quality and patient safety indicators.

In that sense, the importance of implementing continuing education and protocols to standardize the medication administration procedure is highlighted. The protocols are tools that contain the specific phases, ranked according to their execution, and contribute to the prevention of errors<sup>(18)</sup>. These measures can considerably contribute to reduce the prevalence of adverse events and maintain patient safety throughout the hospitalization period.

## ● CONCLUSION

To summarize the research results, the risk factors related to the ND Risk for infection, Risk for falls, Risk for impaired skin integrity and Risk for injury are considered classical in the hospital context. The most prevalent risk factors were: prolonged hospitalization, advanced age and burden of nursing professionals. Some RF presented no correspondents in NANDA-I for the corresponding ND.

The category Risk for injury presented the largest number of RF without correspondence in NANDA-I. The category Risk for falls, on the opposite, presented the largest number of equivalents. Therefore, the knowledge provided will be important for care practice focused on the prevention of adverse events related to the Nursing Diagnoses studied, mainly in hospitalized patients.

Thus, the presence of RF cited in the literature without due mention in NANDA-I indicates the need for more in-depth studies on the theme, such as content analysis and validation, which remain scarce in the literature.

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