

## Nursing knowledge and actions taken about pressure injury prevention: an integrative review

## Conhecimento da enfermagem e ações realizadas acerca da prevenção da lesão por pressão: uma revisão integrativa

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**ABSTRACT | OBJETIVO:** Analyze nurses' knowledge and actions on pressure injury prevention. **METHOD:** An integrative review carried out between May and June 2020, by searching for articles in the databases SCIELO, MEDLINE, and BDNF, published between 2015 and 2020, with the descriptors: "pressure injury," "nurse," and "prevention," using the Boolean "and." Original articles were included in Portuguese, published in full, and available electronically. **RESULTS:** 18 articles were found, of which only 06 answered the guiding question. It is noticed a deficiency in the nurses' knowledge for the prevention of pressure injuries and the little availability of articles dealing with the subject. **FINAL CONSIDERATIONS:** Studies show a deficiency in nurses' knowledge about the prevention of pressure injuries, highlighting the importance of preventive actions based on scientifically based institutional protocols.

**DESCRIPTORS:** Pressure injury. Nurse. Prevention.

**RESUMO | OBJETIVO:** Analisar o conhecimento e ações pelos enfermeiros sobre a prevenção da lesão por pressão. **MÉTODO:** Revisão integrativa realizada entre os meses de maio e junho de 2020, por meio da busca de artigos nas bases de dados SCIELO, MEDLINE e BDNF, publicados entre 2015 a 2020, com os descritores: "lesão por pressão", "enfermeiro" e "prevenção", utilizando o booleano "and". Foram incluídos artigos originais, em língua portuguesa, publicados na íntegra e disponíveis eletronicamente. **RESULTADOS:** Foram encontrados 18 artigos, destes apenas 06 responderam à pergunta norteadora. A mudança de decúbito é uma das ações mais realizadas pela equipe de enfermagem como a medida preventiva para o risco de lesão. Isso demonstra uma deficiência no conhecimento dos enfermeiros para a prevenção de lesão por pressão, além da pouca disponibilidade de artigos tratando sobre o assunto. **CONSIDERAÇÕES FINAIS:** Os estudos mostram deficiência no conhecimento do enfermeiro acerca da prevenção de lesão por pressão, destacando a importância de ações preventivas baseadas em protocolos institucionais fundamentados cientificamente.

**DESCRITORES:** Lesão por pressão. Enfermeiro. Prevenção.

## Introduction

Hospital environments are complex places where patients are exposed to several risk factors, including impaired physical mobility, general health, and others<sup>1</sup>.

The development of pressure injuries (PI) causes significant damage to patients, as it hinders functional recovery, can cause pain, and lead to the development of complications and worsening of patients' health. This type of injury is associated with prolonged hospitalizations, sepsis, mortality, the institution's high financial cost, and increased workload to the health staff<sup>2</sup>.

Pressure injuries in Brazilian health institutions need to be notified to the National Health Surveillance System (NHSS) to map each case, identify the situation, and plan actions to improve the assessment provided to its customers. Nurses are responsible for evaluating patients with pressure injury risk and nursing assistance, prescriptions regarding prevention and treatment, education of other professionals, and notification to the NHSS through Notivisa software<sup>3</sup>.

International organizations have historically contributed to the construction, consolidation, and revision of guidelines with recommendations based on the best evidence available. Those guidelines assist professionals in decision-making and implementation of conducts for the prevention and treatment of pressure injuries. Additionally, those institutions assist in the elaboration of institutional protocols. On this matter, the actions of the National Pressure Injury Advisory Panel (NPIAP) stand out<sup>4</sup>.

NPIAP defines pressure injury is localized damage to the skin and/or soft tissues, usually on a bony prominence or related to the use of a medical device or other artifacts. Such lesion may appear on intact skin or as an open ulcer and occurs due to intense and/or prolonged pressure combined with shear<sup>5</sup>.

Pressure injuries are categorized to indicate tissue damage extent, being classified into stage 1, when intact skin has unbleachable erythema; stage 2, there is a partial loss of skin and dermis exposure; stage 3, there is total dermis loss with adipose tissue exposure and; stage 4, there are skin and tissue loss with muscle fascia, tendon, ligament, cartilage or bone exposure. Usually, such lesions affect bony prominences, such as the sacral region, trochanter, and scapula<sup>5</sup>.

Still, as injury classification, there are pressure injury not classifiable, in which skin loss occurs in its total thickness and tissue loss cannot be visible, as it is covered by slough or eschar; pressure injury related to a medical device that results from the use of devices applied in diagnostic and therapeutic purposes, and; pressure lesion in the mucous membrane which is found when there is a historical use of a medical device at the damaged region<sup>5</sup>.

Occurrence of pressure injuries in hospitalized patients has a higher incidence in male patients (48.5%), over 60 years old (61.1%), and the sacral region is the most affected (46.4%), followed by the calcaneus region (26.76%)<sup>6</sup>. These lesions' appearance is multifactorial, being related to intrinsic factors (e.g., mobility, nutrition, comorbidities) and extrinsic factors (e.g., use of diapers, humidity, increased friction, and shear)<sup>3</sup>.

Risk assessment of pressure injuries development is fundamental for carrying out the planning and implementation of prevention and treatment measures. Registration and the lesion's characterization are essential for proper monitoring of care provided, to establish treatment measures and improvement in care<sup>2</sup> correctly.

The nurse is an active agent in the observation, notification, and treatment of pressure injuries. In addition to the knowledge on the subject, the use and application of the metrics that assess their evidence, nursing care planning is within their legal competence<sup>1</sup>.

Scientific knowledge of nurses on pressure injuries is essential since it is up to those to identify risks and outline precautionary measures to maintain patients' skin integrity. Among the provided healthcare, we highlight skin inspection, body hygiene preservation, alterations in decubitus position, and protection of bony prominences<sup>3</sup>.

Although there are clinical circumstances in which pressure injury is unavoidable, maintaining skin integrity or the recovery of the injured skin and/or underlying tissue in a bedridden patient is based on knowledge and application of care measures according to the recommendations best evidence available. The presence or absence of health institutions' injuries is used as quality indicators that guide the elaboration of public policies, decision-making, and goal setting<sup>4</sup>.

Healthcare planning to maintain skin integrity provided is legal competence of nurses and a patient's right. Given this, pressure injury prevention is highly relevant to nursing professionals, especially for nurses, the team leader and responsible for decision making<sup>7</sup>. Thus, this study aims to analyze nurses' knowledge and actions on the prevention of pressure injuries.

## Methodology

This is an integrative review study that consists of building an analysis of the existing literature on the topic to contribute to discussions about research methods and results and reflections on future studies. The integrative review's initial purpose is to obtain a deep understanding of a given phenomenon based on the previous studies<sup>8</sup>.

The following steps were taken to construct this study: theme choice; preliminary bibliographic survey; problem formulation; sources search; material reading.

After choosing the pressure injuries theme, a previous bibliographic survey was carried out, which enabled the identification of the problem to be studied and the elaboration of the guiding question, which consists of: What is the knowledge and what are the actions used by nurses on the prevention of pressure injuries?

A bibliographic survey was carried out in the databases: SCIELO, MEDLINE, and BDEF in Health Sciences, from May to June 2020, using the following descriptors: pressure injury, nurse, and prevention, separated with the Boolean operator "and" to answer the question.

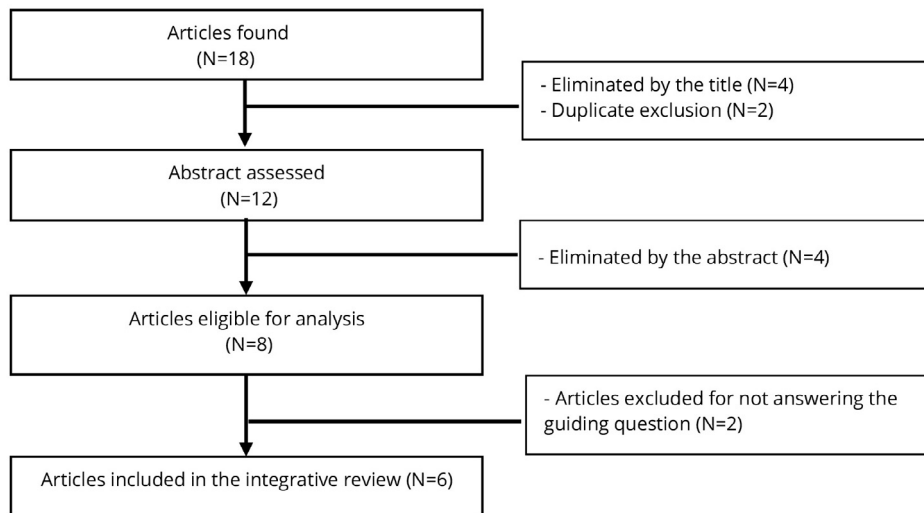
As inclusion criteria, publications made between 2015 to 2020, in Portuguese, which were original articles and available electronically, were applied. The exclusion criteria were experience reports, letters, editorials, books, duplicated production in the researched databases, and works that were not related to the study's scope or that did not answer the guiding question of the review.

A preliminary reading of the bibliographical survey showed little scientific production on the theme, so 05 years was applied for better analysis of the study object.

A survey of scientific publications was carried out using the descriptors, and a total of 18 articles met the inclusion criteria. After data collection, each article was read to confirm the contemplation of the guiding question of this investigation.

Each study's results were synthesized, and each article received a numerical sequence code to facilitate identification (Study 1- E1, Study 2- E2, ...).

**Figure 1.** Flowchart of the article selection included in the integrative review



## Results and discussion

All 06 articles included in the present study were developed in Brazil, being 2020 (02 articles), 2019 (01 article), 2018 (01 article), and 2017 (02 articles). The outline of the articles in the integrative review is presented in Tables 1 and 2.

**Table 1.** Analyzed articles according to Identification (ID), Title, Authors, Year, Research Type, and Study Goal

ID	Title/Authors/Year/Research Type	Study Goal
E1	"Evaluation and treatment of pressure ulcers in the family health strategy." Souza et al. (2020) <sup>9</sup> Qualitative, descriptive, exploratory.	Understand how nurses assess and treat PI in the family health team context.
E2	"Organizational culture: prevention, treatment, and risk management of pressure injury." Souza, Loureiro and Batiston (2020) <sup>10</sup> Cross-section.	Identify factors that facilitate and hinder the prevention and treatment of PI in hospitalized patients' care management.
E3	"Knowledge of nurses about prevention and care of pressure injury." Sousa and Faustino (2019) <sup>11</sup> Descriptive cross-section.	Identify nursing assistants' knowledge regarding prevention and care of PI in medical center and surgery center units in a University Hospital in Brasília.
E4	"Prevention of pressure injuries: actions prescribed by intensive care unit nurses." Mendonça, Loureiro, Frota and Souza (2018) <sup>12</sup> Descriptive cross-sectional and analytical.	Describe nursing actions prescribed by nurses in the prevention of PI and their occurrence in the ICU.
E5	"Knowledge of the nursing team on pressure ulcer prevention." Galvão, Serique, Santos and Nogueira (2017) <sup>13</sup> . Descriptive and exploratory.	Describe and analyze the nursing team's knowledge on classification, evaluation, and prevention measures of pressure ulcers in patients in a University Hospital in Manaus.
E6	"Nursing actions before and after a protocol for preventing pressure injury in intensive care" Vasconcelos and Caliri (2017) <sup>14</sup> Observational, prospective, comparative with a quantitative approach.	Analyze nursing actions before and after using a PI prevention protocol in the ICU.

Source: Present research data.

**Table 2.** CAnalyzed articles according to Identification (ID), Main Results, and Conclusion

ID	Main Results	Conclusion
E1	The following categories were listed: Specific training on pressure injuries; use of pressure injury assessment methods; indication, use, availability of coverings for the prevention and treatment of pressure injuries, and guidance to patients and family members on pressure injuries care.	The nurse must have theoretical and practical knowledge so that, with the professional team and the family, it can promote prevention and treatment care necessary for the patients.
E2	Among the identified factors, it is highlighted that 59% of the interviewees are unaware of the PI prevention protocol, 27% do not use the clinical evaluation for daily dimensioning of the professionals, more than 52% believe that there are no facilitating elements, and 76% affirm that there are complex elements for the prevention of PI. As for treatment, just over 60% report that the patient and the injury are evaluated by nurses, with 54% of the procedures being prescribed by the doctor and 46% of the therapy being performed by nursing technicians.	Prevention and treatment of PI require shared management, with integrated actions from care providers.
E3	The sample consisted of 38 nurses, of which 78.9% scored between 70 and 89% of the instrument and only two nurses (5.2%) scored 90% or more. The least successful items were related to the use of devices, such as water gloves (24.6%) and pillows (23.6%), concerning positioning and repositioning, and massage on bone prominences.	There is a knowledge deficit of the nursing staff at this hospital which can directly compromise care, especially for patients at risk for PI.
E4	The statistical association was found between altering decubitus position, applying hydrocolloid cover to the sacral region, performing external hygiene, changing the orotracheal catheter's fixation and/or enteral feeding tube, and skin inspection with no pressure injuries. The occurrence of pressure injuries was found in 49% of clients in both institutions.	The elaboration and implementation of protocols and the follow-up of entries and groups at most significant risk are strategies that lead to prescriptions of appropriate preventive actions for pressure injuries.
E5	The global average of correct answers was 63.4% for nursing technicians/assistants and 51.4% for nurses. Statistical difference was significant only between groups of the pressure ulcer prevention category ( $p < 0.001$ ).	There is a lack of knowledge on UP prevention among nurses and nursing technicians/assistants; thus, training these professionals should be mandatory.
E6	A higher frequency of risk assessment for pressure injuries in the days following admission was observed after applying the protocol.	The greater frequency of preventive actions after applying the protocol demonstrates this tool's importance in adopting recommendations based on scientific evidence by professionals

Source: Present research data.



The studies included in the review are from different regions of Brazil, being E1- South (Rio Grande do Sul), E2- Midwest (Mato Grosso do Sul), E3- Federal District (Brasília), E4- Southeast (Rio de Janeiro), E5 - North (Manaus), and E6- Northeast (João Pessoa). In this way, pressure injury prevention actions were found with representation from all regions of Brazil. Also, the studies identified involved nurses at all levels of healthcare.

All articles analyzed addressed the "prevention of pressure injuries by nurses" theme, discussing preventive actions, protocol usage, and level of knowledge of these professionals.

The nurse is a member of a multi-professional health team, leader of the nursing team, and responsible for decision making in the care practice for hospitalized patients, aiming to search for care quality. Scientific knowledge is necessary to guarantee care quality. However, all studies analyzed showed that nurse's knowledge on PI prevention is still deficient<sup>11</sup>.

According to Souza et al.<sup>9</sup>, PIs are considered adverse events and are inserted in care quality and patient security because they are preventable. Thus, PIs reveal a deficiency in care quality provided when they occur frequently.

In this review, articles in this review also discuss that elaboration and implementation of protocols, monitoring of records, and shared management with integrated actions among care providers are strategies that direct prescriptions that prevent pressure injuries. All articles discuss the relevance of protocols to guide nursing actions, especially for preventing pressure injuries.

It is necessary to develop strategies to strengthen care practices, and it is essential to use guidelines and implement prevention protocols that guide health professionals<sup>10</sup> to reduce the occurrence of pressure injuries.

Mendonça et al.<sup>12</sup> showed statistical associations between preventive actions implemented based on protocols and the absence of pressure injuries when describing nursing actions to prevent pressure injuries in intensive care centers.

The most common nursing actions were a modification of decubitus (every two hours) and maintenance of clean and dry skin as the main procedures for preventing PI. However, there was randomness in preparing the prescriptions and an occurrence of pressure injury in 49% of the clients in both institutions assessed. The non-standardization of actions for the prevention of PI was related to the nurses' lack of adequate knowledge about preventive procedures<sup>10</sup>.

Souza, Loureiro, and Batiston<sup>10</sup> propose shared management between professionals who perform prevention actions of PI and agree with Mendonça et al.<sup>12</sup> when highlighting the importance of guidelines and implementation of prevention protocols as care quality improvement strategies.

Studies assessed also show that institutions do not offer educational activities on the subject to their professional staff, with great difficulty to invest in continuous professional qualification. Continued education aims to provide health professionals with specific knowledge and constant updates, including disease prevention, seeking excellence in the quality of care provided to patients<sup>13</sup>.

Vasconcelos and Caliri<sup>14</sup> evaluated the actions of nursing professionals before and after using PI prevention protocols. They revealed the importance of protocol introduction, which had significant results when considering nursing actions taken during bed bath, recommended for risk factors control. Results revealed a change in behavior and an increase in the number of preventive actions in all variables observed after using the protocol.

Studies by Souza, Loureiro, and Batiston<sup>10</sup>, Sousa and Faustino<sup>11</sup>, and Mendonça et al.<sup>12</sup> showed that the application of risk assessment scales for PI development, combined with clinical reasoning, can help professionals to establish the most appropriate interventions for the patient. The Braden, Waterlow, and Norton scales were validated and recommended instruments for assessing the patient's risk of developing PI<sup>14</sup>. However, they clarify that using these scales without specific knowledge might not correspond to the patient's real need.

Two studies highlighted a deficiency of specific knowledge when assessing the nurses' level of PI prevention information. Sousa and Faustino<sup>11</sup> and Galvão et al.<sup>13</sup> applied previously validated questionnaires with questions to be answered as true or false on PI assessment, classification, and prevention. In both studies, results were similar, pointing out the nurse professional's unpreparedness in caring for patients with wounds. Results showed a lack of knowledge on the prevention, assessment, and classification of PI and a need for updating professionals' knowledge since it is linked to care quality provided.

Prevention measures condemned by the NPIAP, such as water or air gloves to relieve pressure on the heels and cushions, such as water wheels, to assist in PI prevention, were pointed out as a care strategy by nurses. That reinforces a lack of knowledge or lack of updating professional's knowledge on the subject. These facts corroborate the existence of a knowledge deficiency in the nursing team's actions, exposing patients to risks that are conducive to the occurrence of adverse events<sup>15</sup>.

Prevention strategies outlined by Souza et al.<sup>9</sup>, which are the closest to what the Brazilian National Health Surveillance Agency (ANVISA) recommends in terms of Safe Practice for PI Prevention, were: Risk assessment of all patients before and during hospitalization; Careful assessment of the skin at least once a day, especially in bony prominences; Use of specific mattress and pillows for pressure distribution; Use of calf support; Maintenance of body hygiene, keeping clean and dry skin; Daily skin hydration with moisturizer and humectants if necessary; Use of protective barriers against excessive humidity if necessary, such as cream barrier, semipermeable film, and polyurethane foam; Variation of position every two hours to reduce local pressure; Headboard maintenance at 30° and; Family and patient orientation on PI prevention and treatment<sup>13</sup>.

Regarding preventive actions, knowledge is not enough, being necessary to improve skills and attitudes. It is essential that the nursing team responsibly perform the actions to reduce the risk of an individual developing PI<sup>16</sup>.

Nurses have a fundamental role in PI prevention: identifying risk factors, implementing preventive measures, and providing quality care. For this, the nurse must have scientific knowledge concerning PI stages to prescribe the actions/measures adopted as preventive care by the nursing team<sup>17</sup>. Recommendations by the new NPIAP and ANVISA guidelines will help nurses in decisions making on appropriate intervention<sup>18</sup>.

Souza, Loureiro, and Batiston<sup>10</sup> brought data related to the assessment and treatment of PI in the family health strategy and confirms that nurses need to have theoretical and practical knowledge, promoting care in the prevention and treatment necessary to patients with the multidisciplinary team and the family.

The nurse is fundamental in this process and the most appropriate to manage actions and raise healthcare quality. The prevention of pressure injuries is linked to the nursing team's action, making scientific knowledge essential for the promotion of care aimed at preventing these injuries. Studies reviewed brought difficulties to using preventive measures: the lack of knowledge of the professional, deficiency of continued education in health institutions, and the absence of the implementation of the Nursing Care Systematization based on the guidelines of good practices<sup>15</sup>.

## Final considerations

Studies analyzed showed a deficiency in nurses' knowledge on PI prevention, highlighting the importance of preventive actions established on evidence-based institutional protocols. Nurses promote skin integrity by implementing PI etiology knowledge, risk factors associated with their development, and the use of specific protocols that are easily validated, making clinical judgments, and applying preventive actions.

Nurses must know the entire process that involves the treatment of the patient. The development of protocols that follow an order in the evaluation, classification, monitoring, and reassessment is key to success in prevention strategies.

The present study had limitations in terms of its sample size since few studies that addressed nurses' knowledge and actions at the prevention of pressure injuries were published in the last five years. Studies that addressed injuries' treatment were not considered to maintain focus on nurse knowledge and measures adopted only for injuries avoidance.

It is hoped that findings can be applied to patient care, supporting nurses in implementing preventive measures to avoid pressure injuries occurrence.

### Author contributions

Santos MSM, Alves MBG, and Sousa ICA participated in the conception, design, sampling, analysis, data interpretation, and writing of the manuscript. Calasans MT participated in the conception, guidance, design, sampling, data interpretation, writing, and final review of the manuscript.

### Competing interests

No financial, legal, or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.).

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