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RISK FACTORS AND PREVENTIVE INTERVENTIONS FOR PRESSURE INJURIES IN CANCER PATIENTS

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ABSTRACT

Objective: identify and describe the risk factors for the development of pressure injuries in adult cancer patients and interdisciplinary preventive interventions. **Method:** integrative literature review. Data collection was carried out between March and April 2019 and December 2020, using the databases: BDENF; PubMed/Medline; Embase; Scopus; Cinahal and Web of Science. **Results:** the sample consisted of 16 articles published from 2008 to 2019. Among the risk factors identified, the following stand out: nutritional status, advanced age, incontinence and immobility; the interdisciplinary preventive interventions identified were: decubitus change, nutritional assessment and monitoring, skin care and use of support surfaces. **Conclusion:** further studies are needed to take a careful and assertive look at cancer patients.

DESCRIPTORS: Pressure injury. Oncology. Patient care team. Risk factors. Stomatherapy.

FATORES DE RISCO E INTERVENÇÕES PREVENTIVAS PARA LESÃO POR PRESSÃO EM PACIENTES ONCOLÓGICOS

RESUMO

Objetivo: identificar e descrever os fatores de risco para desenvolvimento de lesão por pressão em pacientes oncológicos adultos e as intervenções preventivas interdisciplinares. **Método:** revisão integrativa da literatura. A coleta de dados foi realizada no período de março e abril de 2019 e dezembro de 2020, utilizando as bases de dados: BDENF; PubMed/Medline; Embase; Scopus; Cinahal e Web of Science. **Resultados:** a amostra foi composta por 16 artigos publicados no período de 2008 a 2019. Dentre os fatores de risco identificados destacam-se: situação nutricional, idade avançada, incontinência e imobilidade; as intervenções preventivas interdisciplinares identificadas foram: mudança de decúbito, avaliação e acompanhamento nutricional, cuidados com a pele e uso de superfícies de suporte. **Conclusão:** há necessidade de mais estudos para um olhar cuidadoso e assertivo para os pacientes oncológicos.

DESCRITORES: Lesão por pressão. Oncologia. Equipe de assistência ao paciente. Fatores de risco. Estomaterapia.

FACTORES DE RIESGO E INTERVENCIONES PREVENTIVAS DE LAS LESIONES POR PRESIÓN EN PACIENTES ONCOLÓGICOS

RESUMEN

Objetivo: Identificar y describir los factores de riesgo para el desarrollo de úlcera por presión en pacientes adultos con cáncer e intervenciones preventivas interdisciplinarias. **Método:** Revisión integrativa de la literatura.

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La recolección de datos se realizó en el período de marzo y abril de 2019 y diciembre de 2020 utilizando las bases de datos: BDENF; PubMed/Medline; Embase; Scopus; Cinahal y Web of Science. **Resultados:** la muestra estuvo conformada por 16 artículos publicados en el período de 2008 a 2019. Entre los factores de riesgo identificados están el estado nutricional, la edad avanzada, la incontinencia y la inmovilidad; Las intervenciones preventivas interdisciplinarias identificadas fueron reposicionamiento, evaluación y seguimiento nutricional, cuidado de la piel y uso de superficies de apoyo. **Conclusión:** se necesitan más estudios para una mirada cuidadosa y asertiva de los pacientes oncológicos.

DESCRIPTORES: Lesión por presión. Oncología. Equipo de salud interdisciplinario. Factores de riesgo. Estomaterapia

INTRODUCTION

The cancer patient, due to the severity of his health condition, may experience limitations in his activities of daily living. Such changes can alter their sensory perception and cause impairment in mobility, predisposing the patient to the development of skin lesions, highlighting, among them, pressure injury (PI)[1].

PI is defined as "localized damage to the underlying skin and or soft tissues, usually on a bony prominence or related to the use of a medical or other device". The lesion can appear on intact skin or as an open ulcer and can be painful, occurs as a result of intense and /or prolonged pressure in combination with shear, being classified according to severity in stages 1 to 4, unstageable PI and deep tissue PI. There are still two additional categories: medical device related pressure injury (MDRPI) and mucous membrane PI[2,3].

It is known that PI is a major health problem in hospital environments and in communities, marked by high prevalence and incidence worldwide[1,4]. However, articles on PI in cancer patients are scarce.

Some factors related to cancer, especially when the disease is in an advanced stage, favor the appearance of PI[1,5]. Among these factors, there is a decrease in the ability to move around, loss of nutrients and proteins due to hypermetabolism and neoplastic cachexia. In addition, most of them are older patients, undergoing typical physiological changes, such as delayed granulation, the interconnection of collagen fibers and poor vascularization, thus decreasing skin resistance. These changes are even more pronounced in cancer patients, since the use of antineoplastic agents causes dermal, epidermal and collagen alterations[5].

Notoriously, the fragility and the large number of risk factors associated with the populations of cancer patients in palliative care have the highest incidence of all types of wounds, among which PI predominates, comprising up to 60%[6].

Other factors associated with the appearance of PI in cancer patients are related to defects in healing caused by chemotherapy, since this can promote the occurrence of spinal aplasia, anemia, agranulocytosis and low productivity of platelets, providing conditions for the emergence of infectious processes[5].

Many patients use immunosuppressive drugs that negatively affect the healing process, in addition to favoring a reduction in the inflammatory response and the appearance of infections. Events such as skin lacerations, surgeries, skin involvement by radiation during radiotherapy sessions and extravasation of chemotherapy drugs out of the vein are also frequent in this public, causing tegumentary changes and inflammatory processes that, together with the evolution of the disease itself, also interfere in the healing of wounds, thus prolonging the discomfort and pain caused by skin lesions, including the PI[7].

Covering interprofessional interventions for the prevention of PI, international guidelines[2] recommend a series of conducts for their prevention and assistance in the treatment, however these strategies must be adequate and adapted in their applicability with the cancer patient.

Due to its specificities, cancer patients can benefit from certain strategies, such as the use of enteral nutrition for nutritional rescue[6].However, they may not benefit from strategies such as repositioning without specific criteria for each patient, as it can generate pain, use of opioids and, consequently, less mobility in the bed, in addition to impairing their comfort[8].

The PI acquired in the hospital has received increasing attention from government, regulatory and quality agencies in the last decades, as it is an adverse event, most of the time, preventable, which has a negative and significant impact for the patient, for the team and for the health institution for adding costs generated with the treatment and increasing the hospitalization time[9,10].

It is estimated that there is an enormous expense with the treatment of PI that, many times, could potentially be avoided with effective preventive interventions[2]. The PI may worsen the initial condition of the disease, complicate the prognosis and still cause death to the patient[5].

Thinking about all the peculiar characteristics of the cancer patient, an assertive and specific look is needed to recognize the risk factors of this population, in order to implement preventive interventions.

Given the above, this study was proposed with the objective of identifying and describing the risk factors for PI in cancer patients and the interdisciplinary preventive actions that may contribute to the practice of integrated care and in an interprofessional way for this population.

METHODS

It is an integrative literature review that used the acronym PICo for the elaboration of the research question: P - population; I - Intervention; Co - Context[11], in which P = adult cancer patients; I = preventive interventions and risk factors for PI; and Co = care of an interdisciplinary health team. The search terms were constructed using the PICo model, which for "non-clinical" research represents an acronym for Patient, Investigation and Context, and which aims to simplify the construction of the research question, in addition to facilitating the research process[11].

Thus, to guide this integrative review, the following questions were asked: what are the risk factors for PI in adult cancer patients under the care of a health team? What are the interdisciplinary preventive interventions for PI in this population?

The study was carried out by searching for articles indexed in the databases of national and international literature: BDENF Enfermagem, PubMed/Medline, Embase, Scopus, Cinahal and Web of Science, in the period of March and April 2019 and in the month of December 2020. The bibliographic survey was carried out looking for the procedures currently used, through the knowledge accumulated in the publications of the last 12 years regarding the identification of risk factors for PI in adult cancer patients under the care of a health team and preventive measures for PI in these patients.

The inclusion criteria used were: articles related to the research question, published from January 2008 to December 2020, in English and Portuguese, and available in summary form and with full text (free/free access). Articles whose study population consisted of patients assisted at home by a caregiver and/or family member and other types of publications, such as theses, dissertations and letters to the editor, were excluded.

To search for the articles, the descriptors MesH - Medical Subject Headings were used: "Patient Care Team" [MesH] OR "Nursing Staff, Hospital" [MesH] OR "Medical Staff, Hospital" [MesH]/"Skin Care" [MesH] OR "Skin Ulcer" [MesH] OR "Ulcer" [MesH] OR "Pressure Ulcer" [MesH] OR "Wounds and Injuries" [MesH]/"Inpatients" [MesH] OR "Hospitals" [MesH]/"Primary Prevention "[MesH] and" Neoplasms "[MesH] .. With the combination of three or more descriptors, combined with filters available in the databases.

In order to improve the results of the study and capture more articles, the Embase database was used with an entree[12], in which the synonyms of the MeSH descriptors were added according to the following example: EMBASE=SourcesEmbase, MEDLINE Query('decubitus':ti OR 'decubitus':ab OR 'pressure ulcers':ti OR 'pressure ulcers':ab OR 'pressure injuries':ti OR 'pressure injuries':ab) AND ('neoplasm' OR neoplasm:ti OR neoplasms:ab OR cancer:ti OR cancer:ab) AND ('hospital patient' OR inpatient:ti OR inpatient:ab). Were retrieved 53 articles by reading the title, 46 after reading the title and abstract, and 43 were excluded after reading the full article.

The study selection process was carried out in relation to the total number of studies retrieved in the searches. Two different researchers and individually analyzed the articles by title and abstract, identifying the articles relevant

to the topic. By means of a consensus between the two researchers and according to the inclusion and exclusion criteria, the articles to be read in full were selected. The studies were submitted to the evaluation of their scientific quality through the classification of the levels of evidence (Table 1), carried out according to the definitions published by Melnyc[13] in 2005.

Table 1. Levels of evidence. São Paulo (SP) – 2021.

Evidence Level	Description of the evidence level
I	Evidence from systematic review or meta-analysis of all relevant randomized controlled clinical trials or from clinical guidelines based on systematic reviews of randomized controlled clinical trials.
II	Evidence derived from at least one well-designed randomized controlled clinical trial.
III	Evidence obtained from well-designed clinical trials without randomization.
IV	Evidence from well-designed cohort and case-control studies.
V	Evidence originating from a systematic review of descriptive and qualitative studies.
VI	Evidence derived from a single descriptive or qualitative study.
VII	Evidence from the opinion of authorities and/or reports from expert committees.

Strong evidence, such as a randomized controlled clinical trial that is considered the gold standard in Evidence-Based Practice, is still scarce in the literature. However, the absence of strong evidence does not preclude evidence-based decision-making; what is required is the best available evidence and not the best possible evidence[13].

The data extraction was carried out by the researchers through the critical evaluation of the articles and filling out a form with the following data: (1) author/year of publication; (2) title of the article; (3) title of the journal; (4) professional category; (5) objective; (6) method (study design and location, sample)/level of evidence (according to Table 1); (7) risk factors for PI; (8) preventive interventions; (9) conclusions/recommendations.

RESULTS

The search strategy used allowed the retrieval of 158 articles, of which 46 duplicates were excluded and 112 publications were selected. After analyzing the title and abstract, 70 articles were excluded. Of the 42 selected for reading in full, 18 were excluded after reading and 8 articles whose content was not available for reading in full were also excluded, totaling 16 studies that made up the final sample.

Among the 16 papers included in this study, Pubmed was the database with the most publications, totaling 5 articles (32%), followed by Web of Science and Embase, with 3 each (19%), Cinahl and BDENF Enfermagem with 2 (12%), and finally, Scopus with 1 publication.

Below is the flowchart for identification, selection and inclusion of articles (Fig. 1).

The included studies were developed in 8 different countries, 7 (44%) in Brazil. There were also works carried out in the United States of America (19%), Portugal, Italy, Canada, France, Jordan and Australia (all of them with 1 study each). English was the language used in 10 studies (62%), while 6 were published in Portuguese (38%).

Regarding the study site, 12 (75%) were performed in a hospital environment, 3 (21%) were performed in a Palliative Care Clinic environment and 1 (7%) in Home Care.

The sources of publications covered 8 (57%) journals in the nursing area, 4 (28%) in medical and nursing journals and 2 (14%) in the medical area. As for the authors, 8 (57%) were written by nurses, 3 (21%) by physicians and nurses, 2 (14%) by physicians and 1 (7%) by nurses with other professionals.

The studies had different characteristics in relation to the types of study, methodological design and levels of evidence, as shown in Table 2.

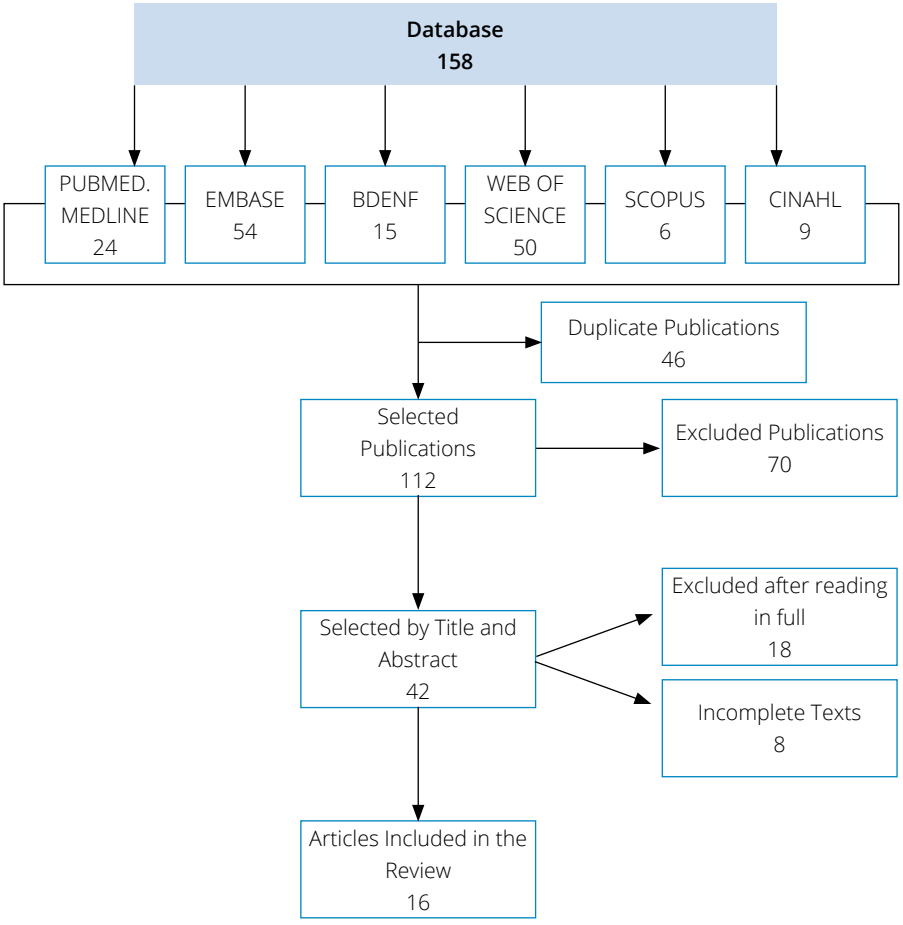

Figure 1. Flowchart for identification, selection and inclusion of articles. São Paulo (SP) − 2021.

Table 2. Summary of the articles included in the study. São Paulo (SP) − 2021.

Title of the article	Author/year/base	Kind of study	Level of evidence	Journal
Analyses of pressure ulcer point prevalence at the first skin assessment in a Portuguese hospital.	Sardo[14], 2016 / Embase	Retrospective cohort study	IV	Journal of Tissue Viability
Burden of Geriatric Events Among Older Adults Undergoing Major Cancer Surgery.	Tan[15], 2016/ Embase	Retrospective study	IV	Journal of Clinical Oncology
Pressure ulcers in cancer palliative care patients.	Hendrichova[16], 2010/ PubMed	Retrospective study	IV	Palliative Medicine
Wounds and survival in cancer patients.	Maida[17], 2009 / PubMed	Observational prospective study	IV	European Journal of Cancer
Prevalence of pressure ulcers in hospitals in Brazil and association with nutritional status - A multicenter, cross-sectional study.	Brito[18], 2013 / Embase	Cross-sectional multicenter study	VI	Nutrition

continue...

Table 2. Continuation...

Title of the article	Author/year/base	Kind of study	Level of evidence	Journal
Inception and validation of a pressure ulcer risk scale in oncology.	Fromantin[19], 2011/ Pubmed	Descriptive methodological study	VI	Journal of Wound Care
Pressure Injuries Among Hospitalized Patients With Cancer Prevalence and Use of Preventive Interventions.	Aljezawi[4], 2018/ WOS	Multicenter, cross-sectional prevalence survey	IV	Journal of Wound, Ostomy and Continence Nursing
Análise das subescalas de Braden como indicativos de risco para LP.	Menegon[20], 2012/ WOS	Cross-sectional, retrospective study	IV	Texto & Contexto Enfermagem
General Principles and Approaches to Wound Prevention and Care at End of Life: An Overview.	Langemo[21], 2012 / Cinahl	Systematic review	I	Ostomy Wound Manage Journal
Pressure injury can occur in patients undergoing prolonged head and neck surgery.	Wrigth[22], 2014 / PubMed	Prospective observational	VI	Journal of Oral and Maxillofacial Surgery
Efetividade do Protocolo Prevenção de Lesões de Pele em Cirurgias Urológicas Robóticas.	Angelo[23], 2017/ Cinahl	Documentary, retrospective, with quantitative analysis of data	VI	Revista SOBECC
Úlceras de Pressão em Pacientes de Cuidados Paliativos em Casa: Prevalência e Características.	Queiroz[24], 2014 / WOS	Descriptive, cross-sectional study	VI	Revista da Escola de Enfermagem da USP
Assistência de enfermagem a pacientes oncológicos com risco de úlcera por pressão em um projeto de extensão universitária.	Moraes[25], 2016 / PubMed	Descriptive research: experience report	VII	Revista Em Extensão
Never Say Never: A Descriptive Study of Hospital-Acquired Pressure Ulcers in a Hospital Setting.	Bry[26], 2012 / Scopus	Prospective and retrospective descriptive	VI	Journal of Wound, Ostomy and Continence Nursing
Diarreia: Dermatite associada à incontinência e lesão por pressão.	Saurusaitis[27] et al, 2019 BDENF Enfermagem	Quantitative, descriptive, exploratory, retrospective.	VI	Revista de Enfermagem da UFPE on line.
Incidência de lesão por pressão em unidade de terapia intensiva oncológica.	Jomar[1] et al, 2019 BDENF Enfermagem	Longitudinal	VI	Revista Brasileira de Enfermagem

Of the sample of 16 studies, all addressed the risk factors for PI, 14 (88%) addressed both risk factors and preventive interventions for adult cancer patients and 2 articles (12%) did not propose preventive interventions.

The description of risk factors associated with cancer patients and preventive interventions for PI are presented in Tables 3 and 4, together with the frequency that each of these factors was considered in the studies.

Table 3. Frequency of risk factors for the development of pressure injuries in cancer patients, present in the articles included in the study. São Paulo (SP) – 2021.

Risk factor	Number of articles (%)	Study locations
Advanced age	12 (75%)	Hospital/Oncology hospital/Palliative care services /Home palliative care
Immobility	8 (50%)	Hospital/Oncology hospital/Palliative Care Services
Malnutrition	8 (50%)	Hospital/Oncology hospital/Palliative care services / Home palliative care
Incontinence	6 (38%)	Hospital/Home palliative care
Gender	6 (38%)	Hospital/Palliative care services/Home palliative care
Low hemoglobin/anemia	4 (25%)	Hospital/Palliative Care Services/Oncology Hospital
Shearing/tissue damage	3 (19%)	Hospital
Heart problems	3 (19%)	Hospital/Home palliative care
Prolonged hospital stay	3 (19%)	Hospital/Palliative care services
Respiratory diseases	2 (12%)	Hospital
Low sensory perception	2(12%)	Hospital/Palliative care services
Functional decrease	2 (12%)	Palliative care services/Home palliative care
Use of sedatives	2 (12%)	Hospital/Palliative care services
Other previous injuries/tissue damage	2 (12%)	Palliative care services/Home palliative care
Neurological disorders	2 (12%)	Hospital
Moisture	2 (12%)	Hospital/Oncology hospital
Thinness	2 (12%)	Oncology hospital/Home palliative care
Evolution of cancer/low performance	2 (12%)	Hospital/Palliative care services
Infections/fever	2 (12%)	Hospital
Diabetes	2 (6%)	Hospital
Hypertension	2 (6%)	Hospital
Socioeconomic profile	1 (6%)	Hospital/Home palliative care
Lowest score on the Braden scale	1 (6%)	Hospital
Use of opioids	1 (6%)	Palliative care services
Poor tissue perfusion	1 (6%)	Palliative care services
Palliation or terminality	1 (6%)	Hospital
Physical degeneration	1 (6%)	Oncology hospital
Pain	1 (6%)	Oncology hospital
Impaired skin oxygenation/ previous injuries	1 (6%)	Hospital
Decreased serum albumin	1 (6%)	Hospital
Crispy skin	1 (6%)	Palliative care services
Prolonged surgery time	1 (6%)	Hospital
Inadequate positioning	1 (6%)	Hospital
Use of vasoactive drugs	1 (6%)	Hospital
Smoking/alcoholism	1 (6%)	Home palliative care
Organ failure	1 (6%)	Hospital

Table 4. Synthesis of preventive interventions for the development of pressure injuries in cancer patients, present in the articles included in the study. São Paulo (SP) – 2021.

Preventive interventions	Number of articles(%)	Study locations
Repositioning (change of position)	7 (50%)	Hospital /Palliative care services/Oncology hospital
Support devices/pressure reducers	7 (50%)	Hospital /Palliative care services/Oncology hospital
Nutritional monitoring	7 (50%)	Hospital/Oncology hospital
Skin hydration	4 (29%)	Hospital/Palliative care services
Injury monitoring	3 (21%)	Hospital/Palliative care services/Home palliative care
Initial assessment of risk factors	2 (14%)	Hospital/Palliative care services
Skin protectors	2 (14%)	Hospital/Palliative care services
Cleansing the skin with pH neutral products	2 (14%)	Hospital/Palliative care services
Control of skin moisture	2 (14%)	Hospital
Educational actions	2 (14%)	Hospital/Home palliative care
Specific dressings	1 (7%)	Palliative care services
Using the Braden scale	1 (7%)	Hospital

DISCUSSION

From the results presented in this study, it was possible to observe that cancer patients can, due to several factors, be extremely vulnerable to the development of PI. In relation to the risk factors for PI, the international guidelines for prevention and treatment[2] highlight a series of events whose impacts must be considered, such as immobility, previous presence of lesions, perfusion and oxygenation of deficient skin, impaired nutritional status, advanced age, among others. All of these risk factors were present in cancer patients and were highlighted in the articles that comprised this integrative review.

The risk factor for PI most pointed out in the studies selected in this review was advanced age. This is because the incidence of cancer in the elderly is much higher, representing a considerable percentage of bedridden patients with cancer who are more susceptible to the development of PI[15]. In addition, in general, the elderly are at a higher risk of impaired skin integrity, since with advancing age there is a decrease in turgidity and skin elasticity. When affected by neoplasms, these patients may have an aggravated condition and the appearance of lesions favored, also, by the addition of changes in immunological mechanisms and tactile sensitivity that could function as intrinsic protective barriers[4],so that for this audience the correct diagnosis of the lesions, as well as the constant monitoring of both skin lesions and the general conditions of patients is essential for their prevention.

International guidelines[2] recommend using risk assessment scales at the time of admission and frequently during hospitalization. Studies have shown that the predictive validity of these scales can be superior to clinical judgment, one example being the Braden scale[19,28]. The correct risk assessment for PI with the use of validated scales, in addition to the skin assessment, enables a more assertive management, be it the prevention or treatment of PI. It is the role of all health professionals who deal with direct care with the patient to observe and evaluate the integrity of the skin in each intervention, thus ensuring interdisciplinary work and comprehensive care[29].

Two other risk factors, which were the second most cited in the articles of this integrative review, were nutritional deficiency and immobility. The studies analyzed highlighted nutritional assessment as a routine on admission and its exquisite monitoring during hospitalization, essentially focusing on patients who are at higher risk for PI. In a study conducted in Brazil, with a sample of 473 patients in which cancer was the most prevalent diagnosis (23.5%), it was

evidenced that the nutritional aspect has been shown to be strongly related to the risk of developing PI due to its negative impact on wound healing[18]. In a second study carried out in Brazil, a cross-sectional multicenter study, it was pointed out that nutritional deficits, such as cachexia and anorexia, and the lack of control of electrolytes caused by chemotherapy and radiotherapy are directly related to the appearance of injuries and are the cause of morbidity and mortality among cancer patients[20]. In addition, on the "nutrition" subscale of the Braden scale, patients with neoplasia had a lower score (higher nutritional risk)[20].

In another study also carried out in hospitals in Brazil, with a sample of 187 patients, in which 13.4% of them had a diagnosis of neoplasms, it was observed that in more than 60% of patients there was identification of inadequate nutrition. In this study, patients with neoplasms had a worse nutritional status, which can be explained by a catabolic state, anatomical alteration of an organ caused by the disease (eg esophageal cancer, difficulty in swallowing) or by the treatment itself (radiotherapy, chemotherapy) that can prevent proper nutrition[20].

The PI and malnutrition are an extremely inconvenient combination for patients, especially those with advanced age and terminal illnesses, so it is essential as a preventive intervention for cancer patients that the nutritional risk assessment for the development of PI is made at the time of admission or at most, in the first week of hospitalization and after that as part of the routine[18].

As for immobility, it is usually directly related to the progression of the disease. Cancer-related pain is often severe and requires the use of opioid analgesics, which can reduce patient mobility due to the effect of drowsiness[4], early repositioning and mobilization is essential as a preventive measure, as well as the correct use of skin protectors and pressure reducing devices, such as heel elevation, use of support surfaces for positioning, among others[2].

Six studies (38%) indicated that the patient's gender may be a risk factor for the development of PI, however 4 pointed to the male gender and 2 to the female gender. The gender of the patient, however, appeared to influence more or less in some studies due to the prevalence of cancer in these (prostate in men and breast in women), so that no correlation was found in this factor directly related to the onset of PI[14,15,17,20,24,25].

Another risk factor identified as frequent for cancer patients was urinary and fecal incontinence. In a descriptive cross-sectional study carried out in Goiânia with 90 adult individuals with advanced cancer, it was identified that urinary and fecal incontinence was evidenced as an important risk factor due to the increase in moisture and local acidity of the skin[24], so that local cleaning with products with slightly acidified pH and the decrease in humidity in these regions are important measures to prevent the development of PI in patients in these conditions. In a study in Brazil, with a sample of 187 hospitalized patients, it was shown that in relation to the Braden scale, the subscale humidity (44.4%) is one of the items presented by patients among the greatest risk factors for development of PI[20]. Thus, preventive interventions to control humidity and incontinence are necessary.

There is also, in many cases of incontinence, a relationship between these conditions and inadequate nutrition, as pointed out in a study conducted with patients admitted to the adult intensive care center of an oncology hospital in Rio de Janeiro, in which 84% of cancer patients had the symptoms of the 2 factors together[27].

Anemia or low hemoglobin, mentioned in 4 (25%) of the studies, was also an important attribute of increased probability for the development of PI, usually reported in the form of fatigue[4,21,23,26]. This can, in most cases, be attributed to chemotherapy, immunosuppression and circulating catabolic factors, and nutritional monitoring and monitoring of patients under this condition is essential as preventive measures.

Shear and tissue damage were also relevant factors present in 3 (19%) of the studies analyzed, being related to other risk factors, such as malnutrition, immobility and dryness of the skin, and cancer is often responsible for causing these conditions, through decrease in activity levels and loss of muscle mass, favoring the development of injuries, so that, with the frequency of these events, measures such as repositioning the patient, the use of reducing and protective devices should be recommended[2,30].

Major oncological surgeries have also been identified as a risk factor for PI. Often, patients with the most different types of cancers are subjected to treatments that involve long-term surgeries, a fact of extreme importance for the study, since scientific evidence show that surgical patients, in general, are predisposed to the development of

PI due to immobilization time, increased surgical time, type of surgery, anesthesia, surgical positions and positioning (extrinsic factors)[4]. Oncological patients still usually have intrinsic factors already mentioned in this discussion, such as advanced age and impaired nutritional status, combined with chronic diseases, such as diabetes mellitus, vasculopathies, neuropathies, hypertension and anemia, which further worsen the risks when undergoing long surgeries[22]. There are studies that propose the application of specific protocols for the prevention of PI in surgical patients[23].

Another highlight in the articles identified are cancer patients in palliative care. The incidence and prevalence of skin lesions in individuals at the end of life due to several comorbidities besides cancer are poorly explored, but it is estimated that PI occurs in at least one third of patients undergoing palliative care. At the end of life, health professionals/interprofessional staff should assist the patient and family in deciding whether the goals of injury care should focus on healing or palliation. In end-of-life patients, dressings should be used for general comfort, to prevent skin exposure to wound exudate and to reduce the number of potentially painful dressing changes[16,21].

In a study conducted in Italy, a review of 414 medical records of hospitalized cancer patients, the author points out that the repositioning of these patients may cause pain or be limited by other factors, which may conflict with palliative care priorities. This study also notes that the strategies commonly used for the prevention and treatment of PI in terminally ill patients can impair their comfort[16]. Repositioning should be used in daily clinical practice with cancer patients, considering individual assessment, based on their clinical condition and prognosis, and respecting their choices. Interventions such as the use of skin protectors, pressure-reducing mattresses and pillows, prophylactic foam and silicone dressings can be used to improve the primary goals of palliative care in cancer patients at risk for PI[16].

It was found in the present study that only one study proposed early mobilization. Bed-rested individuals should move to a sitting position and walk as quickly as they can tolerate. Programming of walking can help to compensate for clinical deterioration, which is often visible in individuals undergoing prolonged bed rest periods[4]. Noting that the patient's low mobility is related to the presence of PI and lower quality of life, it is necessary to stimulate the patient's functionality.

Another pointed risk factor observed in a systematic review conducted with 10 studies and 108 patients was that the pain caused by PI interferes with movement, functionality and participation in activities. It was also noticed that experiencing pain can compromise functionality, as it restricts mobility[31]. Thus, pain management is something that should be considered when instituting PI prevention protocols.

Other studies analyzed in this work have proposed different preventive interventions, such as educational actions with patients, family members and health professionals[24,25,29].

There are controversies as to whether PI occur due to neglect of the care provided or whether they are unavoidable and are part of the natural history of advanced disease. Although there are controversies, there is a growing consensus that they are, in most cases, predictors of imminent death and not a direct cause of death[32].

In view of the results found in the present integrative review, it is observed that cancer patients present several risk factors for PI, requiring the recognition of these risks by the entire health team so that preventive interventions can be implemented, respecting the specificities and characteristics of this population, as well as their comfort.

It is noteworthy here that the main limitation for carrying out this research was the lack of articles that correlate risk factors for the development of PI, as well as measures for prevention with the intrinsic aspects presented by cancer patients.

CONCLUSION

According to the results presented in this review, the risk factors for the development of PI in cancer patients, in general, were the same factors highlighted in the international guidelines for the prevention and treatment of PI.

The advanced age factor was the most risk factor cited in the studies, but it is more related to the frequency with which oncological diseases are present in these patients.

Nutritional deficiency is a factor of known importance for the development of PI and is directly related to the intrinsic aspects involving cancer patients, so that the correct nutritional assessment together with the continuous monitoring of this variable, becomes essential for the prevention of injuries. in these patients.

Tissue damage resulting from treatments such as chemotherapy and immunosuppression, as well as urinary and fecal incontinence are risk factors for PI, very common in cancer patients, so that the correct assessment of the skin and lesions, in the first case, and the cleaning of the skin with slightly acidified pH products and local humidity control are essential to prevent them.

Cancer patients undergoing surgery, prolonged hospitalizations and under palliative care are more exposed to the risk factors that cause these injuries and need a broad and specific look from the interdisciplinary team.

More traditional measures for the prevention of PI, such as repositioning and pressure-reducing support surfaces are the most used measures for cancer patients, so they continue to be recommended through analysis of each case.

AUTHORS' CONTRIBUTION

Conceptualization: Lima AR and Palmer CR; Methodology: Lima AR, Palmer CR and Nogueira PC; Research: Lima AR and Palmer CR; Writing - First version: Lima AR and Palmer CR; Writing - Review & Editing: Lima AR, Palmer CR and Nogueira PC; Supervision: Nogueira PC.

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Not applicable

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