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MULTIPLE RISK FACTORS AND PREVENTIVE STRATEGIES OF PRESSURE ULCERS: SYSTEMATIC REVIEW

MÚLTIPLOS FATORES DE RISCOS E ESTRATÉGIAS PREVENTIVAS DAS ÚLCERAS POR PRESSÃO: REVISÃO SISTEMÁTICA

MÚLTIPLES FACTORES DE RIESGO Y ESTRATEGIAS PREVENTIVAS DE ÚLCERAS POR PRESIÓN: REVISIÓN SISTEMÁTICA

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ABSTRACT

Objective: to describe the main risk factors for development of pressure ulcers and the main preventive measures of health, the Brazilian scientific production in the period 2007-2012. **Method:** systematic review aimed to answer the question << *What are the main risk factors and preventive measures for pressure ulcers evidenced by scientific publications?* >> 13 productions were selected in the databases LILACS and BDENF and virtual library SciELO. We used the instrument of data collection and interpretation of data, where two categories emerged presentation. **Results:** the main risk factors cited were: decreased mobility, obesity, advanced age, etc. Preventive measures were change in position, use of scales for assessing the degree of risk, use of support surfaces for pressure redistribution. **Conclusion:** articles readied important risk factors and preventive measures relevant for the prevention of pressure ulcers. **Descriptors:** Pressure Ulcer; Decubitus Ulcer; Nursing.

RESUMO

Objetivo: descrever os principais fatores de risco para o desenvolvimento de úlcera por pressão e as principais medidas preventivas dos profissionais de saúde, nas produções científicas brasileiras, no período de 2007 a 2012. **Método:** revisão sistemática com vistas a responder a questão << *Quais os principais fatores de riscos e medidas preventivas para úlceras por pressão evidenciadas pelas publicações científicas brasileiras?* >> Foram selecionadas 13 produções nas bases de dados LILACS e BDENF, e na biblioteca virtual SciELO. Foi aplicado o instrumento de coleta de dados e interpretação dos dados, onde se emergiram duas categorias de apresentação. **Resultados:** os principais fatores de risco citados foram: diminuição da mobilidade, obesidade, idade avançada, etc. As medidas preventivas foram: mudança de decúbito, uso de escalas para avaliação do grau de risco, uso de superfícies de apoio para a redistribuição da pressão. **Conclusão:** os artigos aprontaram importantes fatores de riscos e medidas preventivas relevantes para prevenção das úlceras por pressão. **Descritores:** Úlcera por Pressão; Úlcera por Decúbito; Cuidados de Enfermagem.

RESUMEN

Objetivo: describir los principales factores de riesgo para el desarrollo de úlceras por presión y las principales medidas de prevención de la salud, la producción científica brasileña en el período 2007-2012. **Método:** revisión sistemática procuró responder a las pregunta << *¿Cuáles son los principales factores de riesgo y medidas preventivas para las úlceras por presión evidenciadas por las publicaciones científicas?* >> 13 producciones fueron seleccionadas en las bases de datos LILACS y BDENF y biblioteca virtual SciELO. Se utilizó el instrumento de recolección de datos e interpretación de datos, donde emergieron dos categorías presentación. **Resultados:** los principales factores de riesgo citados fueron: disminución de la movilidad, la obesidad, la edad avanzada, etc. Las medidas preventivas fueron el cambio en la posición, el uso de escalas para evaluar el grado de riesgo, el uso de superficies de apoyo para la redistribución de presión. **Conclusión:** los artículos se preparaban importantes factores de riesgo y medidas de prevención pertinentes para la prevención de úlceras por presión. **Descriptor:** Úlcera por Presión; Úlceras de Decúbito; Enfermería.

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INTRODUCTION

Pressure ulcers (PU) are also known as pressure sores and decubitus ulcers, can be defined as a localized lesion of the skin, caused by the interruption of blood supply to the area, usually caused by pressure, shear or friction, or a combination these factors.¹

Pressure ulcers are classified into four stages. In stage I pressure ulcer presents with skin intact, with a reddened area located not whitens, usually over a bony prominence. Pressure ulcers in stage II is the partial loss of thickness dermal ulcer appears as shallow bed with pale red color without slough or as a blister filled with serous exudates, intact or broken open. In stage to stage III pressure ulcer is characterized by loss of tissue in full thickness, where the subcutaneous fat can be displayed without exposure to bone, tendon or muscle and slough may be present without affecting the identification of depth of tissue loss. Already in pressure ulcer stage IV is the total loss of tissue with exposed bone, tendon or muscle, with possible presence of slough or scab in some parts of the bed/center of the wound. It is noteworthy that there are ulcers that cannot be classified to be debrided to as the lesion with total loss of tissue, in which the base is covered with slough (yellow, brown, gray, brown or green) and no or when scab (brown, brown or black) in the center of the lesion.^{1,2}

The skin tolerance for pressure is influenced by extrinsic factors including skin exposure to excessive moisture, friction and shear and intrinsic factors such as nutritional deficiency, advanced age and decreased arteriolar pressure.³

The high incidence and prevalence of pressure ulcers in hospitals result in complications that interfere with the recovery of patients, such as infections that prolong the time of admission, pain and physical suffering. Thus, there is an increased workload of the nursing staff in addition to increasing the costs of treatment.⁴

The presence of pressure ulcers has been presented as an indicator of quality of care of health services and most of them can be prevented by adopting appropriate measures and prevention education targeted at professionals, patients and families.⁵ The main behaviors can be adoption of scales and protocols, seeking identification of risk factors, changing positions, proper nutritional support, among others.⁶

Upon what has been mentioned, it appears that pressure ulcers still represent a serious problem for health services, not only by the

high incidences, but also by increased mortality and costs from them. With this stresses, the importance of the nursing staff, knowledge of risk factors and use of preventive measures daily and systematized, in order to manage the comprehensive care, directing behaviors aimed at meeting the real needs of the patient. To do this, nurses need beyond the specific scientific knowledge, a lot of sensitivity with respect to monitoring and maintaining the integrity of the skin of patients under their care.⁷

Thus arose the interest in conducting the study which issue << What are the main risk factors and preventive measures for pressure ulcers evidenced by scientific publications? >>

Considering the issue presented, the objective of this study is:

- To describe the main risk factors for development of pressure ulcers and the main preventive measures of health, the Brazilian scientific production in the period 2007-2012.

METHOD

This is a descriptive study with a qualitative approach, like systematic review of scientific production on the risk factors and preventive measures of pressure ulcers.

The qualitative methodologies prestige, in general, the analysis of micro-processes through the study of the individual and social activities in group. Conducting an intensive examination of the data, both in breadth and in depth, qualitative methods treat social units investigated as wholes that challenge the researcher.⁸

The survey was conducted in the collection of the Virtual Health Library (VHL), using the following databases Literature Latin American and Caribbean Health Sciences (LILACS) and Database of Nursing (BDENF) and Virtual Scientific Library Electronic Library Online (SciELO). The descriptors were established: pressure ulcers, decubitus ulcer and nursing care.

Inclusion criteria were full articles available online, the ease and availability of the item, in the period 2007-2012, in Portuguese. Exclusion criteria were articles published between years not established to research, unavailable online and did not approach this topic. Soon after, we used the instrument collected data containing relevant information: article title, authors' names, year of publication, database and magazine published, objectives, methodological approach, location of study, research subjects and Description risk factors and preventive measures for pressure ulcers.

According to the strategies defined in the first moment of the search were used and the descriptors analyzed separately, which was

found to exist a large number of publications on the subject proposed, listed in the following table.

Virtual Health Library (VHL)				
Descriptors	Scielo	LILACS	BDENF	Total
Pressure ulcer	65	301	122	488
For decubitus ulcer	13	239	115	367
Nursing care	595	6.880	520	7995

Figure 1. Scientific productions found in databases chosen within the VHL, individually.

In the second, there was the association of descriptors in order to approach the scientific productions for, ie, those that could

contribute to the elucidation of the goals presented.

Virtual Health Library (VHL)				
Descriptors	Scielo	LILACS	BDENF	Total
Pressure ulcer and nursing care	7	51	46	104
Decubitus ulcer and nursing care	2	48	43	93

Figure 2. Scientific productions found in databases chosen within the VHL, associated in pairs.

After identifying the items, were read in full in order to identify those that were related to the research question. Thus, some studies were excluded for duplication in databases or do not match the question of the study, resulting in 13 research papers that wrote the bibliography potential, no dissertation and thesis.

After this selection, the instrument was used to collect data, and then there were the interpretations of the data, where two categories emerged presentation or themes, namely: "Major risk factors for development of pressure ulcers" and "preventive measures for pressure ulcers."

derived from clinical guidelines based on systematic reviews of randomized controlled trials, level 2, evidence derived from at least one randomized controlled trial as well delineated, level 3 evidence obtained from well-designed clinical trials without randomization; level 4 evidence from cohort and case-control well delineated, level 5 evidence originating review systematic descriptive and qualitative studies, level 6, evidence derived from a single descriptive or qualitative study, level 7, evidence from opinion of authorities and/or report of expert committees.⁹

The articles were classified according to clinical evidence as follows: level 1, evidence from systematic review or meta-analysis of all relevant randomized controlled trials or

RESULTS AND DISCUSSION

Bibliografia potencial						
Author	Year	Scientific Production	Methodological Approach	Level of evidence	Database	Magazines and
Medeiros ABF; Lopes CH. A. F.; Jorge MSB. ¹⁰	2009	Analysis of prevention and treatment of pressure ulcers proposed by nurses	Descriptive bibliographic survey of nursing journals indexed in LILACS and MEDLINE.	Level 5	SCIELO	Revista Escola de Enfermagem - USP
Cremasco MF; Wenzal F; Sardinha FM. <i>et al</i> ¹¹	2009	Pressure ulcers: risk and severity of patient and nursing workload	Cross-sectional study conducted in three ICU from a hospital.	Level 4	SICELO	Acta Paul Enfermagem
Anselmi ML.; Peduzzi M.; Junior IF. ¹²	2009	Incidence of pressure ulcers and nursing actions	Prospective cohort study with medical-surgical patients.	Level 4	SCIELO	Acta Paul Enfermagem
Lise F. Silva L. C. ¹³	2007	Pressure ulcer prevention: by actually instrumenting the nursing and guiding the family caregiver	Qualitative and descriptive study.	Level 6	LILACS	Acta Sci. Health Sci.
Lima ACB; Guerra DM. ¹⁴	2011	Evaluation of the cost of treatment of pressure ulcers in hospitalized patients using industrialized dressings	Observational/longitudinal /descriptive study.	Level 6	LILACS	Ciência & Saúde Coletiva
Costa IG; Caliri M HL. ¹⁵	2011	Predictive validity of the Braden scale for intensive care patients	Prospective descriptive study.	Level 6	LILACS	Acta Paul Enfermagem
Araújo TM; Moreira MP; Caetano JA. ¹⁶	2011	Assessment of risk for pressure ulcer in critical patients	Study of transverse type with a quantitative approach.	Level 6	LILACS	Rev. Enferm. UERJ
Fernandes LM; Caliri; MHL; Haas VJ. ¹⁷	2011	Effect of educational interventions on the knowledge of nursing professionals on the prevention of pressure ulcers	Quantitative study with comparative descriptive design.	Level 5	SCIELO	Acta Paul Enfermagem
Valença MP; Lima PO; Pereira, MM; <i>et al</i> ¹⁸	2010	Nurses ' perception about the prevention of pressure ulcers in a teaching hospital of the city of Recife	Descriptive study of transverse cohort, with a quantitative approach.	Level 4	BDENF	Revista de Enfermagem UFPE
Stein EA; Santos, JLG; Pestana AL; <i>et al</i> ¹⁹	2012	Actions of the nurses in the management of care for prevention of pressure ulcers in intensive care unit	Exploratory-descriptive study with a qualitative approach.	Level 6	BDENF	Revista de pesquisa: cuidado é fundamental-online
Sanders LSC; Pinto FJM. ²⁰	2012	Occurrence of pressure ulcer in patients admitted to a public hospital of Fortaleza-CE	Cross-sectional study, documentary and analytical quantitative in nature.	Level 5	BDENF	Revista Mineira de Enfermagem
Passos SSS; Sadiguski D. Carvalho ESS. ²¹	2010	Promotion of the integrity of the patient's skin with dependence to mobility: speech of a nursing staff	Qualitative, exploratory, descriptive study.	Level 6	BDENF	Revista de Enfermagem UFPE
Furman GF; Rocha AF;Guariente MH D. <i>et al</i> ²²	2010	Pressure ulcers: incidence and risk factors in patients at a university hospital	Descriptive study, with a quantitative approach.	Level 6	BDENF	Revista de Enfermagem UFPE

Figure 3. Description of selected scientific articles after reading.

After analyzing literature potential, there was a revision exploratory, making the identification of the period of publications, journals, state the country in which the research was conducted, the types of studies and profiles of professionals who conducted the research.

All productions are researched scientific articles. There were no dissertations and thesis. 69% have a quantitative approach, qualitative approach have 23% and 8% literature review. Regarding the publication year, 8% were published in 2007, 23% in 2009, 23% in 2010, 31% in 2011, 15% in 2012. The productions were published in the following journals: 30% in the journal Acta Paul Nursing, 23% in REUOL - Journal of Nursing UFPE, 8% Research Magazine: Watch Online Elementary, Rev. Enferm.UERJ 8%, 8% Rev. Mining Nursing ., 8% HelthSci Acta Sci., 8% Rev. Esc Enf. USP., 8% Science and Health. As for the

authors, it was found that the members of the research were mostly nurses with varying degrees of titration. Regarding the location where they were produced surveys, 23% were produced in the state of Ceará, 23% in São Paulo, 15% in Bahia, 15% in Pernambuco, 8% in Paraná, 8% in Rio Grande do Sul and 8% in Santa Catarina. It is observed that 53% were performed in the Northeast, showing a greater interest in the subject by researchers in this area.

◆ **Main Topic: Major risk factors for development of pressure ulcers**

The pressure ulcers can be developed by a number of factors, both internal and external to the patient. The extrinsic factors (external) can develop in isolation or combined. They are: pressure, shear and friction ¹. The risk of tissue injury may develop pressure also through intrinsic (internal), or factors that comes from the

Coqueiro JM, Brito RS.
strategies...

Multiple risk factors and preventive

patient. They are: poor nutrition, advanced age, low arteriolar pressure, reduced mobility, among others.²²

Only 38 % of surveyed scientific productions showed the main risk factors for development of pressure ulcers. They are: decreased mobility, obesity, advanced age, duration of surgery, comorbidities such as hypertension and diabetes mellitus, use of medications and wet or dry skin. Decreased physical mobility is considered the most important factor in the development of ulcers pressão.²⁰ It affects the ability, among others, to relieve the pressure effectively may predispose the shear and friction if the patient is confined to bed or chair. In one study in a public hospital in Fortaleza in order to investigate the occurrence of pressure ulcers, immobility was present in all subjects studied.²⁰

One aspect of reduced physical mobility is directly related to the time in which the patient undergoes a major surgery. Studies show that the time that elapses surgery is a factor that can determine the formation of a pressure ulcer. Long surgical procedures in a patient throughout the intraoperative period are kept in the same position suggests a greater incidence of injury from pressure. Friction and shear are causes of developing pressure ulcers during repositioning of patients in surgical tables¹⁶. During the immediate postoperative period, physical mobility may also be impaired due to the effects of anesthesia, pain, painkillers, infusions or drains.¹

Obesity is also identified as a risk factor for scientific production, because with the increase in body weight, there is the formation of adipose tissue, which decreases the vascularity of the skin surface and decreased mobility resulting from overweight.¹⁶

Another factor for the development of pressure ulcers is old age. In a study conducted in a public hospital in Fortaleza, it was observed that the average age of patients with pressure ulcers was predominantly elderly. The age²² contributes to reducing the elasticity, texture, cell replacement frequency and duration of the healing process, as a factor contributing to increased tissue trauma.²³

The articles surveyed also indicate the use of drugs as a predisposing factor for development of pressure ulcers. The use of sedatives and analgesics impair mobility, because, reduce the normal stimulus of pain that leads patients to try to relieve the

pressure, thus making patients more susceptible to prolonged pressure^{16,22}. The antihypertensive reduce the blood flow and tissue perfusion, making use patients that become more susceptible to pressure.¹⁶

Hypertension is cited as a factor base, often in conjunction with other metabolic disorders such as diabetes mellitus. It is understood then that hypertension increases vascular resistance, occurring along one cell hypertrophy of the muscular layer (tunica media). It promotes an ischemia and cellular hypoxia, facilitating the emergence of pressure ulcers.²² Already, in diabetes mellitus, there is the presence of peripheral neuropathy and the deficit in the healing of affected patients, which increases the risk of developing pressure ulcers.¹⁶

The state in which the patient's skin is found is another important point to be considered for the development of pressure ulcers. Excess moisture steepens skin, leaving its outer layers weakened and vulnerable to injury. This excessive moisture can be caused by fecal and/or urinary²². However, dry skin elasticity has decreased, a low tolerance to heat, friction and pressure, making it susceptible to rupture¹⁶.

♦ Main Topic: Preventive measures for pressure ulcers

Prevention is undoubtedly the most efficient available method acting to minimize a problem as frequent as pressure ulcers²⁴. Thus, 69% of surveyed scientific productions feature the main preventive measures to pressure ulcers, such as changing positions, the use of scales to assess the degree of risk, use of support surfaces for pressure redistribution, maintain nutrition adequate and carrying comfort using massage oils and moisturizers.

The changing position of the patient with mobility deficits is a nursing care that should be offered in order to promote comfort, prevent injuries and especially avoid skin breakdown, for this, that care must be repeated several times a day²¹. The duration in which the tissue is exposed to the pressure is a primary factor for the formation of pressure ulcers.¹⁹ For a range of base, the changes should take place usually every 2 hours for changing position of the entire body and more frequently for small position changes, such as moving a leg or perform a partial lateralization.²⁵

Although the changes are a measure of decubitus easy operation, depending only on the prescriptions and nursing interventions, the articles surveyed indicate that alternating

Coqueiro JM, Brito RS.
strategies...

Multiple risk factors and preventive

2/2 hours is a measure infeasible due to overload of activities of staff in the care of the high number of patients and increasing absenteeism. The reduced number of employees induces even a single employee move the patient unattended in care, the force used to drag the patient in bed expansions implies risk to present skin lesions in areas under pressure, this occurs during the exchange of diapers, while bathing, transferring the patient to the stretcher, among others.

The articles indicate that prevention of pressure ulcers can be used protocols and scales that serve to recognize the risk factors and program actions aimed at reducing the incidence of pressure ulcers. The three main tools of risk assessment related risk factors are the scales Braden, Gosnell and Waterlow.²⁶

The Braden Scale was developed based on the pathophysiology of pressure ulcers using the intensity and duration of pressure and tissue tolerance. The scale²⁷ Gosnell was adapted from the Norton scale, which were added items related to the integrity of the skin, drugs used by the patients, temperature, blood pressure, nutrition and diagnosis, but the authors did not include scores on these factors. Since the scale²⁶ is a scale to Waterloo using a greater number of variables risk that Norton and Gosnell, taking into account the formation of high weight, continence, sex and age, visual risk areas like skin, etc.. However, all items surveyed offer greater prominence to the Braden scale, this instrument because it allows a more complete evaluation by various factors related to the occurrence of pressure ulcer .

The support surfaces for pressure redistribution assist in reducing the risk of pressure ulcers.²⁷ The main provisions cited by articles surveyed were: mattresses, cushions and pillows. Studies show that the incidence in the formation of pressure ulcers is significantly lower in patients who use these devices to distribute the pressure and protect bony prominences.²¹

Wounds require an adequate intake of nutrients for effective cure. Pressure ulcers occur, persist and are more severe in patients who are malnourished²⁸. Despite the patient's nutrition exercise great importance in the prevention of pressure ulcers, only 8% of the articles surveyed indicate nutritional support as a key factor in preserving skin integrity and healing of lesions already formed. What is known is that the protein deficiency predisposes to lesion formation.¹⁹

Finally, the studies surveyed point massage comfort as a major preventive measure of pressure ulcers. This procedure involves the movement of the skin in order to relax the tense muscles and improve circulation.³⁰ Sometimes the massage is accompanied by the use of substances emollients for moisturizing the skin as it improves its elasticity and prevents its drying.³⁰ But it is worth noting that the massage or rub in the prevention of pressure ulcers is not recommended, because if the skin is too dry or too wet, it runs the risk of developing pressure ulcers.¹

CONCLUSION

When assessing the scientific production related risk factors and preventive measures of pressure ulcers in the said period, it was observed that the work revealed the importance of knowledge acquired by the nursing staff and the continued discussion on the subject may provide subsidies for targeting actions and behaviors on the topic for the realization of a more skilled nursing care.

Another highlight is the importance of institutional incentive programs aimed at professional qualification based on the pursuit of quality care, prioritizing preventive and patient protection.

It is noteworthy to know the risk factors and prevention of pressure ulcers is not always sufficient to reduce the incidence of these injuries. You must also sizing appropriate personnel in order to reduce the workload and make it possible qualification in care for all patients. Thus, considering the importance of the subject and the high rates of patients affected by pressure ulcers, there is a need for increased research directed to the subject. The findings reported in this study may contribute for future studies aiming to implement best practices for health care.

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Coqueiro JM, Brito RS.
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