

# INCIDENCE OF PRESSURE INJURY IN HOSPITALIZED PATIENTS AND ASSOCIATED RISK FACTORS

## INCIDÊNCIA DE LESÃO POR PRESSÃO EM PACIENTES INTERNADOS E FATORES DE RISCO ASSOCIADOS

## INCIDENCIA DE LAS LESIONES POR PRESIÓN EN LOS PACIENTES HOSPITALIZADOS Y LOS FACTORES DE RIESGO ASOCIADOS

Mayara Amaral Pereira de Jesus<sup>1</sup>  
Patrícia da Silva Pires<sup>2</sup>  
Chrisne Santana Biondo<sup>3</sup>  
Renata Matos e Matos<sup>4</sup>

**How to cite this article:** Jesus MAP, Pires PS, Biondo CS, Matos RM. Incidence of pressure injury in hospitalized patients and associated risk factors. Rev baiana enferm. 2020;34:e36587.

**Objective:** to evaluate the incidence of pressure injuries in patients admitted to hospital and associated risk factors. **Method:** prospective, longitudinal, observational study. The data were collected for 60 consecutive days, using the proper form, skin inspection, medical chart and prescription. The analysis was performed by descriptive statistics, chi-square test and Fisher's exact test. **Results:** sample consisting of 70 patients: 65.7% elderly, 30.0% diabetics and 61.4% hypertensive. The incidence of pressure injury was 24.3% and there was a statistically significant association between diaper use, impaired physical mobility and decubitus change. As for Braden's classification, 70.6% presented severe risk and 64.7% of the injuries were classified as stage I. **Conclusion:** immobility, use of diapers and severe risk at the time of admission were found in patients who developed injury.

**Descriptors:** Pressure Injury. Patient Safety. Nursing. Risk Factors.

*Objetivo: avaliar incidência de lesão por pressão em pacientes internados em unidades de internação e fatores de riscos associados. Método: estudo prospectivo, longitudinal, observacional. Os dados foram coletados por 60 dias consecutivos, utilizando-se formulário próprio, inspeção da pele, prontuário e prescrição médica. A análise foi realizada por estatística descritiva, teste de qui-quadrado e teste exato de Fisher. Resultados: amostra constituída de 70 pacientes: 65,7% idosos, 30,0% diabéticos e 61,4% hipertensos. A incidência de lesão por pressão foi de 24,3% e houve associação estatisticamente significativa entre uso de fraldas, mobilidade física prejudicada e mudança de decúbito. Quanto à classificação de Braden, 70,6% apresentaram risco severo e 64,7% das lesões foram classificadas como estágio I. Conclusão: a imobilidade, o uso de fraldas e risco severo no momento da admissão foram encontrados nos pacientes que desenvolveram lesão.*

*Descritores: Lesão por Pressão. Segurança do Paciente. Enfermagem. Fatores de Risco.*

<sup>1</sup> Nurse. Hospital Geral de Vitória da Conquista. Vitória da Conquista, Bahia, Brazil. mayamaralp@gmail.com. <https://orcid.org/0000-0001-7923-6718>.

<sup>2</sup> Nurse. PhD in Nursing. Professor at Universidade Federal da Bahia. Salvador, Bahia, Brazil. <http://orcid.org/0000-0002-2537-3909>.

<sup>3</sup> Nurse. Universidade Estadual do Sudoeste da Bahia. Professor at Universidade Federal da Bahia. Salvador, Bahia, Brazil. <http://orcid.org/0000-0002-2537-3909>.

<sup>4</sup> Nurse. Hospital Geral de Vitória da Conquista. Vitória da Conquista, Bahia, Brazil. <http://orcid.org/0000-0002-2537-3909>.

*Objetivo: evaluar la incidencia de las lesiones por presión en los pacientes hospitalizados en unidades de internación y los factores de riesgo asociados. Método: estudio prospectivo, longitudinal y de observación. Los datos se reunieron durante 60 días consecutivos, utilizando el formulario adecuado, la inspección de la piel, el cuadro médico y la prescripción médica. El análisis se realizó mediante estadísticas descriptivas, la prueba de chi-cuadrado y la prueba exacta de Fisher. Resultados: muestra compuesta por 70 pacientes: 65,7% ancianos, 30,0% diabéticos y 61,4% hipertensos. La incidencia de lesiones por presión fue del 24,3% y hubo una asociación estadísticamente significativa entre el uso de pañales, el deterioro de la movilidad física y el cambio de decúbito. En cuanto a la clasificación de Braden, el 70,6% presentaba un riesgo grave y el 64,7% de las lesiones se clasificaron como etapa I. Conclusión: la inmovilidad, el uso de pañales y el riesgo grave en el momento de la admisión se encontraron en pacientes que desarrollaron lesión.*

*Descriptores: Lesión por Presión. Seguridad del Paciente. Enfermería. Factores de Riesgo.*

## Introduction

Pressure injury (PI) is the result of pressure applied to a certain area of the body in combination with intrinsic and/or extrinsic factors, which generates localized damage to the skin and/or underlying soft tissue, usually on a bone prominence or related to a medical device or other artifact<sup>(1-2)</sup>.

The increase in the incidence of PI registered in recent years is explained by the higher life expectancy of the population due to advances in health care. Among these benefits, the greater survival of those with serious and lethal diseases stands out, transforming them into chronic and debilitating diseases<sup>(3)</sup>.

PI are considered to be one of the main adverse events (AE) related to health care services, resulting from the long hospitalization of patients and are associated with risk factors and clinical conditions<sup>(4)</sup>. Causes physical and emotional damage to the patient, prolonged recovery time, infections, decreased quality of life, high cost of treatment and sepsis and death<sup>(5)</sup>.

In the United States of America, PI affect 2.5 million people per year. Among these, 60,000 people evolve to death. In addition, they cost hospitals between \$9.1 and \$11.6 billion per year<sup>(6)</sup>. Data released in 2020 show that 153,116 AE occurred in Brazil between May 2019 and April 2020. The PI ranks second, with a total of 29,356 reported cases<sup>(7)</sup>.

In Brazil, in 2013, the Ministry of Health instituted, by Ordinance nº 529/2013, the National Program of Patient Safety, which aims at risk

management and commitment to an acceptable minimum, by promoting quality and safety for the patient in all health spaces<sup>(8)</sup>. Furthermore, based on Resolution no. 36 of July 25, 2013, of the Collegiate Directorate of the National Health Surveillance Agency (ANVISA), the six goals of the World Health Organization (WHO) are adopted as the scope of action for events associated with health care, which aim to ensure the dissemination of the culture of patient safety. The Prevention of PI is one of these actions<sup>(9)</sup>.

In view of this, risk management allows the nursing team to play an active role in the care process and draw up an individualized care plan that enables the improvement of the patient's clinical picture, in addition to the reduction of health costs, which consequently makes the preventive measures optimal and effective<sup>(10)</sup>. Moreover, the adoption of institutional protocols and the development of clinical judgment of the nursing team, in order to contribute with an assistance of quality, safe and that attenuates the risks, is indispensable<sup>(7)</sup>.

Risk management evaluation and prevention receive good contribution from the use and adherence of the Braden scale in clinical practice<sup>(1)</sup>. Prevention during care is the most economical and effective strategy. Standardizing the process has proven to be effective, efficient and contributes to risk management by the nursing team<sup>(6)</sup>.

In view of the above, the occurrence of PI results in impacts on health care, such as: high

costs, increased length of stay and negative indicators of the quality of care.

Studies assessing the incidence of PI are more frequent in critically ill patients and are performed in large centers. It is necessary to know the occurrence of these lesions in patients admitted to smaller centers, in order to contribute to the correction of failures in care, elaboration or qualification of already existing guiding protocols and search for better scientific evidence to subsidize the practice.

The objective of this study is to evaluate the incidence of pressure injury in patients admitted to units and the associated risk factors.

## Method

This is a prospective, longitudinal, descriptive study of an observational type, carried out at the Medical Clinic Unit of a hospital in Southwest Bahia, considered a macro-regional reference for high and medium complexity, which provides exclusive care by the Unified Health System (SUS).

The Medical Clinic Unit receives patients who are hemodynamically stable and also those who are not coming from surgical treatment. It has 38 beds and attends on average 80 patients per month. The sample was of the convenience type and comprised a total of 73 eligible patients.

The inclusion criteria were: not to have PI and be classified as having any risk of developing an injury at admission, to remain hospitalized for at least 48 hours, to be 18 years of age or older. The exclusion criteria were: transfer of the patient to other units of the hospital or to other services and patients readmitted to the Medical Clinic Unit.

For staging and classification of the injuries of patients who developed PI, it was used the update made by *National Pressure Ulcer Advisory Panel (NPUAP)*<sup>(1)</sup>.

The assessment of the risk of PI development was made by the Braden Scale, validated for use in Brazil<sup>(11)</sup>.

The collection was performed by the researchers, daily, during 60 consecutive days

from March to May 2019. It consists of two stages, carried out after training and pre-testing of the instrument. In the first stage, performed at admission, a proper form was applied, adapted from two studies<sup>(12-13)</sup>, composed of demographic data, age and gender, clinical data, medical diagnosis, use of medications and diapers, physical mobility, protective measures used and the Braden score<sup>(11)</sup> at admission. They were used as data source: the patient's interview, through a structured form<sup>(12-13)</sup>; and the evaluation through skin inspection. The risk of PI development was evaluated by the *Braden*<sup>(11)</sup> scale, which stratifies the risk in: no risk, higher than 16; moderate risk, between 12 and 16; and high risk, less or equal to 11<sup>(11)</sup>. Data regarding medical diagnosis, medical prescription and nursing records were extracted from the medical chart.

The second stage was performed 48 hours after admission and was repeated every 48 hours with reassessment of the participant's skin, identification of the presence or absence of PI, staging, appearance, anatomical region where the injury was located and whether preventive measures recommended in Standard Operating Procedures (SOP) were adopted. These were verified in the nursing registers, in the annotation forms and in the nursing evolution.

During the data collection period, 73 patients met the inclusion criteria and agreed to participate in the study by signing the Free and Informed Consent Form (TCLE). However, after the 60-day collection period, 4.1% (n=3) patients remained hospitalized, and it was not possible to follow their evolution, neither did they develop or not the PI. Therefore, the final sample consisted of 70 patients evaluated in the two stages of the survey.

The data were inserted in a spreadsheet prepared in the Microsoft Excel 2010® program. The dichotomous variables were coded in 1-yes and 2-not. Then, the data were transported and analyzed in the software program *Stata*®, version 15.1. Information related to the clinical and demographic characterization, preventive measures adopted, evaluation and incidence of pressure injuries were tabulated and submitted

to descriptive statistical analysis. The association of the incidence of PI with the clinical variables and preventive measures was made using the chi-square test of Pearson and Fisher's Exact (for categories with  $n < 5$ ) adopting  $p \leq 0,05$  and a confidence interval of 95%.

The research project was submitted to the Permanent Education Nucleus (NEP) of the hospital field of study and approved by the Ethics Committee on Research with Human Beings of the Multidisciplinary Health Institute, Anísio Teixeira Campus, Universidade Federal da Bahia (CEP-IMS-CAT-UFBA), under CAAE 05227518.0.0000.5556.

## Results

The sample consisted of 70 patients, with 65.7% ( $n=46$ ) of the elderly prevailing.

Of the total, 30.0% ( $n=21$ ) were diabetics and 61.4% ( $n=43$ ) were hypertensive. Among the medical diagnoses of the patients in the sample, diseases of the nervous system stood out with 27.1% ( $n=19$ ), followed by diseases of the circulatory system 22.9% ( $n=16$ ). Regarding the use of continuous medication 67.1% ( $n=47$ ) made use of antihypertensive, 6.1% ( $n=3$ ) hypoglycemicant, 16.4% ( $n=8$ ) made simultaneous use of antihypertensive and hypoglycemicant, 8.2% ( $n=4$ ) of antihypertensive and platelet antiaggregation. Of the 70 participants 58.6% ( $n=41$ ) had impaired physical mobility. Among these 80.5% ( $n=33$ ) were bedridden, 12.2% ( $n=5$ ) were wheelchair users and 7.3% ( $n=3$ ) used walking sticks. Regarding diaper use, 58.6% ( $n=41$ ) used (Table 1).

**Table 1** – Characterization of patients admitted to the hospital medical clinic field of study. Vitória da Conquista, Bahia, Brazil – 2019. (N=70) (continued)

Variables	n	%
<b>Sex</b>		
Male	36	51,4
Female	34	48,6
<b>Age</b>		
18 to 59 years old	24	34,3
60 to 74 years old	27	38,6
≥ 75 years old	19	27,1
<b>Diabetes Mellitus</b>		
No	49	70,0
Yes	21	30,0
<b>Systemic Arterial Hypertension</b>		
No	27	38,6
Yes	43	61,4
<b>Classification of diagnosis</b>		
Signs, symptoms and abnormal findings	3	4,3
Infectious and Parasitic Diseases	2	2,9
Injuries due to external causes	3	4,3
Circulatory system diseases	16	22,9
Genitourinary system diseases	5	7,1
Respiratory tract diseases	5	7,1
Digestive system diseases	5	7,1
Neoplasias	6	8,6
Diseases of the nervous system	19	27,1
Mental or behavioral disorders	1	1,4
Skin or subcutaneous tissue diseases	2	2,9
Endocrine, nutritional or metabolic diseases	3	4,3
<b>Use of medication</b>		
No	23	32,9
Yes	47	67,1

**Table 1** – Characterization of patients admitted to the hospital medical clinic field of study. Vitória da Conquista, Bahia, Brazil – 2019. (N=70) (conclusion)

Variables	n	%
<b>Type of medication</b>		
Antihypertensive	24	49,0
Hypoglycemic	3	6,1
Antiaggregatoplatelet	1	2,0
Antirheumatic	1	2,0
Neuroleptic	1	2,0
Antihypertensive + Hypoglycemic	8	16,4
Antihypertensive + Antiaggregatoplatelet	4	8,2
Antihypertensive + Hormone Repositor	3	6,1
Hypoglycemic + Antidislipidemic	2	4,1
Antihypertensive + Antidislipidemic + Antiaggregatoplatelet	2	4,1
<b>Physical mobility impaired</b>		
No	29	41,4
Yes	41	58,6
<b>Type of damage to mobility</b>		
Bedridden	33	80,5
Wheelchair users	5	12,2
Use of walking stick.	3	7,3
Use of walker	-	-
Accompanying aid	-	-
<b>Diaper Use</b>		
No	29	41,4
Yes	41	58,6

Source: Created by authors.

Note: Conventional signal used:

- Numeric data equal to zero not resulting from rounding.

Regarding the length of stay of hospitalized patients, the mean was up to 3 days, for 35.7% (n=25) patients, and 10 days or more, for 25.7% (n=18) patients. Thus, the incidence of PI in the institution was 24.3% (n=17). At admission, 81.4% (n=57) patients had full skin

in the evaluation. Table 2 also presents the skin evaluation and preventive measures adopted in the study field unit, in which it was observed that the maintenance of the sheets stretched and dry prevailed with 77.1% (n=54), followed by a 72.9% (n=51) change in decubitus.

**Table 2** – Clinical characteristics at the time of evaluation and preventive measures adopted for pressure injuries in patients admitted to the hospital medical clinic field of study. Vitória da Conquista, Bahia, Brazil – 2019. (N=70) (continued)

Variables	Clinical Characteristics	n	%
<b>Hospitalization Clinics</b>			
	<b>Length of stay</b>		
	Up to 3 days	25	35,7
	4 to 6 days	15	21,4
	7 to 9 days	12	17,1
	10 days or more	18	25,7
	<b>Full Skin</b>		
	No	13	18,6
	Yes	57	81,4
	<b>Outcome</b>		
	Discharge	32	45,7
	Death	9	12,9

**Table 2** – Clinical characteristics at the time of evaluation and preventive measures adopted for pressure injuries in patients admitted to the hospital medical clinic field of study. Vitória da Conquista, Bahia, Brazil – 2019. (N=70) (conclusion)

Variables	Clinical Characteristics	n	%
<b>Hospitalization Clinics</b>	<b>Outcome</b>		
	Transfer	12	17,1
	Developed pressure injury	17	24,3
<b>Preventive Measures</b>	<b>Periodic change in decubitus</b>		
	No	19	27,1
	Yes	51	72,9
	<b>Use of support surface</b>		
	No	57	81,4
	Yes	13	18,6
	<b>Hygienized and hydrated skin</b>		
	No	13	18,6
	Yes	57	81,4
	<b>Maintenance of the sheets stretched and dry</b>		
No	16	22,9	
Yes	54	77,1	

Source: Created by authors.

Regarding the association of pressure injury development, there were statistically significant results among the variables, impaired physical

mobility, diaper use and periodic decubitus change classified in Table 3 as one of the preventive measures.

**Table 3** – Incidence of pressure injury according to clinical characteristics and preventive measures in patients admitted to the medical clinic of the hospital field of study. Vitória da Conquista, Bahia, Brazil – 2019. (N=17) (continued)

Variables	Clinical characteristics and preventive measures	n (%)	Value of p*
<b>Hospitalization Clinics</b>	<b>Sex</b>		0,886
	Male	9 (25,0)	
	Female	8 (23,5)	
	<b>Age</b>		0,888
	18 to 59 years old	5 (20,8)	
	60 to 74 years old	7 (25,9)	
	≥ 75 years old	5 (26,3)	
	<b>Diabetes Mellitus</b>		0,584
	No	11 (22,5)	
	Yes	6 (28,6)	
	<b>Systemic Arterial Hypertension</b>		0,409
	No	8 (29,6)	
	Yes	9 (20,9)	
	<b>Use of medication</b>		0,401
	No	7 (30,4)	
	Yes	10 (21,3)	
	<b>Physical mobility impaired</b>		<0,001
No	1 (3,3)		
Yes	16 (40,0)		

**Table 3** – Incidence of pressure injury according to clinical characteristics and preventive measures in patients admitted to the medical clinic of the hospital field of study. Vitória da Conquista, Bahia, Brazil – 2019. (N=17) (conclusion)

Variables	Clinical characteristics and preventive measures	n (%)	Value of p*
<b>Hospitalization Clinics</b>	<b>Type of damage to mobility</b>		0,233
	Bedridden	15 (45,5)	
	Wheelchair user	1 (20,0)	
	Use of walking stick	0 (0,0)	
	<b>Diaper Use</b>		0,001
	No	1 (3,5)	
	Yes	16 (39,0)	
	<b>Length of stay</b>		0,979
	Up to 3 days	6 (24,0)	
	4 to 6 days	3 (20,0)	
7 to 9 days	3 (25,0)		
10 days or more	5 (27,8)		
<b>Preventive Measures</b>	<b>Full Skin</b>		1,000
	No	3 (23,1)	
	Yes	14 (24,6)	
	<b>Periodic change in decubitus</b>		<0,001
	No	11 (57,9)	
	Yes	6 (11,8)	
	<b>Use of support surface</b>		0,498
	No	15 (26,3)	
	Yes	2 (15,4)	
	<b>Hygienized and hydrated skin</b>		0,910
No	3 (23,1)		
Yes	14 (24,6)		
	<b>Maintenance of the sheets stretched and dry</b>		1,000
	No	4 (25,0)	
	Yes	13 (24,0)	

Source: Created by authors.

\*Value of p calculated by Pearson's chi-square test and Fisher's Exact.

In relation to the evaluation of the patients, of the 17 who developed the lesion, 35.3% (n=6) had length of stay of up to 3 days and 29.5% (n=5) of 10 days or more.

64.7% (n=11) PI were identified in stage I and 35.3% (n=6) in stage II. Regarding anatomical location, the gluteal region was the most affected 38.9% (n=7), followed by the sacral 16.6% (n=3) and elbow 16.6% (n=3).

In relation to Braden's classification 70.6% (n=12) of the patients presented severe risk; 11.8% (n=2), mild; 11.8% (n=2), moderate; and 5.8% (n=1), no risk. Among the 17 patients who developed PI, 21 injuries were identified.

## Discussion

This study presented an incidence of pressure injury of 24.3% (17), a lower number than that found in a study conducted in critical units of the same field hospital, which identified an incidence of 47%<sup>(13)</sup>. Other studies identified an incidence of 13.3%<sup>(14)</sup> and 42.6%<sup>(15)</sup>, which seems to demonstrate that there is no pattern of PI incidence in the analyzed studies. Despite the unsimilarity of the results, incidents in hospital services and PI present high numbers, according to the Patient Safety Bulletin. The first ranks first in number of reported incidents, and injuries rank second in type of reported incidents<sup>(7)</sup>.

There was a predominance of male participants (51.4%) in relation to female participants (48.6%). In relation to age, 65.7% of the patients were 60 years old or older. In a study performed in a hospital in São Paulo, there was a predominance of males (52.9%) and older than 60 years (70.6%)<sup>(15)</sup>, as also evidenced in the present study. It is known in the literature that men attend less the preventive health services and delay care under the justification of lack of time or because they believe they are infallible physically and mentally<sup>(16)</sup>. It turns out that, due to this factor, men are in the majority in the specialized service.

It is also verified that advanced age is a predisposing factor for the development of PPL, due to alterations in skin turgor and tissue integrity resulting from the aging process itself<sup>(17)</sup>. This fact may be related to the age range above 60 years of most patients who developed PI in the sample.

As for medical diagnoses, diseases of the nervous system and circulatory system were the most frequent. The patient, in his senescence process, when affected by these diseases, has changes in the blood circulation and reduction in the wound healing process, in addition to neurological impairment that interfere in mobility and performance of activities<sup>(17)</sup>. In addition, the loss in sensitivity and physical limitations are factors associated with the development of PI<sup>(18)</sup>.

Regarding drugs for continuous use, a cohort of 215 participants in a general hospital of Teresina, Piauí, showed that the use of antihypertensives (82.8%) was the most identified and is a risk factor for the development of PI, followed by chronic non-communicable diseases and the use of analgesics and anticoagulants<sup>(19)</sup>. Hypotensive drugs have as action mechanism the reduction of blood flow and tissue perfusion, factors that contribute to the development of PI<sup>(20)</sup>.

It was observed that elderly people who have impaired physical mobility and make use of continuous medication are more susceptible to the development of PI. Due to the propensity to use polypharmaceuticals, the body of the elderly may present changes in responses to these drugs and, consequently, stimulate changes in the skin<sup>(20)</sup>.

To assess the risks of developing PI, the use of scales is recommended, with Braden's being used internationally, as it reaches a large number of patients and avoids unnecessary costs<sup>(6)</sup>.

The scale was built based on the pathophysiology of the injury and takes into consideration the factors intensity, pressure duration and tolerance of the skin and underlying structures<sup>(11)</sup>. It enables professionals involved in the care to institute individualized care based on the frailties of patients<sup>(4)</sup>. In this study, of the 17 participants who developed the injury, 70.6% (n=12) were classified as severe risk at the time of admission. It was seen that patients with a diagnosis of severe risk on the Braden scale are the most affected by PI, which highlights its usefulness in clinical practice<sup>(14)</sup>.

Regarding the anatomical location, the highest frequency was in the gluteal region, followed by the sacral region and elbow. This data is similar to that identified in a study carried out at the Hospital Universitário de São Paulo, which identified 27.3% (n=9) in the sacral region and 9.1% (n=3) in the gluteus<sup>(21)</sup>. In another hospital in Mexico City in Mexico, the incidence presented was 10.3% in the elbow and 8.7% in the sacral region<sup>(14)</sup>. In another study<sup>(13)</sup> gluteal 4.0% (n=2), intergluteal 8.0% (n=4) and sacral 22.0% (n=11) were identified. It is inferred that the fact that most of the hospitalized patients remain in dorsal decubitus position and have these regions as support points<sup>(14)</sup>, this factor is related to the result presented.

Regarding the staging of injuries, stages I and II were identified. This result is corroborated in a study<sup>(13)</sup> performed with the same patient profile, which identified 68% of the injuries in stage I. In a research<sup>(12)</sup> developed at a University Hospital in the Northeast of the State of Bahia, 28.6% (n=2) injuries were developed in stage I and 71.4% (n=5) in stage II.

Regarding the staging of injuries, stages I and II were identified. This result is corroborated in a study<sup>(13)</sup> performed with the same patient profile, which identified 68% of the injuries in stage I. In a research<sup>(12)</sup> developed at a University Hospital in the Northeast of the State of Bahia,



28.6% (n=2) injuries were developed in stage I and 71.4% (n=5) in stage II<sup>(22)</sup>.

The reduction in the movement capacity generates dependence for the performance of activities and is identified as a risk factor<sup>(1,23)</sup>. Mobility impairment increases pressure, induces the use of diapers, being more frequent in urinary and fecal incontinence, situations that increase skin exposure to moisture and favor the injury<sup>(23-24)</sup>.

Patients with impaired physical mobility should have their body pressure redistributed by changing decubitus and using surfaces capable of providing this relief such as cushions, pillows, mattresses, especially in the bony prominences, places that have greater risk for developing PI. These measures contribute to the circulation and functionality of the body<sup>(4)</sup>.

For prevention of PI, four guidelines should be followed: skin evaluation and early treatment, risk assessment, use of support surfaces, decubitus change and, above all, education for professionals, family and patient<sup>(5)</sup>. The institution of preventive measures, through the daily re-evaluation of the risk and use of POP, are indispensable and guarantee quality in the assistance, promotion of the patient's safety and prevention of injury<sup>(23)</sup>.

To carefully evaluate individuals in any state of health, identifying the risk factors, must be effectively the preventive action of health institutions. In this way, it will be easier to perceive vulnerability, to introduce changes in the practice of care, correcting possible flaws in the patient's safety, and ensuring higher quality in the assistance provided<sup>(1,4)</sup>. In addition, the systematization of nursing care (SNC) instrumentalizes the nurse through the Nursing Process (NP), which allows the team to exercise a critical positioning, have support and draw a care plan that makes it possible to assess the results achieved<sup>(25)</sup>.

The limitations identified in this study are the follow-up period and the bias in the use of data registered in medical charts, which can often be unreliable. Despite these limitations, the objective was achieved and the results provide

data that can be used by the field hospital to re-evaluate patients at risk of developing PI and update the protective measures already adopted as standard by the institution. Thus, it is suggested that studies with a larger sample and follow-up time be carried out, with emphasis on the preventive measures adopted and verification of the effectiveness throughout the patient's hospitalization.

## Conclusion

The incidence of pressure injury identified in this study was 24.3%. Among the 17 patients who developed PI, 21 injuries were observed in the gluteal, sacral and elbow regions. Most of the lesions were classified as stage I. Patients who developed PI were evaluated with severe risk at admission.

Therefore, there was a statistically significant association between the clinical characteristics of diaper use and impaired physical mobility and the preventive measure of decubitus change, with the development of pressure injury.

In view of these results, the need for risk assessment in daily practice and the institution of protective measures is emphasized, so that the nursing team can act early to prevent the development of PI. In addition, it is essential the adoption of guiding protocols, already existing, which contribute to the improvement of the quality of nursing care and patient safety.

## Collaborations:

1 – conception, project, analysis and interpretation of data: Mayara Amaral Pereira de Jesus, Patricia da Silva Pires, Chrisne Santana Biondo and Renata Matos e Matos;

2 – writing of the article and relevant critical review of the intellectual content: Mayara Amaral Pereira de Jesus, Patricia da Silva Pires and Chrisne Santana Biondo;

3 – final approval of the version to be published: Mayara Amaral Pereira de Jesus, Patricia da Silva Pires and Chrisne Santana Biondo.

## References

1. Edsberg LE, Black JM, Goldberg M, McNichol L, Moore L, Sieggreen M. Revised National Pressure Ulcer Advisory Panel Pressure Injury Staging System Revised Pressure Injury Staging System. *J Wound Ostomy Cont Nurs.* 2016 Nov 14; 43(6):585-97. DOI:10.1097/WON.0000000000000281
2. Malagutti W. Feridas conceitos e atualidade. São Paulo: Martinari; 2015.
3. Moura GMSS, Magalhães AMM. Eventos adversos relacionados à assistência em serviços de saúde: principais tipos. In: Brasil. Agência Nacional de Vigilância Sanitária. Assistência Segura: uma reflexão teórica aplicada à prática [Internet]. Brasília (DF); 2017. p. 71-2. [cited 2019 Apr 20]. Available from: <http://portal.anvisa.gov.br/documents/33852/3507912/Caderno+1+-+Assist%C3%Aancia+Segura++Uma+Reflex%C3%A3o+Te%C3%B3rica+Aplicada+%C3%A0+Pr%C3%A1tica/97881798-cea0-4974-9d9b-077528ea1573>
4. Brasil. Ministério da Saúde. Fundação Oswaldo Cruz. Agência Nacional de Vigilância Sanitária. Protocolo para prevenção de úlcera por pressão [Internet]. Brasília (DF); 2013 [cited 2019 Apr 20]. Available from: [https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes?task=callelement&format=raw&item\\_id=332&element=f85c494b-2b32-4109-b8c1-083cca2b7db6&method=download&args\[0\]=a2541cd10df0f9ae6b90824f5f553b93](https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes?task=callelement&format=raw&item_id=332&element=f85c494b-2b32-4109-b8c1-083cca2b7db6&method=download&args[0]=a2541cd10df0f9ae6b90824f5f553b93)
5. Instituto Brasileiro para Segurança do Paciente. Lesão por pressão pode levar até à internação prolongada, sepse e mortalidade [Internet]. São Paulo; 2017 nov [cited 2018 Nov 20]. Available from: <https://www.segurancadopaciente.com.br/qualidade-assist/lesao-por-pressao-pode-levar-ate-internacao-prolongada-sepse-e-mortalidade/>
6. Padula WV, Pronovost PJ, Makic MBF, Wald HL, Moran D, Mishra MK, et al. Value of hospital resources for effective pressure injury prevention: a cost-effectiveness analysis. *BMJ Qual Saf.* 2018 Aug;28(2):132-41. DOI: 10.1136/bmjqs-2017-007505
7. Brasil. Agência Nacional de Vigilância Sanitária. Incidentes Relacionados à Assistência à Saúde - 2020. Brasília (DF); 2020 [cited 2020 Jun 14]. Available from: <https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/category/relatorios-dos-estados>
8. Brasil. Ministério da Saúde. Portaria n. 529, de 1º de abril de 2013. Institui o Programa Nacional de Segurança do Paciente (PNSP). Brasília (DF); 2013 [cited 2019 Jun 16]. Available from: [http://bvsms.saude.gov.br/bvs/saudelegis/gm/2013/prt0529\\_01\\_04\\_2013.html](http://bvsms.saude.gov.br/bvs/saudelegis/gm/2013/prt0529_01_04_2013.html)
9. Brasil. Ministério da Saúde. RDC n. 36, de 25 de julho de 2013. Institui ações para a segurança do paciente em serviços de saúde e dá outras providências. Brasília (DF); 2013 [cited 2019 Jan 20]. Available from: [http://portal.anvisa.gov.br/documents/10181/2871504/RDC\\_36\\_2013\\_COMP.pdf/36d809a4-e5ed-4835-a375-3b3e93d74d5e](http://portal.anvisa.gov.br/documents/10181/2871504/RDC_36_2013_COMP.pdf/36d809a4-e5ed-4835-a375-3b3e93d74d5e)
10. Sousa RG, Oliveira TL, Lima LR, Stival MM. Fatores associados à úlcera por pressão (UPP) em pacientes críticos: Revisão Integrativa da Literatura. *Universitas: Ciências Saúde.* 2016; 14(1):77-84. DOI: <https://doi.org/10.5102/ucs.v14i1.3602>
11. Paranhos WY, Santos VLGG. Avaliação de risco para úlceras de pressão por meio da escala de Braden, na língua portuguesa. *Rev Esc Enf USP* [Internet]. 1999 [cited 2019 Jan 20];33(esp):191-206. Available from: <http://www.ee.usp.br/reeusp/upload/pdf/799.pdf>
12. Pereira AFM, Beserra WC, Pereira MCC, Andrade EMLR, Luz MHBA. Pressure injury incidence in a university hospital. *Rev Enferm UFPI.* 2017;6(1):33-9. DOI: <https://doi.org/10.26694/reeufpi.v6i1.5771>
13. Silva SAM, Pires PS, Macedo MP, Oliveira LS, Batista JET, Amaral JM. Lesão por pressão: incidência em unidades críticas de um hospital regional. *ESTIMA.* 2018;16:1-10. DOI: 10.30886/estima.v16.655\_PT
14. Mejía EMS, Mendonza AJ, Gálvez LER, Aguilar AA. Úlceras por presión en diversos servicios de un hospital de segundo nivel de atención. *Enfermería Universitaria.* 2015;12(4):173-81. DOI: 10.1016/j.reu.2015.08.004
15. Rogenski NMB, Santos VLGG. Estudo sobre a incidência de úlceras por pressão em um hospital universitário. *Rev Latino-am Enfermagem* [Internet]. 2005 [cited 2019 Jun 20];13(4):474-80. Available from: <https://www.redalyc.org/pdf/2814/281421846003.pdf>
16. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Ações Programáticas Estratégicas. Perfil da morbimortalidade masculina no Brasil [Internet]. Brasília (DF); 2018 [cited 2019

- Jun 13]. Available from: <http://portalarquivos2.saude.gov.br/images/pdf/2018/fevereiro/19/Perfil-da-morbimortalidade-masculina-no-Brasil.pdf>.
17. Souza NR, Freire DA, Souza MAO, Melo JTS, Santos LV, Bushatsky M. Fatores predisponentes para o desenvolvimento da lesão por pressão em pacientes idosos: uma revisão integrativa. *ESTIMA*. 2017;15(4):229-39. DOI: 10.5327/Z1806-3144201700040007
  18. Henteges V, Rudell M, Cabral K, Ely GZ. Fatores relacionados ao desenvolvimento de lesão por pressão e medidas de prevenção. Apresentação. In: Seminário Interinstitucional de ensino, pesquisa e extensão, 23, 2018, Cruz Alta, RS. Anais (on-line). Cruz Alta: Universidade de Cruz Alta; 2018 [cited 2019 Jun 13]. Available from: <https://home.unicruz.edu.br/seminario/anais>
  19. Vieira CPB, Sá MS, Madeira MZA, Luz MHBA. Caracterização e fatores de risco para úlceras por pressão na pessoa idosa hospitalizada. *Rev Rene*. 2014;15(4):650-8. DOI: 10.15253/2175-6783.2014000400012
  20. Baumgarten M, Margolis DJ, Localio AR, Kagan SH, Lowe RA, Kinoshian B, et al. Extrinsic Risk Factors for Pressure Ulcers Early in the Hospital Stay: a Nested Case-Control Study. *Gerontol A Biol Sci Med Sci*. 2008;63(4):408-13. DOI: <https://doi.org/10.1093/gerona/63.4.408>
  21. Rogenskin NMB, Kurcgant P. Avaliação da concordância na aplicação da Escala de Braden Interobservadores. *Acta Paul Enferm*. 2012;25(1):24-8. DOI: <https://doi.org/10.1590/S0103-21002012000100005>
  22. Silva MRV, Dick NRM, Martini AC. Incidência de úlcera por pressão como indicador de qualidade na assistência de enfermagem. *Rev Enferm UFSM*. 2012;2(2):339-46. DOI: <https://doi.org/10.5902/217976925238>
  23. Vieira VAS, Santos MDC, Almeida AN, Souza CC, Bernardes MFVG, Mata LRF. Risco de lesão por pressão em idosos com comprometimento na realização de atividades diárias. *Rev Enferm Centro-Oeste Mineiro*. 2018;8:2-9. DOI: 10.19175/recom.v7i0.2599
  24. Soares CF, Heidemann ITSB. Promoção da saúde e prevenção da lesão por pressão: expectativas do enfermeiro da atenção primária. *Texto Contexto Enferm*. 2018;27(2):2-9. DOI: 10.1590/0104-070720180001630016
  25. Conselho Federal de Enfermagem. Resolução COFEN-358/2009. Dispõe sobre a Sistematização da Assistência de Enfermagem e a Implementação do Processo de Enfermagem [Internet]. Brasília, (DF); 2009 [cited 2019 Jun 20]. Available from: [http://www.cofen.gov.br/resoluco-cofen-3582009\\_4384.html](http://www.cofen.gov.br/resoluco-cofen-3582009_4384.html)

Received: April 28, 2020

Approved: June 20, 2020

Published: October 5, 2020



The *Revista Baiana de Enfermagem* use the Creative Commons license – Attribution -NonComercial 4.0 International. <https://creativecommons.org/licenses/by-nc/4.0/>

This article is an Open Access distributed under the terms of the Creative Commons (CC BY-NC). This license lets others remix, adapt and create upon your work to non-commercial use, and although new works must give its due credit and can not be for comercial purposes, the users do not have to license such derivative works under the same terms.