Incidence and risk factors for pressure injury in intensive care unit

Incidência e fatores de risco para lesão por pressão em unidade de terapia intensiva

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RESUMO

Objetiva-se verificar a incidência de lesões por pressão na amostra estudada e identificar os fatores de risco para o desenvolvimento de lesões através da Escala de Braden em pacientes internados na Unidade de Terapia Intensiva de um Hospital Universitário no Rio de Janeiro. Trata-se de um estudo documental exploratório-descritivo e retrospectivo com análise quantitativa, desenvolvido com pacientes internados na Unidade de Terapia Intensiva do Hospital Universitário Clementino Fraga Filho no ano de 2017. A coleta de dados ocorreu a partir dos registros de enfermagem em prontuário eletrônico. Observou-se que dos 75 pacientes avaliados, 21 desenvolveram lesões por pressão, equivalendo a uma taxa de incidência de 28%. Houve maior incidência no sexo masculino e indivíduos com idade maior que 60 anos. Os pacientes internados mais de 10 dias ficaram mais suscetíveis à formação de lesões, sendo a região sacra a mais acometida. Dos pacientes avaliados pela Escala de Braden, 44,7% desenvolveram lesões por pressão. Conclui-se que a partir da taxa de incidência as medidas preventivas e intervenções precoces poderão ser aplicadas, assim como reflexões acerca da política institucional relacionada à prevenção e seu impacto na qualidade da assistência em saúde.

Palavras-chave: Lesão por Pressão; Incidência; Unidades de Terapia Intensiva.

ABSTRACT

The objective of this study was to verify the incidence of Pressure Ulcer in the studied sample and to identify the risk factors for the development of pressure ulcer through the Braden Scale in patients admitted to the Intensive Care Unit of a University Hospital in Rio de Janeiro. This is an exploratory, descriptive and retrospective documentary study with quantitative analysis, developed with hospitalized patients at the University Hospital Intensive Care Unit in the year 2017. Data Collection was done from the nursing records in electronic medical records. It was observed that of the 75 patients, 21 develop pressure ulcer, equivalent an incidence rate of 28%. There was a higher incidence of pressure ulcer in males and individuals older than 60 years. Pacients hospitalized for more than 10 days were more susceptible to pressure ulcer formation, with the sacral region being the most affected. Of the patients evaluated by the Braden scale 44,7% developed pressure ulcer. It is concluded that, based on the incidence rate, preventive measures and early interventions may be applied, as well as reflections on the institutional policy related to pressure ulcer prevention and its impact on the quality of health care.

Keywords: Pressure Ulcer; Incidence; Intensive Care Units.

NOTA

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INTRODUCTION

The evaluation of the incidence of Pressure Injury (LPP) has been used as an indicator of quality of health services, incorporating institutional actions that include multiprofessional care. In Brazil, research related to the subject has already evolved in quantity and quality in recent years, but still need to be more expressive in the scientific scenario worldwide, determining more data referring to the Brazilian reality, regarding incidence rates, risk factors and degree different clientele. Knowledge of the reality predisposes to an individualized and focused assistance to obtain better results and reduction of LPP incidence rates.[1]

LPPs are defined by the National Pressure Ulcer Advisory Panel (NPUAP) as localized damage to the underlying skin and / or soft tissues, usually on a prominent bone or related to the use of a medical device or other artifact. The lesion may present as whole or as an open ulcer and can be painful. Injury occurs as a result of intense and / or prolonged pressure in combination with shear. Soft tissue tolerance to pressure and shear can also be affected by microclimate, nutrition, perfusion, comorbidities and their condition.[2]

The incidence rates of LPP in studies in the world, point to the importance of prevention through the application of good practices mediated by consensus, which can determine the reduction of the incidence of LPP in critically ill patients from 43% to 28%. [3] The nurse stands out as one of the professionals able to systematize the evaluations, using predictive risk scales for LPP. Thus, it is of paramount importance that the nurse appropriately determines, based on the collection of data (anamnesis and clinical examination), the correct nursing diagnosis for the elaboration of an effective care plan in the prevention of this health problem.

The use of a predictive scale of validated risk, adapted transculturally to Brazil and relied upon during its use in clinical practice, favors greater uniformity regarding the classification of risk, risk factors, established risk level for each patient, constituting an instrument to be applied by snurses in the data collection.

The environmental, biological and psychosocial limitations of patients admitted to ICUs place them at high risk of developing LPP. The critically ill patient is highly likely to develop LPP by factors such as sedation, altered consciousness, ventilatory support, use of vasoactive drugs, prolonged movement restriction, and hemodynamic instability, together with nutritional deficiency due to metabolic imbalance, particularly in polytraumatized, burned, sepsis and postoperative patients with large surgeries. [4]

LPPs are a serious health problem that affects all levels of care, from patients to the institution. The patients affected by these lesions have a longer hospital stay, greater experiences of pain, discomfort and suffering, as well as an increase in morbidity and mortality, which can increase hospital costs.

Thus, the research question that guides this study "What is the incidence rate and the risk factors for the development of LPP in hospitalized patients in ICU?" And the following objectives: To verify the incidence of LPP in the sample studied and to identify the risk factors by the Braden Scale (BS) for the development of LPP in an ICU of a University Hospital in the city of Rio de Janeiro.

METHOD

This is an exploratory retrospective study, with a quantitative approach, developed at the Intensive Care Unit (ICU) of the University Hospital Clementino Fraga Filho (HUCFF) of the Federal University of Rio de Janeiro (UFRJ), located in the city of Rio de Janeiro and which was approved by the Institutional Ethics in Research Committee under protocol CAAE 73229817.3.0000.5238, submitted on 08/10/2017, in compliance with Resolution No. 466/12 of the National Health Council (CNS). [5]

The sample consisted of patients hospitalized at the UFRJ HUCFF ICU in the months of July and August of 2017 and, collected during the same period, and who were in agreement with the following inclusion criteria: absence of LPP and skin diseases at admission ICU, being over 18 years and minimum time of 24-hour hospitalization in the ICU, excluding patients who developed skin lesions of different etiology than by pressure.

For data collection, records were used in medical records through a data collection instrument of the type, containing the following information: identification data (age and sex); data on hospitalization (period of ICU stay); health data (pre-existing diseases) and specific data on LPP (risk score according to the BRADEN score in the evaluations performed and recorded in the first 24 hours of hospitalization and in the discharge records of the ICU, regarding the integrity of the skin after period of hospitalization, presence of LPP, staging and location. Staging was based on the international classification proposed by NPUAP.[2]

For the calculation of incidence, the epidemiological form was used: number of new cases of people with LPP developed in a certain period, in a population at risk, transformed into percentage. For data analysis and tabulation, the Excel program was used, statistical formulas for simple and percentage frequency evaluation. After tabulation, the results were distributed in graphs and figures available in the excel program.

The research was of the documentary type, retrospective, without the direct relation with the subjects of the research. The information extracted respected the ethical principles described in the resolution of

the Health Council 466/12, being treated in a way to ensure the anonymity of the subjects, and in a confidential way[6].

RESULTS

During the months of July and August, 80 patients were admitted to the HUCFF intensive care unit, from the Surgical and Emergency Center services. Of these, 05 patients from the sample were excluded because they presented pressure lesion and / or another skin lesion prior to admission to the ICU. Of the 75 patients evaluated, 21 developed a pressure injury, equivalent to an incidence rate of 28%.

In relation to the previous picture, the development of the LPP in stages 1 and 2 in the first 30 days of hospitalization and with more than 30 days, the LPP in stage 4, these more serious injuries and that can evolve to increase morbidity -mortality of patients, including severe infections that can lead to death.

In addition, it is possible to identify practically double LPP between 10 or less days of hospitalization and also 11 and 20 days of hospitalization, demonstrating the increased risk in the development and even more severe staging of these lesions with the length of stay in the ICU, local the latter being of high risk, considering the assistance profile of the hospitalized clientele because it is critically complex requiring supportive, diagnostic and therapeutic measures that are generally invasive.

According to the data on the anatomical topography of the LPP, it was possible to identify greater occurrence in the sacrum, gluteus and intergluteus, three areas that can elicit reflections about the permanence of the risk factors such as pressure, friction, shear and humidity.

Regarding the occurrence of injuries related to the medical device in two cases, it determines progress in the nurse's diagnostic behavior, which already allows the reflection of preventive measures related to the observed situation, thus minimizing their incidence.

Among the pre-existing diseases in the patients evaluated, systemic arterial hypertension (SAH) and type II diabetes mellitus constituted the most frequent comorbidities in the development of LPP. It is noteworthy that the two diseases, of global incidence and prevalence, have a chronic and degenerative behavior, determining compromises in the arteriovenous circulation with repercussion in the skin nutrition, especially of critical patients, in general users of vasoactive amines and sedative drugs.

Regarding the predictive risk assessment with the Braden Scale, it is not yet performed in all patients, a situation that may determine the risk stratification of the assisted clientele, as well as the preventive management of the risks analyzed. Other assessment scales are used

TABLE 1 – Distribution by sex and age of patients hospitalized at HUCFF ICU who developed LPP and their respective incidence rates Rio Janeiro, RJ, 2017.

Variable	Intpatients N(%)	Developed LPP N(%)	Incidence Rate N(%)
Gender			
Female	52 (69,3)	14 (66,7)	26,9
Male	23 (30,7)	7 (33,3)	30,4
Age			
< 60	27 (36,0)	5 (23,8)	18,5
> 60	48 (64,0)	16 (76,2)	33,3

TABLE 1 – Relationship between length of hospital stay and LPP development by stages of patients admitted to the HUCFF ICU. Rio de Janeiro, RJ, 2017.

Length of stay	Inpatients		Development of LPP				
	N	%	Stage				Total %
			1	2	3	4	
≤ 10 days	53	70,7	3	1	-	-	19,0
11 to 20 days	13	17,3	3	5	-	1	42,8
21 to 30 days	2	2,7	1	1	-	-	9,5
> 30 days	7	9,3	-	1	1	4	28,6

GRAPH 1 – Place of greatest occurrence of LPP in patients admitted to the HUCFF ICU. Rio de Janeiro, RJ, 2017.

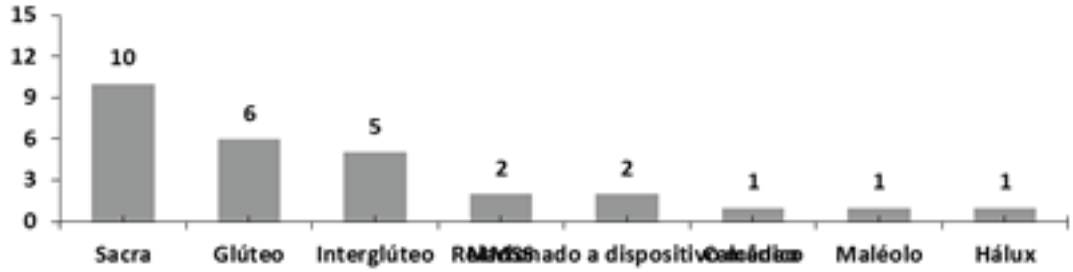
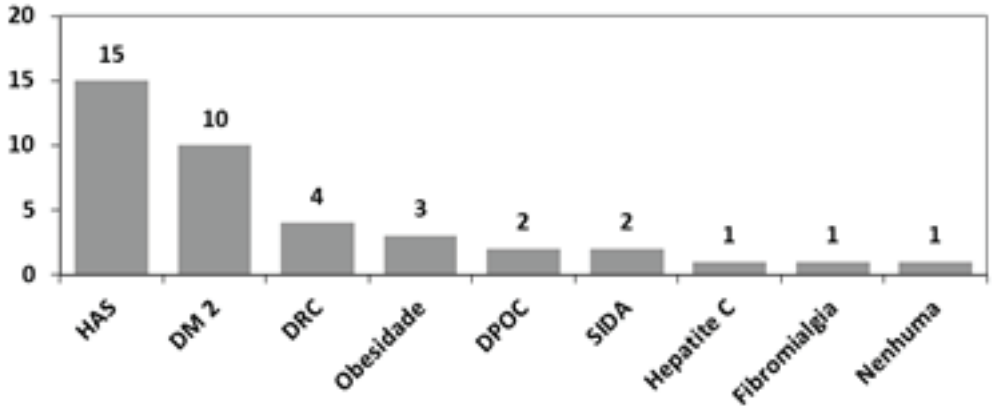
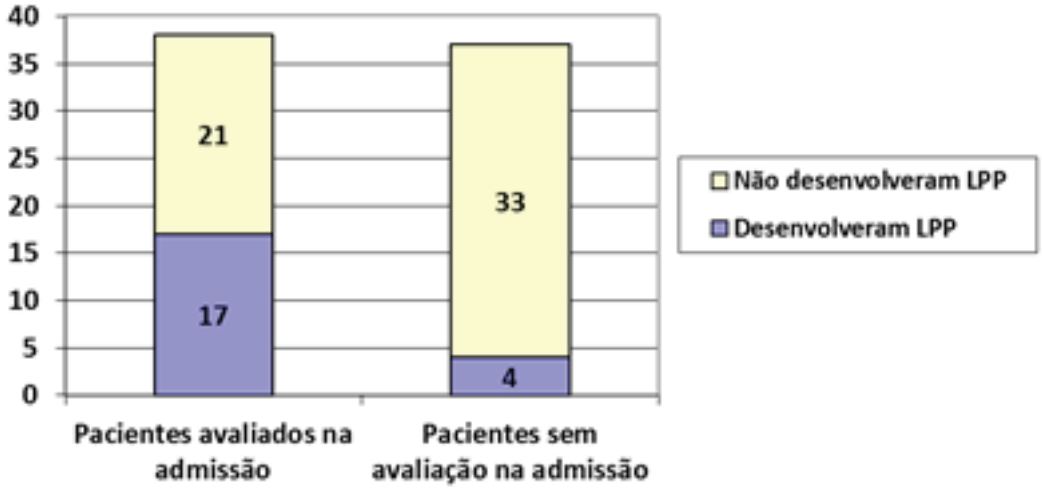


CHART 2 – Major pre-existing diseases among patients who developed LPP in the HUCFF ICU. Rio de Janeiro, RJ, 2017.



GRAPH 3 – Application of the Braden Scale at the time of admission and the development of LPP in patients admitted to the HUCFF ICU. Rio de Janeiro, RJ, 2017.



according to their specificity and sensitivity for risk measurement. In the ICU there is already a more adequate, adapted and validated option for Brazil in the predicted risk assessment of the Cubbin Jackson Scale.

DISCUSSION

Although intensive care units are the most appropriate hospital sector for the care of critically ill patients, it is considered to be one of the most stressful and trau-

matizing hospital environments for the patient. The association of intrinsic and extrinsic factors to which patients are exposed increases the risk of developing lesions.

In the present study, the patients were followed for two months. Of the 75 patients admitted to the ICU who met the criteria of inclusion and exclusion of the research, 21 developed pressure injury during a certain period of hospitalization at the ICU of the University Hospital Clementino Fraga Filho, which indicates an incidence of 28%. The results obtained in this study corroborate the findings in the literature that refer to incidences in critically ill patients ranging from 22.2% to 62.5% in national studies and from 6% to 38% in international studies.[6-7]

In order to evaluate the risk profiles of LPP development, the results were divided into graphs and tables by the following variables: gender, age, hospitalization time, place of highest incidence of LPP, preexisting diseases and evaluation by Scale of Braden for the risk score..

It was verified according to Table 1, that there is a predominance of females with regard to the number of hospitalizations. Taking into consideration the total number of patients who developed LPP, the female sex represents 66.7% of this result. However, when analyzing the incidence rate by sex, it is possible to observe that the male sex presents an incidence rate higher than the female sex, considering that the number of men hospitalized was lower. Some studies report a predominance of males with regard to the incidence of pressure injuries.[8-9] Others attribute a higher incidence in females[10-11] and there are those in which there is no significant difference between the sexes with respect to development of pressure lesions,[12-13] pointing out that this variable still portrays controversy in the literature and does not present a relevant statistical difference.

Regarding the age variable, a higher incidence of pressure injury was observed in individuals over 60 years old (33.3%). Such data reinforce findings in the literature, as demonstrated in studies that evidence the elderly population as being more prone to developing pressure injuries during the period of hospitalization.[7]

Some risk factors that contribute to the high risk in this age group are the physiological changes of the skin over aging such as decreased skin elasticity, insufficient skin hydration and altered sensitivity and may be aggravated when associated with chronic diseases[14]. It is therefore essential to emphasize the importance of multidisciplinary work in the prevention and treatment of LPP in this particular population that is in a context of greater fragility.

According to NPUAP, when it comes to elderly patients, there are some complementary recommendations for the prevention of pressure injuries, such as ensuring that PPIs are correctly differentiated from other cutaneous lesions and in relation to special care with aged and vulnerable skin to choose atraumatic dressings in the prevention and treatment of LPP by decreasing the risk of separation of the layers of the epidermis and dermis during fixation removal.[2]

Regarding the length of stay in the ICU, the studies found that prolonged stay negatively affects patients' health status, increasing the risk of complications. (15) Data obtained, shown in table 2, showed that patients who remained hospitalized for more than 10 days were more susceptible to LPP formation, such information reinforces the study that describes the possibility of developing LPP when the hospitalization in the ICU is greater than 10 days.[4]

When investigating the time elapsed for the appearance of the first lesion we found that the majority of LPP began to develop from the fifth day of hospitalization. Other studies indicate that the patients presented compromised cutaneous integrity, predominantly on the third day of hospitalization.[7] In a study carried out in three ICUs of a university hospital in the city of São Paulo, there was a greater number of LPP occurrences (60.9%) in the first week of hospitalization.[16] This time period is therefore considered as a risk factor for the development of this type of injury. It is imperative that the nurses act in the care of the critical patient in the early adoption of preventive measures.

Regarding the time of hospitalization, we can relate it to the stage of the lesions developed by the patients. Patients hospitalized for less than 10 days, despite having developed LPP in a short time in the ICU, were discharged with stage 1 lesion and those who remained hospitalized for more than 30 days had a longer evolution of the lesion, reaching stage 4. It is concluded that there is a directly proportional relationship between the time of hospitalization and the stage of the lesions, and it is therefore necessary and essential not only to adopt preventive actions, but also to re-evaluate and treat the LPP involution.

Regarding the anatomical location of the lesions, according to Chart 1, the region of greatest involvement was sacral (35.7%), followed by gluteal (21.4%) and intergluteal (17.8%). The regions of lower incidence were the upper limbs, and related to medical device mainly oral region that developed from poor fixation of medical devices, followed by the regions of calcaneus, malleolus and hallux.

From the survey in the literature, it was noted that in all the studies analyzed, the sacral region was identified as the one with the highest incidence of lesions, which is justified because it is the area that has the greatest pressure in patients in the supine position, being important the strategy of change of position every 2 hours as a preventive measure. Different from the findings of this

study, another area identified as having a high LPP frequency in the literature is the calcaneus. This reality can perhaps be justified by the effectiveness of the routine of LPP prevention in this region used in the HUCFF ICU, such as the application of calcaneal suspension devices, in order to ensure that this area is not in contact with the bed surface, pointed as an ideal measure by NPUAP[2] allowing the calcaneus to be free of any pressure in a state sometimes termed "floating calcane".[2]

Regarding the risk factors for the development of LPP, in addition to the age previously discussed, other conditions may influence the development of injuries such as chronic diseases, especially arterial hypertension and diabetes mellitus. According to figure 2, 15 (71.4%) of the 21 patients who developed pressure injury during ICU stay at HUCFF had a medical diagnosis of hypertension and 10 (47.6%) of diabetes mellitus.

In other studies, one of the most prevalent risk factors among the participants was also the presentation of systemic arterial hypertension. It is known that the continuous use of antihypertensive drugs reduces blood flow and tissue perfusion, which makes the patients more susceptible to pressure, facilitating the development of LPP.[17]

In diabetes, there is an imbalance between supply and demand for insulin, which makes these patients prone to peripheral vascular complications and decreased sensitivity, increasing the risk of pressure lesions. A study conducted in a university hospital in Paraíba showed that a total of 26.9% of the patients who developed lesions had metabolic alterations evidenced by diabetes.[18]

Among the diseases presented, it is known that patients presenting extremes of BMI classification are also at higher risk of lesions. Those with reduced body mass have compromised protection of regions of bone prominence and those with excess adipose tissue because it is poorly vascularized and not elastic like other tissues, becomes more vulnerable to pressure and prone to rupture,[4]. However, although these variables are found in the literature, individuals classified as having normal BMI predominated in this study, only three (14.2%) patients presented changes in BMI, classified as obese.

Considering the aspects of prevention of pressure injury, the Braden Scale (BE) should be used as an instrument for the evaluation of patients at risk and early adoption of preventive measures. Graph 3 presents data regarding the application of this scale at the time of admission and / or during hospitalization of the patients in the HUCFF ICU. It can be observed that of the 75 patients hospitalized during the study period, a little more than half (50.6%) was evaluated according to the predictive risk scale. Of these, 44.7% developed a pressure injury, a similar index found in a study done in 2014 at the University Hospital of the Federal District.[19]

On the other hand, a 2018 study performed in a Municipal Hospital in Rio de Janeiro with 49 nurses showed that none of these used a scale for the evaluation of the risk of development of pressure injury.[20] It is known that this scale was developed in order to help prevent LPP. Therefore, taking into consideration the patients in the sample who were not evaluated according to the BE, despite the fact that there is no LPP in 89% of them, we should give importance to those who were not evaluated and developed LPP since the application of the BE could have risk identification and the use of more effective preventive measures.

The results suggest that all patients should be evaluated in the different criteria indicated in the BE, such as: sensory perception, humidity, activity, mobility, nutrition and friction and shear, in the admission and for reassessment during the hospitalization of patients in ICU or those at risk in another hospital admission unit, as described by Araújo[10], where the risk assessment scales for LPP are important tools in nursing care, since they highlight vulnerable points, reinforce the importance of continuous evaluation and favor prevention mechanisms.

According to the NPUAP Quick Reference Guide on Prevention and Treatment of Pressure Injury,[2] it is necessary to take into account the impact of certain risk factors that lead to the development of LPP, among them the increase of skin moisture. When the skin is wet it becomes more fragile due to pH change (it becomes more basic) and becomes more susceptible to friction and shear.[9]

The screening of the nutritional status of patients at risk of developing LPP is also a measure to be adopted for the prevention of injuries and the nutritionist as a member of the multidisciplinary team should develop an individualized dietary plan for each patient. However, the reassessment function of the nutritional status of these at-risk individuals is not limited to the nutritionist, any qualified staff member can and should reevaluate these patients in case of change in clinical condition, for example.[2]

In relation to the items sensory perception, mobility and friction and shear, it is known that the lowering of sensory perception may be in most cases associated with sedation and decreased level of consciousness, which reduces the response to painful stimuli. Limiting the ability to feel pain or discomfort prevents the patient from moving in the bed to relieve pressure, which makes it liable to develop lesions. Added to this condition, in the ICU all patients were bedridden and completely immobilized, ie they did not do any movement without help and with this increase the risk of friction with the surface of the bed.

From the analysis of the subscales of EB, it is possible to identify the main risk factors for LPP development and to improve the planning of preventive actions focused on specific guidelines, prioritizing care and optimizing resources.

CONCLUSION

In order to verify the incidence of pressure lesions and to identify the risk factors for lesion development, using the Braden Scale in patients hospitalized at the Intensive Care Unit of a University Hospital in Rio de Janeiro, the data showed a rate of similar to those reported in the literature, but knowing that the incidence of LPP has been used as an indicator of the quality of health services, it would be satisfactory to find rates lower than the finding in the study.

Through the analysis of the data it was also possible to trace the profile of the ICU assisted clientele and we could conclude that the high incidence observed may be related to the severity, complexity and dependence of the patients and not necessarily only with the length of hospital stay. The first injuries began immediately in the first week of stay in the sector. However, it was observed that more advanced stages of the lesion correlate with prolongation in this time of hospitalization.

The study points to the magnitude of a public health problem, which has long been discussed, but is still difficult to control by health professionals, especially in the area of ICU care in Brazil. Thus, the development of LPP depends on different risk factors related to the patient, environment, structure and work processes, and the early diagnosis of the problem, through risk assessment, may determine more appropriate preventive actions.

ANVISA proposed RDC No. 36 on July 25, 2013, to guide actions for patient safety in health services, including the predictive risk assessment; prevention of pressure ulcer or LPP; notification of LPP including non-events, that is, LPP stages 3, 4 with moderate to severe complications, including deaths so that, through an analysis of the institutional reality experienced, the health team itself promotes intervention proposals involving the entire institutional community awareness, and ongoing education - effective strategies to reduce this burden.

In view of the above, it is fundamental that nurses act as leaders of the health team in the systematization of critical patient care, with early adoption of preventive measures based on nursing diagnosis, in addition to routine reassessment of risk.

The importance of risk assessment through the use of a validated predictive scale, such as the Braden Scale, a tool in the work process for the early identification of patients at high risk of developing LPG, is emphasized, allowing more adequate planning for care borrowed.

We believe that because it is a single case study this represents a limitation of the study, this limitation adds to the specificity of the participants, such as biological characteristics and health conditions, but it stands out that the results found here may be comparable to new studies to be carried out on the subject, in order to broaden the understanding about nursing care and to ensure patient safety in relation to skin integrity. It is therefore suggested that new studies be presented comparing results on the evaluation of the incidence of LPP as indicators in the quality of health services.

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