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PRESSURE INJURY INCIDENCE AND PREVENTIVE MEASURES IN CRITICAL PATIENTS[1]

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ABSTRACT

Considering that the critical patient is more susceptible to the development of pressure lesions, this study aims to analyze the incidence of pressure lesion in critical patients, and to identify the preventive measures instituted. A cross-sectional study was carried out based on the analysis of 198 medical records of patients admitted in the two intensive care units of a university hospital in southern Brazil between July and December 2015. Data were collected from April to May 2016, using an instrument drawn up by the authors. Subsequently, the data were double-digitized in Epi Info® and analyzed by the Statistical Package for the Social Sciences® program. There is a prevalence of male patients (60.1%), white race (73.2%), mean age 57.5 years-old and the incidence of pressure injury was 39.4%. The most recorded preventive measures (97.9%) were: skin inspection, change of decubitus in every two hours, bedside elevation up to 30º, and use of cushions. There was no association between preventive measures and development of pressure injury. The study showed a high incidence of pressure injury and identified measures for prevention, allowing a reflection on the actions prescribed by the nurse to reduce such events, to promote the health of patients and to improve the quality of nursing care..

Keywords: Pressure ulcer. Incidence. Intensive care units. Nursing care. Preventive health services.

INTRODUCTION

Pressure injury (PI) is a frequent complication in critically ill patients. These individuals present more severe clinical conditions or require more rigorous monitoring associated with the implementation of invasive therapy or not. Most of them remain confined to the bed for a long time, and this characteristic added to other factors makes them more susceptible to this disease[1,2].

PIs have a negative impact on patients, families and society. The high cost of treatment, prolonged hospitalization time and risk of infection associated with physiological, aesthetic, psychological, social and economic changes demonstrate the magnitude of this problem that pervades Intensive Care Units (ICUs). Expenditure on PI treatment is considerably higher and higher than that generated by prevention, so it is necessary to rethink prevention and to analyze direct and indirect costs[3].

PI is understood as any damage localized on the skin and/or soft tissues, intact or as ulcer, on a bone prominence, associated with the use of medical artifacts from increased pressure for a prolonged period[4].

The etiology of PIs includes intrinsic and extrinsic factors. They are characterized as intrinsic: clinical condition, advanced age, diabetes mellitus, cardiovascular disease, immobility or impaired mobility, loss or sensory deficit, decreased arteriolar pressure, impaired skin perfusion, altered body temperature and humidity, urinary and intestinal incontinence, dehydration, malnutrition, edema, pain and emotional stress. The extrinsic factors can be considered: pressure, shear, friction, micro-climate, smoking, sedation, surgery, trauma, restraint, traction and plaster devices[4].

The current classification allows categorizing the PI no more in categories, but in stages. The classification system observes the following definitions: stage one - whole skin with erythema that does not whiten; stage two - loss of skin in its partial thickness, with dermis exposure; stage three - loss of skin in its overall thickness; stage four - loss of skin in its total thickness and tissue loss; non-classifiable - loss of skin in its total thickness and non-visible tissue loss; deep tissue - dark

[1]It was extracted from the Conclusion Work of the Nursing Course at Universidade Estadual de Londrina (UEL), entitled "Incidência de lesão por pressão e medidas preventivas em pacientes críticos", presented at"XVI Simpósio de Experiência e Pesquisas Integradas Ensino, Serviços e Comunidade"and at"XVII Congresso Sul Brasileiro de Medicina Intensiva", in 2016 and 2017

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red, brown or purple discoloration, persistent and nonwhite. It also presents two additional descriptions: PIs related to medical devices and PIs in mucous membranes[4].

In the international scenario, PI incidence rates ranged from 0.63% in China[5], 16.6% in a systematic review among several countries[6], to 39.3% in Saudi Arabia[7]. In Australia, the incidence rate was 14.4% after the implementation of a protocol of prevention of PI among patients considered at risk[8].

In Brazil, a longitudinal study performed at an ICU in João Pessoa showed a total incidence of PI of 22.2%[9]. A study in Teresina revealed a 29.03% of incidence among critical patients[10]. Another study in an ICU in São Paulo identified a rate of 11%[11], while a survey conducted in Vitória observed 22% of occurrence among patients admitted to the ICUs[1].

The occurrence of PI is seen as an indicator of the quality of care provided by the nursing team, which is responsible for direct care with the patient. The nurse is responsible for it in the leadership role in health teams, to manage care through actions to identify risk factors, planning preventive measures, treatment and evaluation of the care provided by the team[2,3].

Some tools may assist the nurse's job to ensure quality care in PI prevention, such as risk assessment scales. The Braden scale, the most used in Brazil and in the world, consists of a protocol developed based on the pathophysiology of PIs. This instrument consists of six subscales, which evaluate sensory perception, activity, moisture, mobility, nutrition, friction and shear. The sum of the scores generated by its components allows patients to be classified into: no risk (19 to 23 points), low risk (15 to 18 points), moderate risk (13 to 14 points), high risk very high risk (less than or equal to nine points)[12].

Other measures also contribute to PI prevention, such as: control of pressure on bony prominences, pressure distribution, positioning and repositioning every two hours, incontinence control, maintenance of intact skin and adequate nutrition[3].

Some organizational factors of the work counteract the preservation of the skin integrity of the bedridden patient. Emphasis is given to the workload of the nursing team, the limited number of staff in some institutions - especially during the night period, which can compromise the change of position every two hours - and the scarcity of specific material resources for pressure relief, such as special mattress, cushions and protective dressings, all of high cost for hospitals. There is also a deficiency in the standardization of knowledge related to PI prevention within health institutions, due to the great variability of products and conduits that can be used. In addition, there is the lack of educational campaigns on the subject[13].

Thus, considering that the critical patient is more susceptible to the development of PI, we ask: What is the incidence of PI in critical patients of a university hospital in Southern Brazil? What are the preventive measures implemented by the nursing team?

From this perspective, this study aims to analyze the incidence of PI in critical patients and to identify the instituted preventive measures.

METHODOLOGY

An epidemiological, cross-sectional, documentary study was developed based on the analysis of medical records of patients admitted to the ICUs of a university hospital in the South of Brazil.

It is a large hospital with 300 beds: 228 in the medical-surgical clinic, 40 in the pediatrics, 7 in neonatology and 25 in the maternity ward. It has two ICUs composed of 10 beds each. ICU 1 is intended for adult clinical and surgical patients, with approximately 66 hospitalizations per month; the ICU 2, to adult patients kept in precaution by contact, droplets or aerosols, with about 33 monthly hospitalizations. The nursing team of the ICUs consists of 1 nurse technician for every 2 beds and 1 nurse for every 5 beds in the morning and afternoon periods, and 1 nurse for every 10 beds in the night shift.

The data were collected between April and May 2016 by two undergraduate nursing students. The period was selected for convenience. The students were previously instructed about the objectives of the study, analyzed variables, hospital care protocol and nursing care. All complete records - with prescription, annotation and nursing evolution - were kept in the file service of that institution, of adult patients admitted to the ICU between July and December 2015. Patients admitted with PI were excluded from the analysis. No sample calculation was performed.

To obtain the data, a collection instrument was elaborated, according to studies by Fernandes[14] and Simão[15]. The pilot test was done to improve it.

The research instrument consisted of variables of patient identification and preventive measures of PI. The development of PI was considered as dependent variable, and as independent variables age, sex (male and female), race/color (white and non-white) and time of PI development. The variables age and time of PI

development had their categorization oriented by their respective medians.

The independent variables recorded in the medical records (prescription, annotation and nursing evolution) in relation to preventive measures were: risk assessment, skin inspection, change of decubitus every two hours, use of special mattress, bedside elevation up to 30º, use of skin care, nutritional support, use of cushions, use of urinary/fecal incontinence devices and protective dressing (hydrocolloid or transparent film). The frequency of registration of these variables was categorized as always (patients with a preventive measure every day until the development of PI) and not always (patients who did not have a preventive measure record every day until the development of PI), for the importance of adopting these measures for PI prevention.

The data collected were double-digitized in Epi Info® version 3.5.1 and analyzed through the Statistical Package for the Social Sciences® version 20.0. Poisson regression was used in the development of bivariate analyzes to verify the association between PI development and the adoption of preventive measures. A significance level of less than 5% was adopted.

The present study was previously authorized by the hospital and approved by the Research Ethics Committee of the State University of Londrina, under opinion no 258/2011, CAAE 0224.0.268.000-11, on 10/3/2011. It is the deployment of a larger project that aims to implant, in the institution studied, the six international goals of patient safety.

RESULTS

A total of 198 medical records of patients who were admitted to the ICU of this institution between July and December 2015 were analyzed. A total of 1,065 nursing prescriptions were evaluated. Some variables did not complete the selected sample due to the absence of data in the charts analyzed.

Among the general characteristics of the population, they're male patients (60.1%), white race/color (73.2%) and average age of 57.5 years-old predominated. Regarding the development of PI, an incidence of 39.4% was found in an average of 6.01 days (minimum 1, maximum 22 days) (Table 1).

Table 1. Distribution of patients in intensive care units in relation to age, sex, race/color and time to development of pressure injury. Londrina, PR, Brazil, 2015

	DevelopedPI		Did not develop PI		PR	CI95%	p
	n	%	n	%			
Age							
16-63	36	35,6	65	64,4	1,00		
64-95	42	44,2	53	55,8	1,43	0,81-2,54	0,221
Sex							
Male	49	41,2	70	58,8	1,00		
Female	29	36,7	50	63,3	0,94	0,50-1,74	0,835
Race/color							
White	55	37,9	90	62,1	1,00		
Nonwhite	12	42,9	16	57,1	1,23	0,54-2,79	0,627
Time of development of PI							
Up to 5 days	46	37,4	77	62,6	1,00		
6 or more days	32	42,7	43	57,3	1,14	0,61-2,12	0,684

Source: Created by the authors (2016)
PI–Pressure injury
PR -Prevalence Ratio
CI95% -Confidence interval at 95%

Among the most recorded preventive measures in the nursing team documents were: skin inspection (97.9%), change of decubitus position every two hours (97.9%), head elevation up to 30° (97.9%), and use of cushions (97.9%) (Table 2).

No preventive measure was significantly associated with PI development (Table 2).

Table 2. Distribution of hospitalized patients in intensive care units in relation to preventive measures and development of pressure injury.Londrina, PR, Brazil, 2015

	Developed PI		Did not develop PI		PR	CI95%	p
	n	%	n	%			
Risk assessment							
Always	20	33,3	40	66,7	1,00		
Notalways	58	42,0	80	58,0	0,69	0,37-1,30	0,251
Skin Inspection							
Always	77	39,7	117	60,3	1,00		
Notalways	1	25,0	3	75,0	1,97	0,20-19,33	0,559
Change of decubitus 2/2 hours							
Always	77	39,7	117	60,3	1,00		
Notalways	1	25,0	3	75,0	1,97	0,20-19,33	0,559
Special mattress							
Always	-	-	-	-			
Notalways	78	39,4	120	60,6			
Headboard of the bed raised to 30°							
Always	77	39,7	117	60,3	1,00		
Notalways	1	25,0	3	75,0	1,97	0,20-19,33	0,559
Mobile bed sheet							
Always	-	-	-	-			
Notalways	78	39,4	120	60,6			
Skin moisture							
Always	19	40,4	28	59,6	1,00		
Notalways	59	39,1	92	60,9	1,06	0,54-2,06	0,868
NutritionalSupport							
Always	-	-	7	100			
Notalways	78	40,8	113	59,2			
Use of cushions							
Always	77	39,7	117	60,3	1,00		
Notalways	1	25,0	3	75,0	1,97	0,20-19,33	0,559
Use of devices for urinary/fecal incontinence							
Always	62	42,8	83	57,2	1,00		
Notalways	16	30,2	37	69,8	1,73	0,88-3,38	0,111
Protective dressing							
Always	14	51,9	13	48,1	1,00		
Notalways	64	37,4	107	62,6	1,80	0,79-4,07	0,158

Source: Created by the authors (2016)
PI – Pressure injury
PR - Prevalence Ratio
CI95% - Confidence interval at 95%

DISCUSSION

This research aimed to describe the incidence of PI and the influence of preventive measures in the development of PI among critical patients. It was identified that almost half of the investigated patients developed PI. The high incidence did not demonstrate a significant association with the care prescribed for PI prevention.

The distribution of the population as to sex, age and race/color corroborates other studies that approached PI in critically ill patients. A study developed in a cardiopneumological ICU in São Paulo had similarity to the average age (57.2 years-old), male sex (55%) and white race/color (80%)[11]. However, the predominance of women (51.6%) and brown race/color (64.5%) was identified in an investigation in the Brazilian Northeast[10]. Other research, performed among critically ill patients in Vitória (ES), also observed female predominance (51%)[1].

In this investigation, the incidence of PI was 39.4%, with lesion development averaging 6.01 days. The incidence is high when compared to other studies that addressed this issue among critically ill patients. Two studies carried out among ICU patients in Vitória (ES) reported an incidence of 22% and 30.9%, respectively[1,16], approaching the research findings in a ICU in João Pessoa, with 22.2%[9], and in an emergency service of a university hospital in the South

of Brazil, with 19.5% [17]. In an ICU in São Paulo, an incidence of 11% was observed[11]. A cohort study among ICU patients in Teresina showed an incidence of 29%, with the development of most PIs between the third and fourth day of hospitalization[10]. In the international scenario, a similar incidence was found between critical Saudi patients (39.3%)[7] and the present investigation. A systematic review showed incidence rates that corroborate current findings in the United States (39.1%), France (44.5%), Indonesia (33.3%), Japan (28.4%), Belgium 5%), Canada (43.2%) and Sweden (36.9%)[6].

In a prospective study in ICUs in Espírito Santo, an association was found between PI development and hospitalization time (more than 10 days). However, statistical significance was not associated with the development of PI with body mass index, diabetes mellitus, smoking, type of diet, use of mechanical ventilation and sedation[1].

The clinical conditions of ICU patients contribute to the development of PI, since prolonged confinement in the bed increases the risks of poor tissue perfusion and makes the patients more susceptible to such adverse events[2]. Extrinsic factors may also contribute to the increased incidence of PI in this population. Nursing for PI prevention depends on the prescription of the nurse, and the nursing team is responsible for the execution of most preventive care[18].

The preventive measures identified in the records of the nursing team did not demonstrate statistical significance with the development of PI. This is possibly due to the adoption, at the institution, of preventive standard measures already included in the electronic prescription of nursing, such as: maintaining high head, avoiding friction of the patient's skin with the sheet during the change of decubitus, inspecting the risk areas to PI at each position change and use pouch/pillows/cushions to protect bony prominences.

In an analysis of the amount of nursing care for critical patients without and with PI in Rio de Janeiro, there was no statistical significance, but it was highlighted that patients with PI received less amount of nursing care when it is compared to patients without PI. The most accomplished interventions (over 200 times) in patients without PI were: to keep the skin dry, to keep sheets clean and stretched, to use movable sheet, to use disposable diaper, to change the diaper with each physiological elimination, to change of decubitus every two hours, skin inspection and to keep headboard at 30º. In patients with PI, the prevalent measure (over 200 times) was a change of decubitus position every two hours[19].

All nursing professionals, in their academic formation, are instructed on the legal aspects of correctly and completely registering the care performed, given the importance of such attribution to the legal support of the professional, institution and patient. More important than simply recording the medical record is verifying the veracity of the care that has actually been implemented[20].

CONCLUSION

The present study contributed to identify the incidence of PI in the ICUs of a public hospital and the preventive measures instituted. Knowing patients who are vulnerable to PI development helps the multi-professional team to detect risk factors and to implement preventive measures prior to the onset of the problem. The data collected may support the improvement of the quality of care provided, in order to obtain more satisfactory results in the actions of care aimed at reducing the incidence of PI.

It was also sought to stimulate reflection on the effectiveness of nursing care aimed at the prevention of PI, considering that this study verified the accomplishment of some preventive measures in the majority of the patients.

Even with the results obtained with prevention, the incidence of PI was high, a fact that raises doubts about the effectiveness of the prescribed care. Investments in professional training, creation and dissemination of protocols, as well as adequacy of human and material resources, can help in eliminating this problem so present in ICUs.

Among the limitations of this study, we highlight the small period of data collection, which may have interfered with the incidence of PI. Another important consideration is that, due to the prescription of some care for all patients, several PI prevention practices had a high percentage of follow-up, a situation that limited the performance of multivariate statistical analyzes. In addition, the sectional nature does not allow the establishment of a causal relationship between the factors studied.

Longitudinal studies are suggested that support the identification of factors for the development of PI in critical patients, in order to establish the cause and effect relationship between the observed variables. Another important aspect is to identify the relation of the intrinsic and extrinsic factors in the development of PI.

INCIDÊNCIA DE LESÃO POR PRESSÃO E MEDIDAS PREVENTIVAS EM PACIENTES CRÍTICOS

RESUMO

Considerando que o paciente crítico é mais suscetível ao desenvolvimento de lesão por pressão, objetivou-se analisar a incidência de lesão por pressão em pacientes críticos e identificar as medidas preventivas instituídas. Foi realizado um estudo transversal baseado na análise de 198 prontuários de pacientes admitidos nas duas unidades de terapia intensiva de um hospital universitário do Sul do Brasil, entre julho e dezembro de 2015. Os dados foram coletados no período de abril a maio de 2016, utilizando-se um instrumento elaborado pelos próprios autores. Posteriormente, os dados foram duplamente digitados no Epi Info® e analisados pelo programa Statistical Package for the Social Sciences®. Predominaram pacientes do sexo masculino (60,1%), raça branca (73,2%), com média de idade de 57,5 anos e incidência de lesão por pressão de 39,4%. As medidas preventivas mais registradas (97,9%) foram: inspeção da pele, mudança de decúbito a cada duas horas, cabeceira elevada até 30º e uso de coxins. Não houve associação entre medidas preventivas e desenvolvimento de lesão por pressão. O estudo mostrou elevada incidência de lesão por pressão e identificou as medidas instituídas para prevenção, possibilitando uma reflexão sobre as ações prescritas pelo enfermeiro para redução de tais eventos, promoção da saúde dos pacientes e melhoria da qualidade da assistência de enfermagem.

Palavas-chave: Úlcera por pressão. Incidência. Unidades de terapia intensiva. Cuidados de enfermagem. Serviços preventivos de saúde

INCIDENCIA DE LESIÓN POR PRESIÓN Y MEDIDAS PREVENTIVAS EN PACIENTES CRÍTICOS

RESUMEN

Considerando que el paciente crítico es más susceptible al desarrollo de lesión por presión, el objetivo fue analizar la incidencia de lesión por presión en pacientes críticos e identificar las medidas preventivas determinadas. Fue realizado un estudio transversal basado en el análisis de 198 registros médicos de pacientes admitidos en las dos unidades de cuidados intensivos de un hospital universitario del Sur de Brasil, entre julio y diciembre de 2015. Los datos fueron recolectados en el período de abril a mayo de 2016, utilizándose un instrumento elaborado por los propios autores. Posteriormente, los datos fueron doblemente digitados en el Epi Info® y analizados por el programa Statistical Package for the Social Sciences®. Predominaron pacientes del sexo masculino (60,1%), raza blanca (73,2%), con promedio de edad de 57,5 años e incidencia de lesión por presión de 39,4%. Las medidas preventivas más registradas (97,9%) fueron: examen de la piel, cambio de decúbito a cada dos horas, cabecera elevada hasta 30º y uso de cojines. No hubo asociación entre medidas preventivas y desarrollo de lesión por presión. El estudio señaló elevada incidencia de lesión por presión e identificó las medidas determinadas para la prevención, posibilitando una reflexión sobre las acciones prescriptas por el enfermero para reducción de tales eventos, promoción de la salud de los pacientes y mejoría de la calidad del cuidado de enfermería.

Palabras clave: Úlcera por presión. Incidencia. Unidades de cuidados intensivos. Atención de enfermería. Servicios preventivos de salud.

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