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Pressure injury: analysis of medical records and adverse event reports

Lesão por pressão: análise de prontuários e notificações do evento adverso

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ABSTRACT

Introduction: The movement for patient safety seems increasingly globalized. Thus, strategies to leverage patient safety are necessary for this asset to be consolidated in the healthcare dynamics of health organizations. **Objective:** Evaluate in parallel the records of reports on pressure injuries with reports of adverse events in a public university hospital. **Method:** Descriptive study, from a documentary source. It was developed with patient records and reports of pressure injury in the Intensive Care Unit for adults and neurology and orthopedics unit of a hospital in Paraná. Variables of clinical and demographic characterization of the sample were extracted; intrinsic and extrinsic risk factors for pressure injury, in addition to comparative incidence in documentary records in medical records and reports. Descriptive statistical analysis was performed. **Results:** A total of 658 medical records were analyzed, predominantly of men (62.0%), hospitalized in the non-critical sector (69.7%). It was found 91 (13.8%) records of incidence of pressure-related injuries in the medical records. Several intrinsic and extrinsic risk factors were raised. There were three reports of the adverse event in the same period, revealing that 96.7% of the injuries identified in the medical records were not properly reported. **Conclusions:** There is a clear discrepancy between the incidence of pressure injury observed in medical records and reports of adverse events.

KEYWORDS: Pressure Injury; Patient Safety; Notification; Quality Management

RESUMO

Introdução: O movimento em prol da segurança do paciente parece cada vez mais globalizado. Assim, estratégias para alavancar a segurança do paciente são necessárias para que esse bem se consolide na dinâmica assistencial das organizações de saúde. **Objetivo:** Avaliar em paralelo os registros de prontuários sobre lesão por pressão com as notificações do evento adverso em um hospital universitário público. **Método:** Estudo descritivo, de fonte documental. Foi desenvolvido com prontuários de pacientes e notificações de lesão por pressão na Unidade de Terapia Intensiva para adultos e unidade de neurologia e ortopedia de um hospital do Paraná. Foram extraídas variáveis de caracterização clínica e demográfica da amostra; fatores de risco intrínsecos e extrínsecos para lesão por pressão, além da incidência comparada em registro documental em prontuários e notificações. Procedeu-se à análise estatística descritiva. **Resultados:** Foram analisados 658 prontuários, predominantemente de homens (62,0%), internados no setor não crítico (69,7%). Constatou-se 91 (13,8%) registros de incidência de lesão por pressão nos prontuários. Diversos fatores de risco intrínsecos e extrínsecos foram levantados. Houve três notificações do evento adverso no mesmo período, revelando que 96,7% das lesões identificadas nos registros de prontuários não foram devidamente notificadas. **Conclusões:** Há evidente discrepância entre a incidência de lesão por pressão observada em prontuários com as notificações do evento adverso.

Palavras-chave: Lesão por Pressão; Segurança do Paciente; Notificação; Gestão da Qualidade

INTRODUCTION

The movement toward greater patient safety seems increasingly globalized and, fortunately, irreversible. Strategies to enhance patient safety - meaning the reduction of care-associated risks to an acceptable minimum - are necessary for this to be consolidated in the healthcare are dynamics of health organizations[1].

Rather than promoting practical means that lead to greater safety in care, promoting an organizational culture that fosters safe practices and is also proactive in learning from mistakes is imperative for patient safety to be effectively enforced[1,2]. In this scope, reporting adverse events (AE) - which cause harm to patients to a lesser or greater extent - is useful because it tends to increase the assertiveness of safety management actions[3,4].

In the dynamics of healthcare, especially in hospitals, there is no denying the diversity of AE with potential to affect the patients. That being said, a study that focused on identifying AE that were considered preventable listed the following AE in descending order of frequency: healthcare-related infections; surgical and/or anesthetic complications; damage due to delay or failure in diagnosis and/or treatment; pressure injuries; damage from complications in venipuncture; damage due to falls; and damage as a result of the use of medicines[5].

Pressure injury (PI) is any direct or related tissue damage, manifested as a result of exposure of soft tissues to prolonged pressure, especially in areas of bony prominence[6,7,8]. Recently, the scale for better understanding PI was reviewed by an international body. The scale ranges from I to IV, representing the depth of the PI and also unclassifiable lesions; deep tissue injury; injury related to the use of a medical device; and injury in mucous membranes[6,7].

PI is a common and persistent problem in hospital dynamics. Therefore, its prevention and management pervade cross-disciplinary actions and involves skin assessment, water and diet support, controlled decubitus change, topical skin moisturizing, among others[9].

The reporting of PI events is currently recommended to the Patient Safety Centers (PSC) and is a tool for us to better understand the magnitude and focus of the problem, enabling more specific actions according to the institution's reality, since the analysis of patient safety indicators is a planned activity for PSC[10]. Nevertheless, a single source of monitoring and evaluation is not advisable. It is necessary to implement mechanisms for surveying information, like active search in medical records, walk rounds, quality audits and others[10].

Studies that identify AE are socially and scientifically relevant to assess the persistence of PI as an AE in hospital environments and increase problem recognition actions to foster more assertive actions. This led to the following question: is there convergence between PI registration in medical records and AE reporting? Therefore, the objective was to cross-evaluate the records of PI medical records and AE notifications in a public university hospital.

METHOD

Descriptive research of documentary source. It was held in a medium-sized public university hospital located in the state of Paraná, Brazil. The hospital organization has 215 beds exclusively for the Unified Health System and covers a population of approximately two million people.

The wards that were investigated were the Intensive Care Unit (ICU) for adults and the inpatient unit in neurology and orthopedics, which had 14 and 23 beds, respectively. The units were chosen because of our prior knowledge of higher incidence of PI in the hospital, based on the clinical and demographic profile of the patients.

The time frame of the study comprised the period from June 1 to December 31, 2016. Based on this, the target population was the population hospitalized in the survey sectors during this period. The sample excluded medical records in which the patient was transferred from the units researched to another that was not included and those in which the completeness of the records did not allow for data extraction.

Data were extracted from medical records filled at the Medical and Statistical Archive Service (MSAS) and from PI reports to the Patient Quality and Safety Management Center (PQSMC) in the same period. Data collection took place between March and June 2017. To do that, we designed our own form, which included clinical and demographic characterization, as well as information about the care of patients in whom PI was recorded, as follows: time of hospitalization, intrinsic and extrinsic risk factors for the development of PI, record of incidence of PI. Reports from PQSMC records were computed in frequency per month of analysis.

The form was previously pilot tested in a random sample of five medical records and also face assessment by three hospital quality management specialists. After that, we had to make a few adjustments related to the wording of some items and, later, effective data collection was possible.

After manually collecting medical records and PI reports, the information was transposed into electronic spreadsheets using Microsoft Office Excel® software and then analyzed using descriptive statistics.

The ethical requirements applicable to the investigation were duly fulfilled. In this regard, the study comprises a broad research project that deals with patient quality and safety. It is nationally registered by CAAE protocol n. 58636916.5.0000.0107.

Table 1. Characterization of the sample of patients according to age, gender, hospitalization unit and occupation. Paraná, Brazil, 2016.

Variable	Category	N	%
Age (years)	17 to 30	132	20.0
	31 to 45	136	20.7
	46 to 60	196	29.8
	60+	194	29.5
Gender	Female	250	38.0
	Male	408	62.0
Inpatient Unit	Intensive care unit	200	30.3
	Neurology and Orthopedics	458	69.7
Occupation	Not identified	386	58.7
	Retired	61	9.2
	Worker (Miscellaneous)	147	22.4
	Homemaker	54	8.3
	Pensioner	3	0.5
	Student	5	0.8
	Unemployed	1	0.1
Total		658	100.0

Table 2. Risk conditions predisposing to pressure injury recorded in patient records. Paraná, Brazil, 2016.

Risk factors	N	%
Chronic or cardiovascular disease	290	44.1
Hypotension	183	27.8
Cancer	40	6.1
Spinal cord injury	15	2.2

RESULTS

Regarding medical records, the study comprised the analysis of 658 patient documents. The total days of ICU stay were 3,593 (average of 17,9 days per patient); and in the neurology and orthopedics unit it was 5,003 days (average of 10,9 days per patient). Table 1 shows the characterization of the sample according to age, gender, hospitalization unit and occupation.

Table 2 shows some risk factors for PI observed by the analysis of patient records.

Table 3 presents extrinsic risk factors for PI in the patients.

Table 4 presents risk factors intrinsic to the development of PI by the patients.

Of the total (n = 658) of medical records analyzed, 91 (13.8%) mentioned the incidence of PI in the patients at some point. Therefore, the study progressed to the comparison of these incidence records with AE reports in the same period to the PQSMC, as shown in Table 5.

Table 3. Distribution of risk factors for pressure injury extrinsic to the patients. Paraná, Brazil, 2016.

Extrinsic risk factors	N	%
Pressure	521	79.2
Friction	337	51.2
Surgery time > 2 h	178	27.0
Moisture	137	20.9
Shear	66	10.0

h: time.

Table 4. Distribution of risk factors for pressure injury intrinsic to the patients. Paraná, Brazil, 2016.

Intrinsic risk factors	N	%
Edema	206	31.3
Inadequate nutrition	200	30.4
Decreased sensory perception	198	30.0
Unstable temperature	177	26.9
Decreased tissue perfusion	160	24.3
Advanced age	192	14.0
Smoking	198	30.0

Table 5. Reports of pressure injury to the Patient Quality and Safety Management Center. Paraná, Brazil, 2016.

Month	N. of reports	%
June	2	66.7
July	1	33.3
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-
Total	3	100.0

After parallel evaluation between the report data and the evidence of incidence found in the medical records, we found underreporting of 88 PI, which corresponded to a percentage of 96.7% of the total injuries registered in the medical records.

DISCUSSION

The incidence of PI increases the need for patient health interventions, as well as staff workload and financial demands on system organizations[11], which reinforces the importance of this investigation. Among the risk conditions for its occurrence, factors related to hospitalization, predisposing conditions and intrinsic and extrinsic factors to the individual patient stand out[6].

A study aimed at identifying factors associated with PI in an ICU environment found a statistically significant association with the use of vasopressor medication and length of stay in

the unit[12]. In the analysis of this last variable, it was observed that the higher the number of days the patient was hospitalized, the higher the incidence rate of injuries[12]. This reinforces the need for PI to be duly reported to competent bodies like PSCs, because once the profile of affected patients is better understood, prevention interventions can be more focused and include strategies for dehospitalization.

Data from Epimed - ICU data management software - point to an average stay between 5.12 and 7.58 days for ICU and from 14.61 to 24.97 days for the wards[13]. Compared with the data of the present study, the average number of ICU days (17.9) was higher, and in the neurology and orthopedics unit (10.9) it was lower. From this perspective, we can see that prolonged ICU stay, sometimes aggravated by the immobility that is common to patients admitted to that sector and even their clinical severity, may be a risk factor for the development of PI, which confirms the pertinent literature[6].

Among the conditions predisposing to the incidence of PI, the most frequent were chronic or cardiovascular disease (n = 290; 44.1%), followed by hypotension (n = 183, 27.8%) (Table 2). These factors suggest difficulty in perfusion and tissue nutrition and, as a consequence, may culminate in the injury. Corroborating the previous statement, a study conducted in the ICU identified a statistically significant association between the incidence of PI and variables associated with perfusion, oxygenation and systolic pressure below 90 mmHg[14].

Systematic review of recent literature[15], which sought to identify predictive risk factors for the incidence of PI in critically ill patients, reinforces factors related to perfusion as important for the occurrence of the condition. Furthermore, it adds factors like pressure and friction as independent variables for the occurrence of PI[15], which variables are considered extrinsic to the individual and which obtained high frequency in this investigation (Table 3).

Extrinsic risk factors for PI can be mostly tackled by preventive actions associated with nursing care or guidance (followed by supervision) of the nurse. The assessment of developmental risk through the use of prevention scales followed by the planning of individualized actions focused on skin care and hygiene are suggested as some of the precautions to avoid PI[16] and may mitigate the effect of extrinsic factors. This assertion corroborates the Brazilian protocol for prevention of AE, which advocates the daily assessment of the risk of PI and, subsequently, the implementation of appropriate preventive measures according to the risk[9].

In contrast, intrinsic factors like edema (n = 206; 31.3%); inadequate nutrition (n = 200; 30.4%); decreased sensory perception (n = 198; 30%); unstable temperature (n = 177; 26.9%) and decreased tissue perfusion (n = 160; 24.3%), although frequent in the investigation, appear as points of greater difficulty of intervention and demand multidisciplinary actions (Table 4). It is postulated that preventive actions focused on these factors can often require shared decisions among the health team, which still struggles with fragmented work in many locations.

The association between edema and increased risk of PI is indicated in the literature by the decrease in oncotic pressure by low albumin levels, which affects the distribution of body fluids, enabling their accumulation in the interstitium[14]. In this perspective, low albumin level was associated with higher risk of incidence of PI in a previous study, which recommends the assessment of protein intake by the health team[17].

The susceptibility to the incidence of PI caused by edema may be worsened by deficient nutritional intake. This is because anemic conditions may imply poorer transport of nutrients and oxygen to the tissues and, as a consequence, facilitate the occurrence of the disease[17].

The analysis of possible protein replenishment meets the nutritional needs identified in the study and can greatly contribute to the prevention of AE (Table 4). In this perspective, integrated multiprofessional practices, with nurses, physicians, dietitians, and physical therapists, may enable more effective preventive actions.

It should be noted that although a high incidence of PI was identified through documentary analysis of medical records, only three injuries were formally reported (Table 5) to the hospital's PQSMC and survey. In a comparative analysis with the number of injuries identified through the medical records review process, there was an underreporting of 88 PI, which clearly shows the disparity between what workers observe and record in the medical record with what is reported as an AE.

The low rate of information about AE occurring in health practice is not unique to the present investigation. Studies that have focused on analyzing the safety culture in hospitals point to the fact that, even after five years of the establishment of the National Program for Patient Safety, discussing errors is still a rare practice in some institutions[2,3].

Given the above scenario, we emphasize the use of the active search methodology applied through the medical record review process[10] as a strategy that can benefit safety managers in the qualification of their information and, as a consequence, in planning more effective strategies for the promotion of quality care.

It is worth noticing that, at the time of the study, the hospital had not implemented the protocol for PI prevention in its care dynamics[9]. However, in addition to the fact that the protocol in question does not deal with the reporting of the AE itself, but its prevention, the PSC had been established since 2013, which, in a way, leads to the interpretation that the culture of AE reporting in the organization was still incipient.

Although the discrepancy between the number of PI identified through medical record analysis and the small number of event reports is a worrying result, it should also be noted that such finding reinforces the need for continuous, rational and strategic educational and supervisory actions in healthcare

organizations that are committed to patient safety. In this context, it is believed that the assessment of the institutional reality, the maturity and commitment of caregivers and the resources available to care need to be systematically done by managers so that the assertiveness of improvement initiatives is feasible.

CONCLUSIONS

We concluded that there was evident divergence between the records of incidence of PI in medical records in relation to AE reports. This finding possibly refers to the immaturity of the hospital's safety culture at the time of the study, specifically regarding the disclosure of errors and AE as a means of fostering improvement.

Based on the findings of this study, we believe that the evidence that non-unified methods for gathering patient safety information are important is a concrete contribution of the research. Nevertheless, since the study did not enable us to identify the reasons for discrepancy between medical records and PI reports, a thorough understanding of the factors leading to underreporting is a problem to be investigated in the future.

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Conflict of Interest

Authors have no potential conflict of interest to declare, related to this study's political or financial peers and institutions.