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## Complications of pressure ulcers in severely ill patients: a descriptive-exploratory study

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### ABSTRACT

**Aim:** to identify the complications of pressure ulcers in severely ill patients from the perspective of the nurses.

**Method:** This is a descriptive-exploratory study which adopts a qualitative approach involving a questionnaire to nurses working in an intensive care unit of Onofre Lopes Hospital, in Natal, Brazil. The data were submitted to the content analysis topics.

**Results:** From the comments of the professionals, we generated a category "Complications of pressure ulcers in severely ill patients", and the subcategories "infection", "period of hospitalization", "hospital costs", "mortality" and "suffering".

**Discussion:** Ulcers lead to infections and to an increase in microbiological resistance. They increase the period of hospitalization and the costs of treatment due to the resulting complications. Mortality is related to the worsening of clinical conditions. Suffering is a result of pain and dependency.

**Conclusion:** For the nurses, pressure ulcers are complications that generate a worsening of clinical conditions of severely ill patients, which makes it necessary to adapt the treatment.

**Descriptors:** Nursing; Intensive Care; Pressure Ulcer

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## INTRODUCTION

The patient is considered to be in a critical status when s/he presents alterations in one or more vital organs, presents a risk or instability in hemodynamics, displays an increase in acute disturbances, is in need of rigorous controls or requires highly complex therapies. In particular, such a patient demands attention from a multi-professional team, constant monitoring and, in many cases, invasive proceedings. Besides that, they present a high level of dependency in terms of clinical conditions that increase over time, which leads to an increase in the cost of treatment. There may also be a large number of complications such as the formation of pressure ulcers (PUs) and hospital infections<sup>(1)</sup>.

Within the context of possible complications to which severely ill patients in intensive care are susceptible, PUs remain a serious challenge to healthcare in general.

PUs are lesions located on the skin and/or in subjacent tissue, normally on a bony prominence, generated by pressure and/or a combination of friction and shear tensions. There are also associated contributing factors such as smoking and intrinsic components, the roles of which are not yet completely understood <sup>(2)</sup>.

Pressure ulcers are classified in four categories. These are:

Category I: non-whitening erythema, corresponding to the appearance of this substance on intact skin, usually seen on bony prominences<sup>(2)</sup>.

Category II: partial loss of skin thickness or phlyctena (characterized by the loss of skin thickness represented by a superficial scar with a rose-red bed). It can also take the form of a shallow cratered abrasion, or closed or open phlyctena filled with a serum fluid or a serum-hematic fluid<sup>(2)</sup>.

Category III: total loss of skin thickness permitting the visualization of subcutaneous tissue<sup>(2)</sup>.

Category IV: total loss of skin thickness which generates the visualization of bone and muscle, usually in cavities or fistulas. It can occur in devitalized or necrotic tissue. There is a high risk of developing complications such as septicemia and osteomyelitis<sup>(2)</sup>.

A study shows that the global incidence of pressure ulcers in hospitalized patients varies from 2.7% to 29%. This number goes to 33% in patients hospitalized in Intensive Care Units (ICU). With regard to morbimortality, the period of hospitalization of a patient that has pressure ulcers can rise by a factor of five, and the risk of death rises to 4.5 times when compared to patients without this condition<sup>(3)</sup>.

An epidemiologic study performed in a college hospital in São Paulo, Brazil, showed that the overall incidence of PUs in that institution is 39.8%, rising to 41% in patients hospitalized in UCI<sup>(4)</sup>.

The high incidence, prevalence, morbidity and costs show that PUs and associated complications in populations of hospitalized patients, indicates an imperative necessity to understand this etiopathogenesis. In addition, nursing staff have to bear the greatest responsibility, such as recognizing those patients at greatest risk of developing pressure ulcers<sup>(5)</sup>.

PUs are an important cause of morbimortality, affecting the quality of life of the long-term ill and of their carers, and also being part of an serious economic overload for the public health services. Furthermore, it is an important yardstick that can be used to observe quality in healthcare assistance<sup>(3)</sup>.

Research into the understanding of nurses regarding PUs performed in a hospital in the Brazilian Federal District, showed that their knowledge regarding the evaluation and stages of PUs is outdated. Only 7% of those interviewed knew the correct and updated classification of ulcers. This indicates that the nurses need to be informed about PU management in order to prevent or minimize the occurrence of complications<sup>(6)</sup>.

Based on the data here described, we justify this study in terms of its relevance since, after the identification of the most common complications associated with PUs in critically ill patients, it will be possible to prepare the team and systematize the support provided in intensive care. As a consequence, we believe it will improve the service provided, leading to a reduction in the incidence of PUs and of other complications, a decrease in time spent in hospital, and a reduction in the general costs of treatment.

In this sense, this study aims to identify the complications associated with pressure ulcers in critically ill patients from the perspective of the nurses.

This report is part of a larger project presented in the Integrated Multiprofessional Residence in Health course, in the area of nursing in intensive care, from the Rio Grande do Norte Federal University (UFRN, in Portuguese). The title of the abovementioned paper, presented in 2011, is *Prevention and treatment of pressure ulcers: understanding of the nurses in an intensive care unit*.

## **METHOD**

This is a descriptive and exploratory study adopting a qualitative approach, performed in an intensive care complex of the College Hospital Onofre Lopes (HUOL, in Portuguese), in the municipality of Natal, Brazil.

HUOL is a hospital attached to UFRN which integrates the hospital and health complex in the Brazilian state of Rio Grande do Norte. It is one of the largest and most important public hospitals of the Brazilian Unified Health System in the region. This hospital has two ICUs. One is equipped with eight beds for general clinical and surgical patients, while the other, which can hold up to four beds, is dedicated to the care of coronary and surgical patients from cardiology and neurology.

In this study, the HUOL ICU nurses, a total of 13 professionals, made up the population under consideration. The was an intentional sample type, based on a single criterion of inclusion – that of being an ICU nurse in this hospital. The criteria for exclusion were if the professionals were absent/on vacation during the period of data collection, and those who refused to participate in the study.

As a methodological instrument, a structured questionnaire was used. This was composed of open and closed questions and aimed to check the understanding of these professionals regarding the care of patients with PUs in Intensive Care, with an emphasis on the identification of complications.

The closed questions aimed to investigate the professional background of the nurses, including their educational background, and their professional and work experience. The open questions related to the clinical management and identification of complications of patients with PUs.

The data collection was performed during the months of June and July 2011.

After the data was collected it was transcribed and then analyzed. The answers obtained from the forms were transcribed in full, after which the data was analyzed and consolidated. The results were compared with the existing literature regarding the topic, and grouped in different categories.

The analysis was in three parts: pre-analysis (a superficial reading of the data transcribed from the recordings); material scanning (selection of the comments of the subjects and the organization of categories into themes) and; treatment of the results (interpretation). Thus, we read the empirical material and built the corpus, based on the criteria of validation, exhaustion, representation and pertinence<sup>(7)</sup>.

From the analysis of the data, the following category emerged: Complications of pressure ulcers in critically ill patients.

This project was approved by the Ethics in Research Committee of UFRN through registration number CAAE 0240.0.051.000-10. All participants signed the Free and Clear Consent Agreement. In order to guarantee the subjects' anonymity, we used the names of Roman Gods.

## **RESULTS**

In the HUOL Intensive Care complex, 13 nurses work in the assisting level. Of these, 10 worked exclusively in this area, while three were placed in other areas and worked in the ICU on occasions. All employees are part of the permanent staff of the institution.

### **Complications of PUs in the context of severely ill patients**

With regard to the aggravating potential of PUs in severely ill patients, some subcategories such as increased infection, hospitalization time, hospitalization costs, mortality and suffering, emerged.

Among the professionals interviewed, there was a unanimous decision to point to PUs as a potential complicating factor in severely ill patients. The increase in the risk of infection related to the presence of pressure ulcers emerged as a subcategory.

*Yes, the skin is the largest organ of the body. It is designed to protect and, when injured, it allows the entry of microorganisms that may lead to infection. (Justicia)*

*Unbroken skin avoids the incursion of microorganisms. (Baco)*

Nurses agree that injuries are an entry door to microorganisms that can generate serious infections, leading to general infections, as the severely ill patient presents a fragile immunological system. They also report that antimicrobial resistance is an aggravating factor with regard to the general health of the patient, as the ulcers are an issue that force patients to be hospitalized and demand a long period of time to heal.

*They are important because pressure ulcers are a gateway to microorganisms. (Apolo)*

*These wound infections can be recurrent, and the patients use too many antibiotics, generating antimicrobial resistance. (Bellona)*

The rise in hospitalization costs is taken into consideration as a complicating factor in terms of promoting health. The interviewees associate the rise in costs to the use of specialized products to treat wounds, the need for evaluation by a multi-professional team, the possibility of having to perform certain proceedings such as debridement, and also the treatment of possible complications originating from the ulcers. It is important to mention that these products are not always available for use.

*They are important in this context because they increase the time spent in hospital, the costs, and it aggravates the general clinical condition of the patient. (Baco)*

The increase in time spent in hospital on the part of patients with Pus, is related to the fact that severely ill patients are already debilitated, suffering from low levels of immunity and subject to many different therapies. When a pressure ulcer is presented, recuperation is consequently slower, which increases the time spent in hospital.

The worsening of the clinical condition of the patient, and the consequent increase in mortality, were also mentioned as relevant issues. The nurses reported that patients with PUs have a higher risk of death due to many associated complications, especially those linked to infection.

*Yes, because the patient is debilitated and the skin suffers the consequences. When they have pressure ulcers, the risk of death increases due to the infections arising from the increase in time spent in hospital. (Minerva)*

Finally, one professional mentioned the pain and suffering of the patient and the family as an important factor in the illness-health process. The association took into consideration the pain related to the wound during changes of dressings and the positioning of the patient. For such a patient, the interviewee understood that the suffering also includes the rise in dependency with regard to professionals and relatives. In terms of relatives, the suffering comes from their preoccupation with the cicatrization of wounds, apprehension with regard to not knowing how to handle such wounds, and the pain they can generate.

*All safe care must consider the minimization of damage that can lead to the worsening of the general state of the patient; an ulcer can bring many consequences to the client and to their relatives. (Apolo)*

*We see that the family always asks when the patient has some scars. Many relatives worry and ask if they can be treated and if the wound will heal. So too does the patient, if he is conscious. (Minerva)*

## DISCUSSION

In this study, all participating professionals considered pressure ulcers as relevant to the context of severely ill patients. Based on the comments of these professionals, it was possible to select the main aspects that were considered relevant by the nurses. These are infection, time spent in hospital, hospitalization costs, mortality and suffering.

The emergency situation caused by infections related to PUs was the most clearly observed complication found in this research. This happens because of the loss of integrity of the skin, the invasion of microorganisms and antimicrobial resistance.

The infections of wounds is increasingly important nowadays due to the increase in its prevalence, its gravity, in the clinical and epidemiological consequences, in the rising threat of antibiotic resistant microorganisms, and in the rational use of antibiotics. For these reasons, these factors have a strong impact on the life of patients and of the community in general<sup>(8)</sup>.

With regard to hospitalization costs, the professionals affirm that those patients with PUs are more expensive to care for due to the use of specialized dressings, the need for multi-professional care, and the rise in time spent in hospital.

A study performed in a general hospital in Recife evaluated the costs associated with the use of industrialized adhesive bandages. This study found that 68% of the costs associated with dressings in the unit were used specifically in dealing with pressure ulcers<sup>(9)</sup>.

A national study in Brazil that aimed to characterize the profile of patients with PUs in an institution, demonstrated that the prevalence of such wounds increases the time spent in hospital, leading to difficult issues in terms of the patient's recovery, and increasing the risk of complications such as infections<sup>(10)</sup>.



Pain and suffering were occasionally mentioned, and to a lesser extent. The nursing professionals associate the suffering to pain related to the presence of the wound, and the dependency of the patient on the caretaker.

Pain is a complex and subjective phenomenon, influenced by social, emotional, psychological and physiological factors. The professionals also mention that those patients with chronic ulcers are usually submitted to proceedings such as dressing change that can exacerbate the pain. One study indicates that the moment in which the patients declare themselves to be suffering from pain during the proceeding is related to the removal of the dressing from the wound<sup>(10)</sup>.

PU's represent an increasing item in terms of the physical and emotional suffering of these patients. They also increase their dependency, and reduce their functionality with regard to performing ordinary daily routines<sup>(10)</sup>.

As we have seen, many studies corroborate the statements of the professionals. In addition, some research shows that the scientific knowledge of the nurses is deficient and that the high incidence of PU's are a common feature of hospitalization in Brazil.

We still have to consider that the psychosocial factor is underexplored. In addition, these pieces of research demonstrate that PU's generate physical pain, emotional discomfort, a feeling of incapability, physical dependency on carers, deformities and suffering on the part of the family, delaying the process of healing and the recuperation of the patient.

## **CONCLUSION**

The care of severely ill patients demand efforts on the part of professionals involved in the dynamics of health assistance. As the professional mainly responsible for implementing the process of care with regard to these patients, the nurse must have access to the information that creates a base for preventing and treating the complications.

Using the information gathered in our study, it can be seen that PUs are potentially harmful, leading to the worsening of the clinical condition of patients, causing infection, increasing time spent in hospital and hospitalization costs, increasing mortality, and the suffering on the part of both the patient and his/her family.

In this sense, we consider the qualifications of the nursing team of the ICU regarding prevention and treatment of Pus as being important, as well as the systematization of caregiving through the construction of protocols that permit the standardization of assistance, with an emphasis into education in health and the prevention of complications.

It is also important to stimulate the multi-professional team to work in a more integrated fashion through the sharing of information, the discussion of cases and improved teamwork, in order to provide an improved quality of care to patients.

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