



## Original Article

### PREVENTION AND TREATMENT OF PRESSURE ULCERS IN THE DAILY LIVES OF INTENSIVIST NURSES

*PREVENÇÃO E TRATAMENTO DE ÚLCERAS POR PRESSÃO NO COTIDIANO DE ENFERMEIROS INTENSIVISTAS*

*PREVENCIÓN Y TRATAMIENTO DE ÚLCERAS POR PRESIÓN EN EL TRABAJO DIARIO DE ENFERMEROS INTENSIVISTAS*

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Exploratory study aimed to identify activities of prevention and treatment of pressure ulcers planned and implemented by nurses in the Intensive Care Unit; the importance ascribed to the interventions; and the difficulties to carry out those interventions. The study took place in the Intensive Care Unit of a University Hospital, with participation of nine nurses. The data, collected by means of interviews, were analyzed in the light of the discourse of the collective subject technique. Data revealed that changes in position stand out as a prevention measure and dressings are the main care in the treatment of pressure ulcer. The difficulties reported by nurses indicate limitations in human resources regarding number, training, and lack of involvement of the team; and in material resources to promote comfort and safety to the patient.

**Descriptors:** Pressure ulcer; Nurse; Intensive Care Unit.

Estudo exploratório, que objetivou identificar as atividades de prevenção e tratamento de úlcera por pressão, planejadas e/ou implementadas por enfermeiros na Unidade de Terapia Intensiva, a importância atribuída às intervenções e as dificuldades encontradas para executá-las. Foi realizado em uma Unidade de Terapia Intensiva de um Hospital Universitário, com participação de nove enfermeiros. Os dados, obtidos por meio de entrevista, foram analisados à luz da técnica do discurso do sujeito coletivo e destacaram a mudança de decúbito entre as medidas de prevenção e o curativo como o principal cuidado no tratamento da úlcera por pressão. As dificuldades relatadas pelos enfermeiros apontam para deficiências nos recursos humanos, em número, capacitação e falta de adesão da equipe; e nos recursos materiais para promover conforto e segurança ao paciente.

**Descritores:** Úlcera por pressão; Enfermeiro; Unidades de Terapia Intensiva.

Estudio exploratorio con objetivo de identificar las acciones de prevención y tratamiento de ulceras por presión, planeadas y/o ejecutadas por enfermeros en la Unidad de Cuidados Intensivos, la importancia atribuida a las intervenciones y las dificultades encontradas en la ejecución de estas. Se llevó a cabo en una Unidad de Cuidados Intensivos de Hospital Universitario, con la participación de nueve enfermeras. Los datos obtenidos a través de entrevistas se analizaron de acuerdo a técnica del Discurso del Sujeto Colectivo, y destacó el cambio de posición entre las medidas de prevención y atención curativa como el tratamiento principal de la úlcera por presión. Las dificultades señaladas por las enfermeras fueron las deficiencias en recursos humanos, en número, la formación y falta de adhesión de los miembros del equipo; y en los recursos materiales para promover la comodidad y seguridad del paciente.

**Descriptores:** Úlcera de presión. Enfermero. Unidades de Cuidados Intensivos.

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## INTRODUCTION

Despite the scientific and technological advancement in the health care, some problems still persist currently, such as pressure ulcers (PU), for example, whose prevalence remains high in hospitalized patients or under home care, which represents an important cause of morbidity and mortality world wide. These ulcers affect the quality of life of the patient and their caregivers and constitute a remarkable economic overload for the health services.

In 2007, the *National Pressure Ulcer Advisory Panel* (NPUAP) updated the definition of PU and its system of classification. Based on this revision, the PU started to be defined as a lesion on the skin and/or on the tissue or subadjacent structure, generally on a bone prominence, resulting from isolated pressure or combined pressure with friction and/or shear. Regarding the stages, the four original ones (I, II, III, and IV) were kept, and two more were added regarding deep tissular lesion and the ulcers that can not be classified<sup>(1-2)</sup>.

According to this definition the pressure factor seems to have an important key role in the development of PU associated to friction and shear. The type of tissue involved is also important, the derm and epiderm are more resilient to the effects of pressure than the muscles. Besides that, the type of force or the combination of forces (that is, pressure, shear and friction) on the tissue is also important. Pressure forces and shear mainly affect the deeper layers of tissue, while friction affects mainly the superficial layers<sup>(3)</sup>. The bedridden patients or with reduced mobility are more subject to the action of those forces in case prevention measures to minimize their adverse effects are not adopted, so they are more susceptible to the development of PU.

The problem of the PU has been emphasized in many researches which express variations in the rates of prevalence and incidence. In Brazil, in the last decade, several studies on the incidence were developed with

hospitalized patients, and the incidences presented varied between 10.6 e 55%, being bigger or smaller according to the population involved, the inclusion or exclusion of PU in stage I and the methodology adopted<sup>(4)</sup>.

At the Intensive Care Unit (ICU), besides the limitations of activity and mobility imposed to the patient by his clinical condition, by the need of having more strict control, associated to higher complexity therapies, other risk factors are added, such as the use of sedatives, alterations of the consciousness level, the use of vasoactive drugs and hemodynamic instability, which makes them prone to PU<sup>(5)</sup>.

The incidences of PU at the ICUs in the Brazilian hospitals have presented rates which vary from 25.8 to 62.5%<sup>(6-7)</sup>. However, these results decrease when the institutions implement prevention programs, such the experience of a university hospital in São Paulo, whose rate of incidence was 41.02% and it decreased to 23.1%, after the implementation of prevention protocol of PU based in the guidelines of the NPUAP<sup>(4)</sup>.

The concern with structuring and implementation of prevention protocols of PU in Brazilian hospitals, based on the best practices using evidences, has been emphasized in the last decades due to programs to improve quality of assistance which point out the incidence of PU as an indicator of quality of assistance and nursing. However, many difficulties still remain, such as lack of human and material resources, philosophy of the institution or of nursing management prioritizing the PU treatment, lack of team training, among other aspects, end up making PU prevention difficult.

In order to recognize PU as a problem which interferes in the quality of assistance to the patient, and, therefore, the need to implement effective measures of prevention, it important to understand how it develops, its causes, the risk factors for its occurrence, and its

prevalence and incidence in the studied reality. When it is not possible to prevent the acute lesion or their chronification, it is fundamental to know about the interventions that accelerate the process of healing, reduce the risks of complications, minimize suffering and improve the cost-benefit of the treatment<sup>(8)</sup>.

So, the importance of the team is relevant for the impact PU causes on the patients, family members and health institutions, thus justifying the interest in developing the present study in order to know the studied reality, and to contribute for the improvement of the quality of assistance to the patients, both in the prevention as well as in the treatment of the PU.

In this perspective, the objectives of this study cover: to identify the activities of prevention and treatment of PU, planned and/or implemented by nurses to patients in critical condition at the ICU; to investigate the importance attributed by these professionals to the planned and/or implemented interventions; and to identify the difficulties they meet in order to act in the prevention and treatment of PU.

## METHOD

It is an exploratory study, with qualitative approach, made at the ICU of a teaching hospital in the city of João Pessoa, PB, Brazil. The sample studied was made up by nine nurses from a group of ten. The criterion used to select them took into account the availability of time and the interest of those professionals in participating in this research.

The researcher informed the objectives of the research and the ethical considerations, besides asking for a formal consent of the patients through the signature of an Informed Consent Form. The data were registered in writing by the researcher keeping the contents of the interviewees' discourses. The average length of the interviews was 30 minutes.

The data collection occurred in November and December, 2008, using the interview technique,

following a semi-structured guideline. The first part of the research was made up by questions which were pertinent to the demographic features of the participants, including these variables: sex, age, time of professional graduation, title and time spent in working with intensive care. The second part was made up by six guiding questions, open, which were used to obtain pertinent data to the actions of the professionals regarding prevention and treatment of the PUs, the importance attributed to these interventions by the professionals, and the difficulties found to put them into practice.

The interviews were held at their own institution, before the beginning or after the end of their working shift, according to the availability of time of the professionals.

The project of research was analyzed by the Committee of Ethics and Research of the Institution and approved by protocol no. 080/08. The ethical aspects of the research which involved human beings, established in resolution no. 196/96 of the National Health Council<sup>(9)</sup> were considered.

The technique of Discourse of the Collective Subject (DCS)<sup>(10)</sup> was used for the data analysis which is made up by a set of individual discourses, where the central ideas and the key expressions for the construction of a synthesis discourse that represents the collective thinking come from.

## RESULTS AND DISCUSSION

Nine nurses were interviewed, they were between 24 and 53 years old, with average age of 38 years and most of them were male (55.5%). Regarding qualification, four nurses had taken courses of specialization in ICU, four, in other areas (Gerontology, Health Services Administration, Family Health and Urgency and Emergency) and only one had a graduation in nursing.

The time of professional education of the nurses ranged from 1 to 31 years. The ranges between one to five years (44.5%) and between six to ten years (22.5%) were outstanding. The other professionals had already been graduated for more than 10 years, and one of them had been graduated in nursing for 31 years.

The time of working experience in ICUs had a bigger percentage between one and five years, with four subjects (44.5%), and less than one year with two nurses (22.5%). Considering the time of professional graduation and the time of working in the ICUs, the study reveals that the professionals already have important experience in the process of caring, which is considered a differential for the development of the working activities of the group studied.

The statements obtained were grouped in DCS, after the identification of the main central ideas (CI), which showed concrete indications on how the nurses planned and/or implemented actions of prevention and treatment of PU, the importance they attribute to those actions and the difficulties they found to implement actions of prevention and treatment of PU in their working practice.

Therefore, considering the importance of the identification of risk factors for the development of PU, as a prerequisite for the planning of actions of prevention, the nurses were asked about these risks in the patient in an ICU. Their answers were grouped into two main ideas:

#### **CI I/ DCS I – Intrinsic risk factors for pressure ulcer**

*Protein-calorie malnutrition, nutritional deficit, hemodynamic instability, infections, obesity, fecal or urinary incontinence, metabolic disorder decurrent from septicemia, cachectic patients.*

#### **CI II/ DCS II - Extrinsic risk factors for pressure ulcer**

*Bed sheets not stretched. Low frequency of changing bed sheets. Humid skin, friction, staying in the same positions for more than two hours. Absence of changing positions, immobility in bed.*

As to *intrinsic risk factors* for the development of PU, the study emphasized alterations in the nutritional condition although there is no evidence on individual nutrients and their specific role in the prevention of PU, malnutrition is associated to global morbidity and mortality. So, the best practice involves the inclusion of the nutritional condition as part of the total evaluation of the patient and must be done on the arrival in a new health institution and whenever there is an alteration in the patients' condition which increases the risk of malnutrition<sup>(11)</sup>. Once the nutritional risk and any risk for PU is noticed, we must take the patient to a nutritionist, so that he can prescribe nutritional support to the patient, following the nutritional cycle, which must include: nutritional evaluation; and estimate of the nutritional needs; a comparison between the ingestion of nutrients and the estimated needs; adequate nutritional intervention through adequate feeding; monitoring and evaluation of nutritional results, reevaluation of the nutritional condition at frequent intervals while the patient is under risk<sup>(12)</sup>.

It was also noticed that the nurses were worried with the presence of infections associated to the risk for the development of PU. Related to these aspects, a study made with adults at ICUs of 15 public and private hospitals in Brazil, showed that sepsis, time of hospitalization and high risk in the classification of the Braden scale are factors that are potentially associated to the formation of PU in bedridden patients<sup>(13)</sup>. It is necessary to point out that the infection can also arise decurrent from PU, starting on the lesion area and it can become systemic.

Related to the extrinsic *risk factors*, the nurses mentioned the care with the bed linen of the patient, friction and his lack of mobilization. The pressure, the strength of shear and the friction are potential causers of PU, combined or isolated. The friction, mechanical force of two surfaces, one moving on the other, damages the superficial tissues, causing bubbles or abrasion<sup>(12)</sup>. This can happen in patients who can not stand up during repositioning and transfer, once the friction caused by the movement of the body on the bed sheet can break the functions of barrier of the corneal layer. So the presence of humidity, dirt or folding in the bed sheets must be a pertinent concern of the nursing professionals for when these factors are present, the risk for this lesion to develop increases.

The shear is the mechanical force that is more parallel than perpendicular to the skin, that damages deep tissues, such as muscles. It normally occurs when the bedstead is elevated and the patients slide down. Thus, the tissues fixed to the bone are pushed to one direction, while the superficial tissues remain still. The forces of shear in the interface between the body and the support surface can aggravate the tissue damaged, which was already caused by other sources<sup>(12)</sup>.

The immobility or reduced mobility are indicated by the nurses as risk factors for the development of PU. This is a present condition in critical patients bearing severe neurological or cardiovascular diseases, state of shock; in large burned areas, in polytraumatized patients, in patients with alteration of sensibility, of the level of consciousness, or in those patients using sedatives, analgesics and hypnotics, decurring from excessive sleepiness they provoke, therefore reducing the natural stimulus of changing position to relieve pressure. Therefore the development of PU is a complex phenomenon, which involves several factors related to the patient and to the environment. But immobility is the main risk factor, due to the incapacity

of the patient to move without help to relieve pressure regularly in vulnerable areas of the body<sup>(14)</sup>.

Special attention must be given to the programs of repositioning, of a passive mobilization of the patients, depending on his clinical condition, the adoption of a preventive conduct recommended by international guidelines which begins with the identification of the patients at risk for the development of PU, as soon as the patient is admitted in the health institution<sup>(11-12)</sup>.

The report of the nurses on the risk factors for PU bring the questioning on planned and/or implemented actions to prevent the problem at the ICU. Regarding this aspect, their answers were categorized in the central idea III which relates the *measures of comfort and security*.

### **CI III/DCS III – Measures of Comfort and Security**

*Changes of decubitus and massage. Measures of comfort, changes of decubitus every two hours; after bath massage, using moisturizing cream daily, in bed; Bed sheets very adherent to the mattress, well tidy. Protection of bony prominences. Change of decubitus every 3 hours. Egg crate mattress, massage using essential oils in the areas of higher risk of the development of pressure ulcers, keep bed sheets well stretched and avoid humidity.*

Regarding the measures of prevention for PU reported by the nurses, their concern related to the *change of decubitus*, is evident. The repositioning must be considered for all the patients at risk and must be done to reduce the length and magnitude of the pressure on the vulnerable areas of the body. Big pressures on bony prominences, for a short period of time, and small pressures on the bony prominences, for a long period of time, are equally harmful. In order to decrease the risk to develop PU, it is important to reduce the time and the amount of pressure to which the patient is exposed<sup>(12)</sup>.

So, the changes of position must be made following the schedule, for bedridden patients or in a wheel chair, and their frequency must take into consideration the condition of the patient (tissue tolerance, level of activity and mobility, general medical condition, the global objectives of the treatment and evaluations of the condition of his skin) and the surfaces of support in use<sup>(11-12)</sup>.

It was conceptually established that the surfaces of support are redistributors specialized in pressure able to control tissue load and micro weather. The redistribution of the pressure is the capacity to reallocate the concentrated pressure under the bony prominences, it is influenced by mechanical and physical characteristics of the surfaces of support and by the mechanical properties of the body tissues<sup>(15)</sup>.

There is a diversity of products available in the market, including bed mattresses of integrated system, small mattresses and cushions which can be made with air, foam, gel, viscous liquid, elastomer or water. The mattress is projected to be placed directly on the bed frame, while the other surfaces called superposition, like the small mattress and the chair cushion are designed to be used on existing surfaces. The pyramidal mattress, reported by the participants of the research as 'egg crane' is classified in this last category and is still very used in hospitals and at home for the prevention of PU.

Independently of the type, the surface of support chosen to prevent PU must be evaluated regarding its behavior when the human body is on it. An inadequate support or a bottom out can be a problem for the surfaces of support. To check if the support is adequate put a hand (palm up) under the mattress or cushion under the risk area of PU or under the area already injured. If you feel less than one inch of material of support it means that the surface of support had its thickness decreased in that point and is no longer redistributing the pressure, therefore it is inadequate<sup>(11)</sup>.

Despite the growing popularity of the surfaces of support, there are few controlled clinical studies; therefore there are few solid theoretical evidences to support their use<sup>(15)</sup>. So, it is necessary to point out that the devices of redistribution of pressure must serve as adjuncts and not as substitutes of the protocols of repositioning<sup>(11-12)</sup>.

Another important aspect which was highlighted in the interviewees' discourses was doing a massage. In some discourses a schedule in which they should be done was specified and the use of solutions during the massage. Regarding this therapeutic measure it is recommendable not to use it for the prevention of Pus, more specifically not to rub the skin at risk<sup>(12)</sup> vigorously. This action must not be followed in the presence of acute inflammation or and when there is a possibility of having damaged blood vessels or fragile skin. Besides causing pain, the friction of the skin can slightly destroy the tissues or provoke an inflammatory reaction, especially in fragile elderly people<sup>(12)</sup>.

The evidences on the role of massage in the prevention of PU are limited, and although there are different massage techniques its role in the prevention of PU is an area of continuous research<sup>(11)</sup>. From the interviewees' discourses it was noticed that the nurses developed actions of prevention of PU, but they needed more specific and current orientation so that they could develop a more effective and safer practice, in order to decrease the incidence of this problem at the ICU, and the possible complications to the patients resulting from this occurrence.

Regarding the planned/implemented actions by the nurses for the treatment of PU the answers were categorized in *therapeutical measures* and *measures of comfort*.

#### **CI IV/DCS IV – Therapeutical Measures**

*Dressings; Debridement. Adequate dressings, good nutrition. Use dressing whenever necessary or with a schedule twice a day. Meticulous dressing twice a day with 0.9% saline solution, some ointment depending on the degree of the ulcer. Debridant, hydro colloid and preventive dressings and debridement.*

#### **CI V/DCS V – Comfort Measures**

*Change of decubitus, egg crane mattress, massage with the essential oil on the areas of higher risk for the development of pressure ulcer, use well stretched bed sheets and avoid humidity. Keep changing decubitus.*

The treatment of PU following the Guidelines of the Agency for Health Care Policy and Research – AHCPR – involves aspects related to the evaluation of the lesion and specific measures of treatment related to the care with the wound; to the control of the overload on their tissues; to the control of bacterial colonization and infection; to the surgical repair through plastic surgery; to the education of the patients, family members and professionals and to the improvement of quality of the services<sup>(16)</sup>. In this context, the Discourse of the Collective Subject defines dressing as the most quoted therapeutical measures by the nurses, who describe different ways and solutions for its implementation. Although the dressing was highlighted, we must point out the importance of considering it within the approached context and its primordial function to keep the physiological integrity of the PU.

A dressing is considered ideal when it protects the wound, it is biocompatible and hydrates the skin properly. The condition of the ulcer bed and the desired function of the dressing establish the time of dressing that will be used. There are several types of dressings available in the market, which must be selected according to the clinical judgement of the health professional in order to assure its function of protecting the skin around the wound and keeping it dry, while the ulcer bed is kept humid it is necessary to choose a type of dressing that controls the exudates, but does not dry

the ulcer bed. The excessive exudates can delay the healing of the wound and macerate the tissue around it<sup>(16)</sup>.

In the DCS reported in the central idea V, the subjects of the study reaffirm the measures of comfort during the treatment of the wounds, also reported as actions of prevention of the PU. Such measures lead to the recommendation of the literature, except for the massage in the areas of higher risk for the development of PU, whose restrictions have already been described. Another important orientation of the guidelines of prevention and treatment of the PUs is regarding the need of individualizing each case, observing their peculiarities and using the clinical judgement to choose the best behavior to prevent and/or treat them.

For such, it is necessary for the health Professional to know about the physiopathology of the PU, about the proper behavior for its prevention and treatment, besides the commitment to promote an assistance of quality that decreases the incidence of this problem.

Under this perspective, it is convenient to point out that the nurses attribute importance to the measures of prevention and treatment of PU, centered in the *improvement of the prognostic of the patient, in the prevention of complication, in the reduction of time of permanence in the ICU and in the hospital costs.*

#### **CI VI/DCS VI – Improving the prognostic of the patient and avoiding complications**

*Improving the prognostic of the patient is very important because several opportunist diseases were avoided. It decreases the discomfort of the patient and the risk of infection. It prevents infection and avoids secondary infections. It avoids one more source of infection in the critical patient.*

In the central idea VI, the participants of the research showed their concern with the prevention of complications and with the welfare of the patients, when referring to the importance of the prevention and

treatment of the PU as a way to improve the prognostic of the patient, prevent infections and decrease the discomfort. The concern of the nurses with risk of infection is pertinent, once this complication of the PU, besides bringing serious damage to the patient, can even take him to death due to sepsis; it significantly increases the time of hospitalization and hospital costs, mentioned in the discourses of the health professionals.

### **CI VII/DCS VII – Reducing the time of permanence in the ICU and hospital costs**

*It reveals the importance of reducing the time of permanence in the ICU, once it represents a higher cost for the institution. It is absolutely indispensable to worry with the prevention of ulcers, considering the time of hospitalization.*

The concern of the nurses regarding the reduction of time of permanence in the ICU as one of the resources to reduce hospital costs is a real concern of the institutions of health, whose discussion goes through the identification of the factors which may be related to their increase.

The costs related to the treatment of patients with PU are significantly higher than the costs generated by basic preventive measures. Besides that, the existence of a PU is a factor of risk for the hospitalized patient who might die, and increases the time of hospitalization<sup>(17)</sup>.

A study made in Brazil showed that the average cost of hospitalization of patients who did not have preventive measures was 45% higher than of those who had had such measures. Soon the authors concluded that it was possible to reduce costs and offer public services of better quality if training with the nursing team were implanted, using a protocol of preventive measures based in a task of risk evaluation as the scale of Braden<sup>(18)</sup>.

Despite its importance it is known that there are many barriers for the consolidation of the prevention of PU in the health institutions, whether related to their

own philosophy of the service, or to the human resources and/or materials. Some of these difficulties were mentioned by the nurses (CI VIII e IX), regarding both prevention and treatment of the PU.

### **CI VIII/DCS VIII – Lack of human and material resources**

*There is a lack of specialized labor, number of health professionals is insufficient for the operationalization of the preventive and therapeutic plan for the patient. Human resources are insufficient and there is a lack of supporting material for the changing of decubitus. Not all the health professionals care about changing of decubitus; they don't always have adequate material to make the changing (pillows for support); difficulty to change of decubitus in obese patients. Lack of proper dressing, for example, the hydrocolloid dressing. Besides the lack of materials, there are more effective dressings and substances in the market than those available in the hospital.*

The nurses' statements highlight *difficulties related to human resources*, such as lack of specialized labor and of interest of some nurses to perform such activity; and *materials*, regarding the lack of devices to position the patient adequately and provide comfort. Regarding this subject it is also pointed out that the provision of quality in the care to the critical patient is a priority that is related to the promotion of adequate conditions of work, and it must be related to the amount of personnel, the qualification of the health professionals and the availability of physical and material resources to provide assistance. Otherwise, the health professionals may be demotivated for work and the work practice may be distant from the real needs of the patient.

Therefore, there is the need of developing practices which stimulate and enable the health professionals for work. According to that, the opening of workshops of professional training to improve the health professionals' knowledge is seen as a way to make them more prepared to provide a better assistance to the patient, once, independently of the knowledge each one might have, there are always new methods and

techniques which are more effective for the prevention of PU, so, it is essential for the professional to be updated<sup>(19)</sup>. The same philosophy is applied in the area of treatment of the lesions.

### **CI IX/ DCS IX – Lack of standardization of the actions**

*Lack of standardization of the actions for operationalization at work.*

Another concern emerging from the discourse of the interviewees is the *lack of standardization of the actions for operationalization at work*, which shows the need of establishing protocols that will help the team to uniform their behavior in a systemized way, thus contributing to the improvement of the assistance to the client, both in the prevention and in the treatment of the PU.

### **FINAL CONSIDERATIONS**

Keeping in mind the importance of the assistance of nursing in the prevention of PUs, especially in the ICU, where such problem is prevalent, it is necessary to qualify the nursing professionals to evaluate the risk that the patient might develop that problem, and to plan actions of preventive character, once after they appear the care becomes more complex and this is more demanding both for the institution as well as for the team, besides worsening the prognostic of the patient.

As the results show, the nurses attribute importance to the prevention and the treatment of the PU as a way to reduce the time of permanence of the patient in the ICU and, consequently, the hospital costs to improve the prognostic of the patient and to prevent infections. Such concern is pertinent and it is supported by the literature, in the perspective of improving the quality of assistance to the patient.

The difficulties to prevent and treat the pressure ulcers point to the deficiencies in the human resources both in number, as well as in ability and lack of adhesion

of the team, and in the material resources to promote comfort and security to the patient, especially to reposition him adequately. Another relevant aspect is the lack of standardization of the actions of the nursing team.

Such results suggest the development of the studies in order to establish a protocol of prevention and treatment of PU at work, which goes through, among other factors, the process of permanent education of the team, and the need to provide the sector with human resources and adequate materials.

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