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Predisposing Factors for the Development of Pressure Ulcers: Comprehension of Nursing Students

ORIGINAL

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Abstract

Objective: to identify the knowledge of nursing students on predisposing to the development of pressure damage; investigate the preventive measures used to reduce the UPP and analyze how they perform patient care with pressure damage.

Method: exploratory study, research conducted at the Center for Health Sciences UFPB in February 2013, through the interview technique with 84 students from 6th to 9th semester Graduate Nursing.

Results: increased participation was 33.3% 8th period. 90.5% cited friction as a predisposing factor for the pressure damage. Preventive measures predominant position change by 84%. As for nursing care maintenance leaves wrinkle prevailed by 47%.

Conclusion: there is an interest among academics in the development of the issue and that there was 10% uniformity in.

Keywords
Pressure Damage; Nursing; Predisposing Factors.

Introduction

The tissue injury appears as a serious problem, however trivial, in the hospital setting, especially in patients with impaired and bedridden

physical mobility, being one of the main quality indicators of the health team, especially nursing. From this point of view, a professional organization dedicated to the prevention and management of pressure injuries, known as National Pressure Ulcer Advisory Panel (NPUAP) modified in 2016 the terminology of pressure ulcer and updated the stages of pressure damage. The term "pressure injury" replaces "pressure ulcers". This new terminology describes more accurately the pressure injury of both intact and ulcerated skin, because in the previous staging system the Phase 1 (currently category/grade 1) describes the injury as intact skin, while the other phases describe open ulcers [1]. The pressure injury develops when there is damage to the skin and/or underlying tissue, and usually this is compressed between a bony prominence and a hard surface for an extended period of time. The injury can be presented as intact skin or an open ulcer, and can be painful [2].

Its appearance is multifactorial. Several studies list several risk factors that support the appearance of these lesions. However, it is valid to point out that its development occurs from two critical etiological determinants: the intensity and duration of pressure. There are also extrinsic factors, such as: friction, shearing, humidity, ambient temperature, trauma; and intrinsic factors, among them: reduction and/or loss of sensation, muscle strength and immobility, compromised vascular and lymphatic system, inadequate nutrition, anemia, drug vasoconstriction, change in the level of consciousness, fecal and urinary incontinence, excessive sweating and weakness as a result of the skin aging process and of the peculiar conditions of each individual [3].

In Brazil, studies on the prevalence and incidence of pressure lesions in patients in bed are still incipient. These constitute a serious public health problem representing high costs that affect hospitals, patients, nursing homes, health center and Intensive Care Unit - ICU [4]. In qualification, a study carried out at the semi-intensive care center in a university hospital in Brazil affirm that pressure injuries by repetition occur due to insignificant portion of nursing professionals who have some degree of disability on preventive knowledge, and present contraindicated practices for prevention, such as: massage of hyperemia areas, use of water gloves, inadequate repositioning of bedridden patients and wheelchair users, and elevation angle of the head of the bed in 30°. Which shows the importance of the hospital institution offering training and upgrade in services to nursing professionals, through continuing education [5].

The classification system for pressure injuries was developed providing information to health professionals with the use of a uniform and objective method for evaluation of clinical manifestations of the patient. This classification, currently, includes six categories/degrees, namely, (I, II, III, IV grades, not gradable /unclassifiable and suspected of deep tissue injury), that will be highlighted below [2].

The grade I is characterized by the presence of erythema on intact skin, which does not whitens after removal of pressure. In dark skin pigmentation, bleaching may not be visible and its color may be different from the surrounding skin area. Coloring changes do not include purple or brown discoloration. The area may be painful, hard, soft, warmer or cooler, as compared to adjacent tissue. The grade II presents the occurrence of partial thickness loss of derma, presenting itself as a shallow wound (flat) with red-rose bed without devitalized tissue. It can also be presented as closed or open flictena filled with serous fluid.

In grade III, it is noticed the presence of drainage and the yellowish or greenish exudate with foul odor, indicating greater susceptibility to infection. In this condition, there is deep tissue loss with greater commitment depending on the anatomical location, and the slough may also be present. In grade IV there is skin loss in its total thickness with bone, muscle or tendon exposure. It often includes tissue

and tunnels separation, and may be the presence of slough in some parts of the wound bed [6].

In addition to these four stages, there is in the sequence the suspect of deep tissue injury characterized by localized area of intact skin with purple or dark red color, presence of bloody blister due to damage in soft tissues, due to pressure and/or shear. As the final sorting consensus, not gradable / unclassifiable ulcers include lesions with total loss of tissue thickness, in which the base of the ulcer is covered with slough tissue (yellow, brown, gray, green or brown) and / or necrotic tissue (dark yellow, brown or black) in the wound bed [2].

In relation to predisposing factors for the development of pressure injuries, studies show that this is characterized as a key element in its development associated with friction and shear. Friction mainly affects the surface layers of the skin that are associated with weaknesses arising from the aging process and unique conditions of each individual that may cause changes in quality of life, sequelae resulting from the increased immobility time in bed, requiring planning rehabilitation actions and patient recovery [7].

It is noted that, even in patients who have already developed the pressure injuries, the risk assessment should be carried out continuously as this may prevent the formation of this type of injury in other regions of the body. The sites that often need more attention are: occiput, sacral, ischial, heels, trochanters and elbows areas, as these are places with higher bone prominence. It is important to note that risk areas can be modified according to the clinical state of the patient [8].

In addition to the pressure related to the intensity duration and tissue tolerance, other risk factors contribute to the development of lesions, highlighting that in ICU patients the risks are higher due to the peculiar characteristics of those hospitalized in this sector [9]. Among these are: hemodynamic instability, significant limitation of mobility due to several pathologies or sequelae, impaired general condition and humidity, that will be detailed below [4]. Shear occurs when blood vessels are stretched or jostled, hindering or stopping blood flow. This factor causes most of the damage observed in the lesions by pressure [2-7]. The friction causes tissue damage when the patient is dragged in bed instead of being lightly lifted.

While the humidity refers to the prolonged skin contact with the presence of urine, feces or perspiration, these contributing significantly to the appearance of skin lesions and when these factors are not controlled, they cause maceration. The partial or total restriction of movement characterizes the immobility related to the level of consciousness and neurological competence of the human being. In relation to nutritional deficit, it represents the deficiencies of vitamins A, C and E, and it occurs due to the role that these vitamins have in the synthesis of collagen, immunity and epithelial integrity [2-7]. Advanced age causes the increase in hospitalizations for chronic conditions, undermining health and increasing the risk of pressure, friction, shear and decrease of blood circulation in the skin.

Other predisposing factors that are related to the development of pressure sores are: smoking, low blood pressure that can divert blood from the skin to the vital organs. The cognitive state demonstrates the change in the level of consciousness of the patient, which associated to other conditions will lead to the emergence of pressure injury. The psychological state is considered due to the degree of stress, the emotional energy and lack of motivation [2-7]. Depressant drugs induce sleeping, helping the patient to remain longer in the same position, leading to the appearance of tissue injury. The use of steroids also contributes to tissue injury due to fluid retention [10]. High body temperature represents a greater risk of necrosis in the lesions by pressure, due to the increased demand of oxygen and sweating, which leads to skin maceration [11].

From the described, the interest in researching the subject pressure damage and specifically its pre-

disposing factors emerged during participation in an extension project carried out at the University Hospital Laureano Wanderley, and within the social impact that this problem brings to bedridden patients, with direct repercussion in the family budget and hospital costs. Thus, it is appropriate to carry out the research, because of the need to conduct studies to encourage the deepening of knowledge on this subject, starting from graduation.

Considering the context, the objectives of the study are: To identify the understanding of nursing scholars about the predisposing factors for the development of pressure sores; to find out the preventive measures used to reduce injury by pressure and how academics have received guidance about nursing care to the patient that presents pressure injury. It is important to consider that the development of cutaneous lesion is recognized as high risk to patients confined to bed and in serious condition, considering that the population of elderly people is biased to be growing in our midst, and the negative consequences are growing. In this way, the scientific and technical preparation of nursing scholars during the undergraduate program on the prevention of injury by pressure is of dire need.

Methods

This is an exploratory descriptive study with a quantitative approach. The quantitative research seeks to provide greater familiarity with the problem and build hypotheses. The bibliographic survey, interview with people, experiences of practices with the problem researched and examples analysis stimulate the understanding of individuals and constitute criteria for most of these surveys [12]. The survey was developed in the classrooms of the Health Sciences Centre (CCS) at the Federal University of Paraiba (UFPB), Brazil. The population consisted of 460 nursing scholars, from these 84 students composed the sample, being 27 attending the sixth period, 24 attending the seventh period, 28 of the eighth period and 05 of the ninth period of the Nursing Course.

It was taken into account which requires Resolution No. 466/2012 of the National Health Council about the ethical and legal principles governing research with human beings [13], as well as the issuance of the certificate of the Research Ethics Committee of CCS/UFPB, according to Protocol n° 0447/2012, CAAE: 09850812.2.00.5188. Students were clear about the goals of the research, autonomy and freedom to participate or withdraw their consent at any stage of this, without any injury. At the time of the approach of the students in the classroom, an Informed Consent was distributed, in order to obtain their authorization and subsequently the pre-set interview form.

Data were collected in the month of February 2013 with the application of a predetermined interview form. It consisted of two parts: the first about the sociodemographic profile of nursing academic and the second consisted of objective and subjective issues regarding the understanding of the students about the predisposing factors for the development of pressure damage, preventive measures and guidance received during the course regarding the nursing care provided to patients susceptible to present skin lesions.

Findings were analyzed by means of quantitative method, being discussed and justified in the light of relevant literature and the authors' overview. The SPSS (Statistical Package for the Social *Sciences) version 7.0* was used for computing, as statistical editor, reporting the results in tables and figures, with absolute numbers and percentages, making the correlation between variables found.

Results

Analysis and discussion of the results of this study allowed an understanding of the students' experiences, from the phenomenon of identification that received the following names: Analysis of knowled-

ge of nursing scholars about pressure injury. This phenomenon shows the knowledge and experience of students in the teaching-learning process.

The findings on the sociodemographic aspects are arranged in the category of age, gender, marital status and the period that the nursing academic was attending. Noteworthy is the age group between 20 to 25 years (74.7%) and 25 to 30 years (21.8%). Regarding gender, the female (92.9%) was predominated compared to men (7.1%). As for marital status, it was observed that single people represented (84.5%) and married people (9.5%). The results indicate that predominated the 8th (33.3%) and 6th (32.1%) periods of the nursing course.

The political-pedagogical project of nursing seeks to meet any student profile as it aims to train a professional who understands the principles of SUS - Unified Health System, which enhances the integrity and the right to assistance at any level of health care, working as a multidisciplinary team, valuing interdisciplinarity in the understanding of phenomena involving the health-disease process, adopting communication, leadership, decision-making, administration and management.

Table 1 shows the knowledge of the respondents about the most complete definition of pressure injuries. It was observed that 45% of them responded to the item "Injuries resulting from compression of the body over bony prominence for long periods". The minority, of 15.4% percentile, says another meaning confirmed by various authors, that pressure injuries are skin lesions produced as a result of lack of blood supply [14].

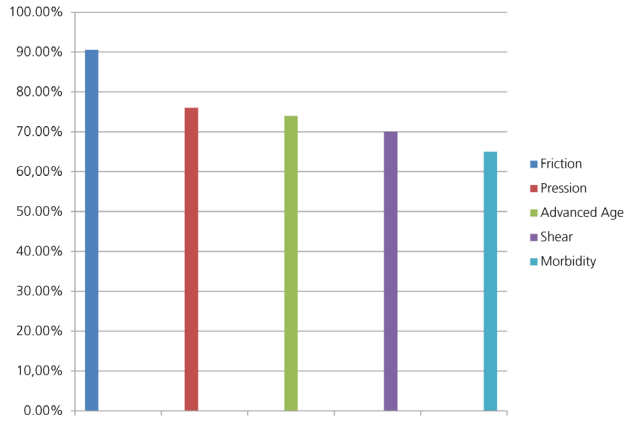
Figure 1 presents the responses from scholars about the predisposing factors for the development of injury from pressure. Friction prevailed with 90.5% of responses, followed by pressure (76%) and shear (70%). All the answers are consistent according to the literature, proving that the students are prepared to provide preventive care to patients with skin lesions and in critical condition.

Table 1. Students answers -as periods in the survey- regarding the definition of pressure injuries. João Pessoa-PB, 2013.

Common definitions about pressure injuries	N	%
Injuries resulting from compression of the body over bony prominence for long periods	38	45.0
Skin injuries that occur due to immobility in bed	23	27.0
Injuries caused due to decreased blood circulation	13	15.4

Source: Direct research with students of the Nursing Course, 2013

Figure 1: Academic responses about the predisposing factors for development of pressure sores. João Pessoa-PB, 2013.



Source: Direct research with students of the Nursing Course, 2013.

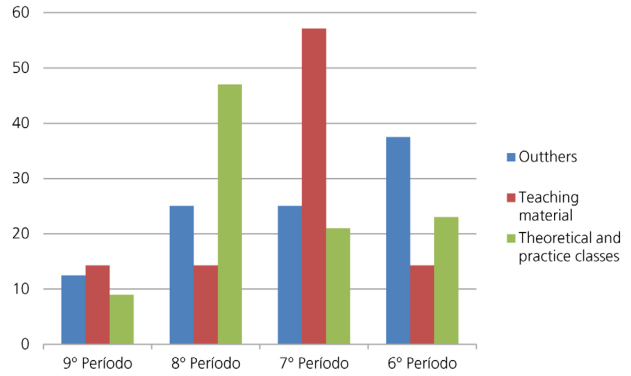
Table 2 reveals the preventive measures used by nursing scholars to decrease the chances of disruption of the layers of the skin of the patient, one of the choices of students stands out that the percentage of hits was greater than the errors. Reaffirming that the level of knowledge is consistent with which NPUAP and other literature advocate related to the subject. For prevention, skin care evaluation and prescription are required, which is an assignment of nurses, being essential the participation of the multidisciplinary team to check other changes that contribute to the planning of patient care at

Table 2. Academic responses for periods investigated on preventive measures used to reduce pressure sores. João Pessoa- PB, 2013.

Preventive measures	Correct		Incorrect	
	N°	%	N°	%
Realization of change of decubitus to each 4 hours.	13	16.0	69	84.0
Assessment of each patient in the bed to observe the development of pressure sores, followed by record in his/her medical record.	74	88.0	10	12.0
Pressure injury patients do not require preventive measures.	83	100	-	-
Maintenance of sheets with folds do not interfere in the development of pressure injury.	05	6.0	76	94.0
Cushions placement and use of eggshell mattresses and pneumatic relief pressure.	82	100	-	-
Pads and water gloves should not be used for pressure relief.	21	27.0	57	73.0
Realization of comfort massage on perilesional area is a measure to prevent pressure injury.	57	70.0	25	30.0
Note the sacral, calcaneus region, greater trochanter, ischial and lateral malleolus, where are frequently the appearance of PU	01	1.0	81	99.0

Source: Direct research with students of the Nursing Course, 2013

Figure 2: Respondents answers on the guidelines received about



Source: Direct research with students of the Nursing Course, 2013.

risk. Nutritional adjustments may be needed to assist in mobilization interventions or patient mobility, among other measures.

In **Figure 2**, the nursing students emphasized that the educational courseware had the highest demand among them, to gain the knowledge and deepening on the prevention of pressure sores in people with impaired mobility, with 57.1% of responses from students who attended the seventh period of nursing. Among the responses of the students of the eighth nursing period, there are the theoretical and practical classes taught by professors from the Federal University of Paraiba, representing the percentage of 47% on receiving scientific information on the prevention of pressure sores.

Discussion

Demographic findings reveals the predominance of individuals of young age, especially single women, who are already 3 years or more in public education institution studying nursing. It's worth noting that young age people are of great relevance in the studies, as students are mostly teenagers, and at this stage of life they have high biological capacity for reproduction of knowledge, being noted also the emergence of competition and opportunities [15].

The female predominance is evident in this study, a feature expected, because when we return to the socio-historical aspects, we can say that nursing has influence in females since the early days, when Florence Nightingale founded the first school of Nursing in England. From this era, there was the dissemination of the work of assistance to poor people, suffering of infectious and contagious diseases. These places, called later of shelters and then hospital, demanded caring provided by women with no

scientific training, whose greatest concerns were for spiritual healing and eternal salvation. In the 17th century, medicine started to use it as a place of healing and training in health [15].

In the context of the respondents' characteristics, unmarried young people are more focused on study and work, they present more dedication when compared to the married ones, whereas the responsibility and concerns of the latter are higher on maintaining the home and family, which makes life more complex [16].

Most were in sixth and eighth period of the Nursing course. It is possible to consider that there is greater interest in academic class, in carrying out scientific work when attending most of the disciplines of curriculum strategy. On the other hand, we realize that the resolutions of operation and approval of the Political Pedagogical Project of the Graduate Nursing Program, Bachelor Degree of Health Science Center Courses Campus I, at the Federal University of Paraíba, in Resolution n. 51/207 of CONSEP, include teaching triad, research and assistance [17].

The more course periods are attended, the greater the acquisition of knowledge of the academics in the theoretical and practical training. Thus, the students feel safe and prepared to take care of the patient who has pressure sores, reflecting a safe and qualified practice. With this, it is considered that the real learning starts with the junction of the two pillars, the theory and the practice.

When students were asked about the definition of pressure injury, **Table 1** shows that the more chosen options were: "injuries from a body compression on bone prominence for a long time", citing the exactly and correct definition of the pressure injuries, which reveals a positive point for them, considering that this concept is also confirmed by the literature on pressure lesions, saying that they arise when the tissue is generally compressed between a bony prominence and a hard surface for a significant period of time [14].

Regarding risk factors by comparing the results of **Figure 1** with the literature, it appears that the students answered correctly the question, considering that the pressure occurs when the body tissue is compressed between a bony protrusion and a hard surface (which is common among bedridden patients). And the most severe form of damage by friction occurs associated with the shear, happening more frequently for restless patients and/or those with reduced consciousness level.

Analyzing the findings of **Table 2**, it is emphasized that the percentage of correct answers was higher than those wrong. This item was considered positive in our view when the students answered the question with a larger number of hits. Drawing a parallel with **Figure 1**, they also answered correctly about the predisposing factors for developing pressure injury. Among the types of wounds found in the literature, those that present gravity in healing pressure injuries are the ones under pressure in location not favoring the healing process.

Therefore, the nursing staff in hospital practice should reflect how they are carrying out their actions and how these impacts directly on the development of skin lesions in the course of healing, type of injury and the occurrence of cross-infection. Its complications can result in tissue death, in addition to cause tissue damage and lead to numerous complications in the patients' condition, with constraint on the mobilization of the body [2]. The development of pressure damage is directly related to immobility when the patient is missing movements or is too prejudiced. When there is no sufficient nursing staff on duty, the change in decubitus predetermined schedule becomes more difficult to be accomplished.

According to the results of **Figure 2**, the educational courseware to deepen on the subject was the highest demand among nursing students, to knowledge and deepening of the prevention of pressure injuries. We agree with the students in order to find out something more about the evalua-

tion process and wound healing, in addition to classes attended. It is necessary to create consciousness since the early graduation on the effective management related to healing practices, with regard to preventive measures of pressure sores. It is essential that nurses keep constantly linked to the scientific basis of caring, seeking new research and aware of its relevance to practice.

Thus, it is necessary to search for information on the evaluation and healing process of skin lesions, because it is a complex phenomenon (but orderly), which covers various processes, even inducing acute inflammatory procedure by type of injury the patient may be affected of, the regeneration of parenchymal cells, migration and proliferation of tissue and connective cells, the protein composition of the extracellular matrix and the remodeling of the connective tissue and the parenchymal components, collagenization and strengthening the wound.

In the case of pressure damage, the evaluation of their degree is extremely important for the correct choice of the type of dressing to be used, as well as better coverage, depending on the case. Due to the extension of the theme, it is impossible to learn everything in the classroom. Thus emerges the need to search for reading, for every student [18].

Conclusions

The severity of pressure injuries when the patient is affected by this injury that affects the physical, psychological and social conditions, was reported. From this commitment, the survey participants are aware of a differentiated nursing caring, understanding of predisposing factors, coupled with the implementation of preventive measures, an important strategy to reduce costs in the institution, which takes place over the hospitalization time of each patient affected by this type of skin lesion.

Through this research, we found common answers in all course periods investigated relating to injuries caused by pressure for long periods, in bedridden patients. The friction was the main factor answered by students, that predisposes the development of pressure sores.

As results shown, nursing students cited the importance of prevention, relating the use of unwrinkled sheets and patient repositioning as means of effective nursing care, and thus reducing the length of stay of patients affected by injury pressure in hospitals.

The difficulties encountered in the research course are related to mismatching the students at the time of the interview form application in classrooms, because they were in different theoretical and practical training courses, in the classrooms of the UFPB Health Sciences Center.

The result of this study provides important information for nursing students, ensuring better preparation for the provision of more effective care to critically ill bedridden patients. This study enabled the further development and better understanding on the subject, providing maturation and more security for a promising professional future in this area, as the nurse and the teams assist with the preparation of forward strategies to preventive measures of injuries pressure. It also presents a significant contribution to education, care, research and extension, as these findings will serve as a basis for the reformulation of hospital practices by teachers in relation to how to approach this subject, so important for nursing.

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