



Journal of Nursing

Revista de Enfermagem

UFPE On Line

ISSN: 1981-8963

ORIGINAL ARTICLE

PREVALENCE AND INCIDENCE OF PRESSURE ULCERS IN AN INTENSIVE CARE UNIT

PREVALÊNCIA E INCIDÊNCIA DE ÚLCERA POR PRESSÃO EM UMA UNIDADE DE TERAPIA INTENSIVA.

PREVALENCIA E INCIDENCIA DE ÚLCERAS POR PRESIÓN EN UNA UNIDAD DE CUIDADOS INTENSIVOS

Valéria Castilho Palhares¹, Aristides Augusto Palhares Neto²

ABSTRACT

Objective: estimating the incidence and prevalence of pressure ulcers (PU). **Method:** a prospective study conducted with 332 patients in ICU within one year. Data collection was used to recording annotation of skin integrity and was calculated the prevalence and incidence of PU. The research project was approved by the Ethics Committee in Research, Protocol 3354-2009. **Results:** from the patients studied, 92 % were at risk for PU, 12% developed PU at admission, and 10% had PU on admission. From the PU identified on admission 20 were stage I, 29 stage II, 2 stage III and 7 stage IV. From the PU identified during hospitalization, 11 were in stage I, 39 in stage II and in stage III 4. The incidence and the prevalence of PU were of 13,95% and 17,79% respectively. **Conclusion:** recognizing the incidence and prevalence of PU contributed to quality of care. **Descriptors:** Pressure Ulcer; Nursing; Intensive Care Unit.

RESUMO

Objetivo: calcular a incidência e a prevalência de úlceras por pressão (UPP). **Método:** estudo prospectivo realizado com 332 pacientes em UTI durante período de um ano. Na coleta de dados utilizou-se a ficha de anotação de integridade da pele e foram calculadas a prevalência e a incidência de UPP. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, Protocolo 3354-2009. **Resultados:** dos pacientes estudados, 92% apresentaram risco para UPP, 12% desenvolveram UPP na internação, 10% apresentaram UPP na admissão. Das UPP identificadas na admissão 20 eram de estágio I, 29 de estágio II, 2 de estágio III e 7 em estágio IV. Das UPP identificadas durante a internação, 11 eram no estágio I, 39 no estágio II e 4 no estágio III. A incidência e a prevalência das UPP foram de 13,95% e 17,79% respectivamente. **Conclusão:** conhecer as taxas de incidência e prevalência das UPP contribuiu para qualidade da assistência. **Descritores:** Úlcera por Pressão; Enfermagem; Unidade de Terapia Intensiva.

RESUMEN

Objetivo: calcular la incidencia y la prevalencia de las úlceras por presión (UPP). **Método:** estudio prospectivo realizado con 332 pacientes en UCI dentro de un año. La recolección de datos se utilizó para registrar la anotación de la integridad de la piel y se calcularon la prevalencia y la incidencia de UPP. El proyecto de investigación fue aprobado por el Comité de Ética en Investigación, Protocolo 3354-2009. **Resultados:** de los pacientes estudiados, 92 % estaban en riesgo de UPP, 12% han desarrollado UPP en el ingreso, el 10% tenían UPP al ingreso. De la UPP identificada en la admisión 20 fueron en etapa I, etapa II 29, 2 etapa III y IV 7. De las UPP identificadas durante la hospitalización, 11 se encontraban en etapa I, 39 en etapa II y etapa III 4. La incidencia y la prevalencia de UPP fueron de 13,95% y 17,79%, respectivamente. **Conclusión:** conocer la incidencia y la prevalencia de UPP contribuyó a la calidad de la atención. **Descriptor:** Úlcera de presión; Enfermería; Unidad de Cuidados Intensivos.

¹Nurse, Professor, Department of Nursing, Faculty of Medicine of Botucatu. Botucatu (SP), Brazil. Email: valeria@fmb.unesp.br.

²Physician, Professor, Department of Surgery and Orthopedics, Faculty of Medicine of Botucatu. Botucatu (SP), Brazil. Email: palhares@fmb.unesp.br

INTRODUCTION

Pressure ulcers (PU) are defined as a localized area of cell death that develop when a soft tissue is compressed between a bony prominence and a hard surface for long periods of time.¹ Ulcers are classified into stages ranging from Stage I to IV, based on the depth of tissue involvement.²

Studies show that in intensive therapy the incidence of PU has a range from 1% to 56%.^{1,3-4} In Brazil, studies in the intensive care unit estimated incidences of PU from 10,62% to 62,5%.^{4,5-7}

International literature shows that the introduction of protocols of PU and educational programs prevention decreases its incidence. In long-term hospital, after educational intervention, the incidence was reduced from 23% to 5%, and in orthopedic unit, from 55% to 29%.⁸⁻⁹

The Ministry of Health sets the ICU as a place where there is a set of functionally clustered elements, being used in the treatment of critically ill patients or at risk requiring medical and nursing uninterrupted service, plus equipment and skilled human resources.¹⁰

Because of the clinical conditions presenting patients who are hospitalized in the ICU, its treatment, in most cases, demand the use of specific apparatus and also the use of numerous therapeutic artifacts, becoming thus the patient susceptible to potential risk complications, such as infections due to invasive procedures, loss of muscle mass and the occurrence of ulcers by pression.¹¹

It is known that the professional of nursing plays a crucial role regarding patient care, and also plays an extremely important work in the treatment of wounds, since it has a greater contact with the same, monitors the evolution of the lesion, guides and performs the bandage, and holds greater mastery of this technique, by virtue of having in its training curriculum components toward this practice and nursing staff develop it as one of its attributions.¹² Among the various scales that exist, the Braden Scale (EB), was adopted to evaluate the risk of developing PU. The scale consists of six subscales: nutrition, sensory perception, moisture, activity, mobility, and friction/shear. The risk is assessed in scores ranging from 6 to 23.¹³ It observes that the higher the score, the lower the risk of developing PU. The significance of the final evaluation score detects scores below 12, identified as high risk for the development of pressure ulcers; between 13 and 14, moderate risk; and between 15 and 16 minimum risk.

Pressure ulcers (PU) in hospitalized patients has been mentioned as one of the indicators of quality of care in health services; it is considered a direct indicator of the quality of nursing care.¹⁴ ICU being of PS, a gateway for many patients in the hospital, it is necessary recognizing who are the patients that develop PU along admission and who are the patients that come afflicted with PU. Believing that these numbers have great importance in regard to establishing prevention, assessment and treatment of PU protocols, and also by the scarcity of these indicators in the literature, it was decided by this study.

Given the above, the objectives of this study are:

- Calculating the incidence rate of pressure ulcers in the ICU-PS during the period
- Calculating the prevalence of PU of home origin at the time of admission
- Classifying the risk for pressure ulcers according to the score of the Braden Scale
- Assessing the stage regarding the depth of pressure ulcers

METHOD

This is a clinical epidemiological, descriptive, prospective study developed in an intensive care unit with a capacity of nine beds of a level III University Hospital of Botucatu in São Paulo.

All patients admitted to the ICU-PS were studied from September 2007 to August 2008, a total of 332. During the study period, the Technical Service Emergency divided into a medical section and three nursing sections: Technical Section Screening, Technical Section of Adult Nursing and Technical Section of Pediatrics.

The Technical Section of Adult Nursing was responsible for the ICU with nine beds and a ward with 12 beds. This is a General Intensive Care Unit designed to meeting patients entering the Emergency Room Technical Service and requiring ICU admission. The staff of this unit was comprised of one nursing supervisor, four nurses, 13 nursing technicians and 38 nursing assistants.

The target population of this study consisted of 332 patients. From September 2007 to August 2008, the monthly average of hospitalization was of 28 patients, average stay of ten days, percentage occupancy of 92%, and mortality rate of 40%.¹⁵

For data collection it was used the record annotation on skin integrity, in use since 2005 in the section, the period from September 2007 to August 2008, completed by nurses of

the section was used. This record contains data identifying the patient regarding: gender, age, diagnosis, specialty, patient's admission date, date of entry in the ICU-PS, date of discharge from the ICU, risk factors for the development of PU, dated the day of evolution, Braden Scale score, PU origin, PU site, stage of PU, PU size, conduct for prevention, treatment behavior, characteristics of the tissue and exudate.

To identifying the origin of the PU there were adopted the UD and UH acronyms, being UD for pressure ulcer of home origin, ie, for the patient who was admitted to the unit with the PU, and presence of the acronym UH for pressure ulcer of hospital origin, ie, for patients who developed PU during hospitalization.

This record was open to all patients admitted to the ICU, a total of 332 and the notes were made daily by nurses providing care in the ICU-PS. To calculating the prevalence of UD there were raised the number of patients admitted with PU and divided by the total admissions of the study period.

To calculating the incidence of UH there were raised the number of new PU and divided by the number of patients at risk of developing PU, with scores in the range of less than or equal to 16 Braden For patients whose Braden Scale score was less than or equal to 16 procedures to prevent the emergence of PU as placing pyramidal mattress, placing pillows and cushions, using moisturizer and / or essential fatty acids throughout the body and the prescription of changing positions two were performed in two hours recorded in individual form and the pre-established every two hours position, facilitating the supervision of decubitus responsibility of the nurse. This form also allows for annotation on the location and stage classification of depth.

For classification regarding the stage depth it was adopted the classification of the National Pressure Ulcer Advisory Panel (NPUAP).²

For the daily progress note of the integrity of the skin of the patient, the nurse bath followed patient, scanning the patient's skin

and the presence of PU by checking the type of the damaged tissue, related to contamination of the wound data and the characteristics of the exudate for appearance, color, quantity and odor.

For the treatment of pressure ulcers there were used saline 0,9%, essential fatty acids, papain at concentrations of 2%, 4%, 6% and 10%, hydrocolloid dressing and activated carbon dressing as indicated by the appropriate coverage.

Inclusion criteria for the study are: all admitted to the ICU of Emergency Department patients, and exclusion: records of skin integrity that do not allow information for lack of adequate completion.

The study was submitted to the Ethics Committee of the Faculty of Medicine of Botucatu, without the need for informed consent by the patient due to the characteristics of the study, approved as protocol CEP 3354-2009.

The records were organized monthly by the admission date and the end of each month entered one by one in excel spreadsheet to performing the calculations of UH incidence and prevalence of UD, stage of PU and EB score. The study was submitted to statistical analysis of data.

RESULTS

There were studied 332 patients with an average age of 57 years old, 55% male and 45% female, average stay of 10 days, occupancy rate of 92% and 40% mortality. Among the 332 patients, 180 were from clinical specialty and 152 of surgical specialty.

In this case series there were identified 304 (92%) patients at risk for PU, ie, with EB less than or equal to 16, as shows figure 1. Of these patients, the average age was of 53 years old, and of patients without risk (n = 28) the average was 51 years old.

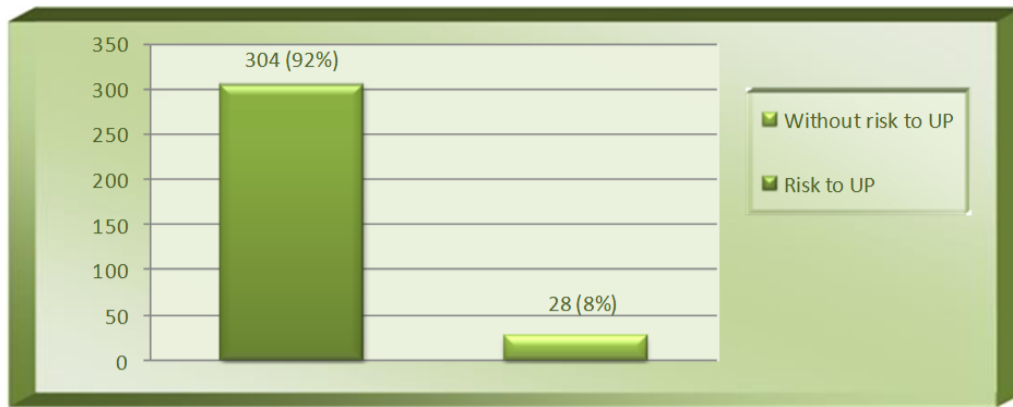


Figure 1. Risk to developing PU as Braden Scale, n=332.

Through the application of EB, we identified at admission only 28 patients with EB > 16, without risk of PU. From the 304 patients who were at risk for PU, 14 showed EB between 15 and 16, ie, at minimum risk for

developing PU; 22 had EB between 13 and 14; moderate risk for developing PU; and 268 patients had EB ≤ 12, high risk for developing PU, as table 1.

Table 1. Risk for developing PU according to Braden Scale, n = 332. ICU-PS, Botucatu (SP), 2007-2008.

Braden Scale (EB)	Total of patients
Without risk (EB> 16)	28
Minimum risk (EB between 15 and 16)	14
Moderate risk (EB between 13 and 14)	22
High risk (EB≤12)	268

Of the 332 patients studied, 34 had UPP on admission, ie, UD. The total number of UD was of 58, and the number of UD per patient was of 1.70. During hospitalization 41 patients

developed PU, ie UH. The total number of UH was of 54 ulcers, and the UH number per patient was of 1.31, as shown in Figure 2.

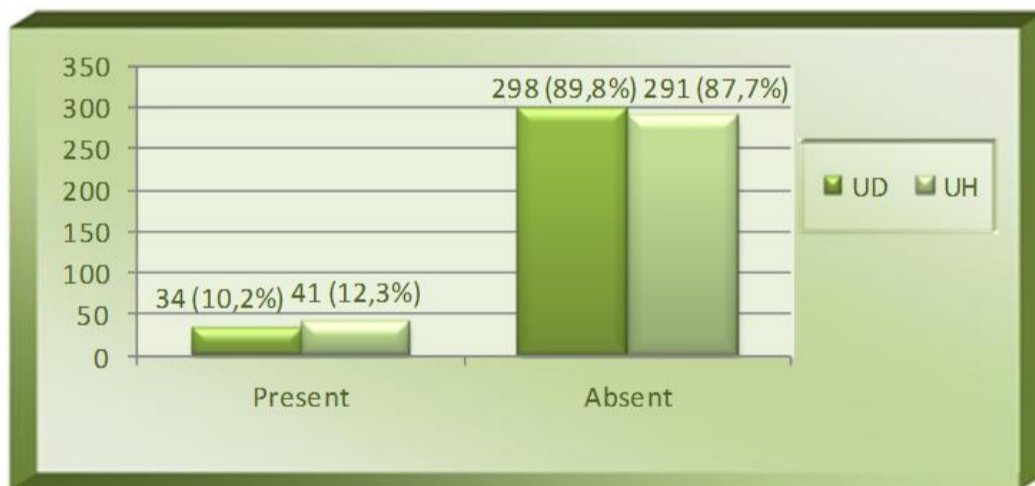


Figure 2. Total of patients who showed PU on admission (UD) and during hospitalization (UH), n=332.

As the depth of the PU, 20 UD were classified in stage I, 29 stage II, 02 stage III and 07 stage IV. There were recorded 11 UH in

stage I, 39 stage II, 04 stage III and none in stage IV, as shown in Table 2.

Table 2. Depth of domiciliary ulcers (UD), n = 58 and medical ulcers (UH), n=54. UTI-PS, Botucatu (SP), 2007-2008.

	Depth of UD	Depth of UH
Stage I	20	11
Stage II	29	39
Stage III	02	04
Stage IV	07	00

Regarding the location of the UD, 23 were in the calcaneus, 21 sacralis, 06 trochanteric, 01 occipital, 03 gluteal, lower limb 02, 01 in the lateral malleolus and 01 scapular. Regarding the location of the UH 32 were in the sacral region, 9 trochanteric, occipitalis 6,

3 in calcaneus, gluteal 2, and 02 in the left lower limb (LLL).

The records of these data allowed calculating the incidence of UH and the prevalence of UD in ICU-PS during the study period. The prevalence of UD was of 17.77%

and the incidence of UH was of 13.95%, as shown in table 3.

Table 3. Prevalence and incidence of PU in ICU-PS, n=332. ICU-PS, Botucatu (SP), 2007-2008.

UPP	%
Prevalence Ud	17,77%
Incidence Uh	13,95%

DISCUSSION

Regarding the socio-demographic and clinical aspects of this study, it was found that the average age was of 57 years old, and 53 years old for patients at risk for developing PU, and 51 years old for patients without risk of PU. The results found in the literature do not always agree with our findings. In a study of incidence of PU, the overall average age was of 66 years old and of 70 years old for patients with risk of UPP.⁴

In another study, the average age of patients was 48 years old and patients with risk of PU was of 53 years old.¹⁶ In relation to the findings of genre literature also differs as the predominance of male or female gender.¹⁷ The number of men and women in our sample was very similar. Most patients belong to specialty clinics and this is due to the internal characteristics of the study ICU, where there is a predominance of clinical admissions.

The use of the Braden Scale as a predictor of risk identified in this series that the majority of patients admitted have high risk for PU. In surveying the literature, the importance of the use of the Braden Scale in clinical practice as a useful tool for predicting the onset of pressure ulcers or its recurrence was observed. The EB allows recognizing the individual risk of each patient and implements preventive measures earlier consistent with the identified risk.¹⁸ In our study the use of EB as a predictor of risk was very important to know the patients and devise strategies to prevent early.

Regarding the prevalence of PU at admission (UD), this is justified by being inserted into this ICU from an emergency department, where many patients are already bedridden, come from nursing homes and even stay in stretchers inside emergency rooms, without the possibility of changes in position. We also observed that the depth of UD was in more advanced stages than UH. This is justified by the care adopted prevention and treatment within the ICU studied. This routine care for prevention and treatment of PU in the study ICU was filed since 2005, therefore, the nursing staff has incorporated into their routine work such care, ie, changing positions every two hours, using mattress pyramidal, pillows and cushions, daily skin inspection, the use of moisturizers and

essential fatty acids for skin hydration and prevention, among other preventive measures recommended by literature¹⁹. In UH, we observe that most of the injuries were in stage I and II, confirming the findings of prevalence studies done in national and international hospitals.^{5,20}

It was observed in this study that the prevalence of UD was of 17,77% and the incidence UH was 13,95%. Studies point to the ICU as having risk for developing UPP three times greater than the admission in other hospital units, leaving the incidence of around 33% in the United States (USA).^{17,21} In a study conducted in the USA in the intensive care unit showed an incidence of UPP 20,1%.²² in Brazil, studies in the intensive care unit estimated incidences of UPP 10,62% to 62,5%.^{4,5-6,14,23} In this series, the result of the incidence of ICU PU approaches of international studies, where this index ranged between 0 and 20,1%. We believe this is due to the involvement of the nursing staff in caring for the prevention and treatment of the patient's skin and the existing protocol since 2005, enough to incorporate the recommended routine care in time.

CONCLUSION

The incidence rate of pressure ulcers in the ICU-PS was 13,95%. Knowing the incidence rate of pressure ulcers in the ICU-PS contributes to the quality of care given that it is an indicator of quality of care.

The prevalence of pressure ulcers of home origin was 17,77%. Recognizing the prevalence of pressure ulcers of home origin was important to differentiate them from those that occurred during hospitalization.

The risk for PU found was of 92%. This study showed the importance of the use of predictive scales as a risk assessment tool for the prevention of PU.

The PU evaluated both as the source of home hospital origin was more frequent in Stages I and II. Among the UHs we did not obtain PU in stage IV.

This study noted that the measures of prevention and treatment adopted have proven the importance of establishing such care for an individualized nursing care, as they are directly related to the planned nursing care, since the rates found are similar to those found in the American literature.

REFERENCES

- Keller BP, Wille J, van Ramshort B, van der Werken C. Pressure ulcers in intensive care patients: a review of risks and prevention. *Intensive Care Med* [Internet]. 2002 [cited 2013 Feb 10];28(10):1379-88. Available from: <http://link.springer.com/content/pdf/10.1007%2Fs00134-002-1487-z.pdf>
- Fernandes LM, Caliri MHL, Haas VJ. Efeitos de intervenções educativas no conhecimento dos profissionais de enfermagem sobre prevenção de úlceras pressão. *Acta Paul Enferm* [Internet]. 2008 [cited 2012 Feb 10];21(2):305-11. Available from: http://www.scielo.br/pdf/ape/v21n2/pt_a12v21n2.pdf
- Fife C, Otto G, Capsuto EG, Brandt K, Lyssy K, Murphy K, Short C. Incidence of pressure ulcers in a neurologic intensive care unit. *Crit Care Med* [Internet]. 2001 [cited 2012 Feb 12];29(2):283-90. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/11246307>
- Rogenski NMB, Santos VLCG. Estudo sobre a incidência de úlceras por pressão em um hospital universitário. *Rev Latino-Am Enfermagem* [Internet]. 2005 [cited 2012 Abr 11];13(4):474-80. Available from: <http://www.scielo.br/pdf/rlae/v13n4/v13n4a03.pdf>
- Anselmi ML, Peduzzi M, Junior IF. Incidência de úlceras por pressão e ações de enfermagem. *Acta Paul Enferm* [Internet]. 2009 [cited 2012 Mar 30];22(3):257-64. Available from: <http://www.scielo.br/pdf/ape/v22n3/a04v22n3.pdf>
- Dicini S, Camaduro C, Iida LIS. Incidência de úlcera por pressão em pacientes neurocirúrgicos de hospital universitário. *Acta Paul Enferm* [Internet]. 2009 [cited 2011 Mar 30];22(2):205-209. Available from: <http://www.scielo.br/pdf/ape/v22n2/a14v22n2.pdf>
- Xakellis GC Jr, Frantz RA, Lewis A, Harvey P. Cost-effectiveness of an intensive pressure ulcer prevention protocol in long-term care. *Adv Wound Care* [Internet]. 1998 [cited 2011 Mar 30];11(1):22-9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/9729930>
- Gunningberg L, Lindholm C, Carlsson M, Sjöden PO. Reduced incidence of pressure ulcers in patients with hip fractures: a 2-year follow-up of quality indicators. *Int J Qual Health Care* [Internet]. 2001 [cited 2012 Mar 29];13(5):399-407. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/11669568>
- Ministério da Saúde. Portaria n 466, de 04 de junho de 1998 [Internet]. Brasília: Ministério da Saúde; 1998 [cited 2010 May 09]. Available from: <http://www.amib.com.br>.
- Fernandes NCS, Torres GV. Incidência e fatores de risco de úlceras de pressão em pacientes de Unidade de Terapia Intensiva. *Cienc Cuid Saúde* [Internet]. 2008 [cited 2011 Jun 10]; 7(3):304-10. Available from: <http://www.sigaa.ufrn.br/sigaa/verProducao?idPrducao=1343584&key=a260480cbbd172aabbc37ce610831fda>.
- National Pressure Ulcer Advisory Panel (NPUAP). Pressure ulcer prevalence, cost and risk assessment: consensus development conference statement. *Decubitus* [Internet]. 1989 [cited 2011 Jun 10];2(2):24-8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/2665781>
- Prudencio e Silva D, Barbosa MH, Araújo DF, Oliveira LP, Melo AF. Úlcera por pressão: avaliação de fatores de risco em pacientes internados em um hospital universitário. *Rev Eletr Enferm* [Internet]. 2011 [cited 2012 Jan 30];13(1):118-23. Available from: <http://www.fen.ufg.br/revista/v13/n1/v13n1a13.htm>.
- Bergstrom N, Allman RM, Alvarez OM, Bennett MA, Carlson CE, Frantz RA et al. Treatment of pressure ulcers: clinical practice guideline, n. 15 [Internet]. Rockville: U.S. Department of Health and Human Services, Public Health Services, Agency for Health Care Policy and Research; 1994 [cited 2012 May 09]. Publication, 5-0652. Available from: http://books.google.com.br/books?hl=pt-BR&lr=&id=Ki9VMYD4zf8C&oi=fnd&pg=PP1&dq=Treatment+of+Pressure+ulcers,+clinical+guideline&ots=B2jfCLMUbW&sig=S5T2tUyDATJn4DSJGr8kV4uZa_c#v=onepage&q=Treatment%20of%20Pressure%20ulcers%2C%20clinical%20guideline&f=false
- Costa MP, Sturtz G, Costa FPP, Ferreira MC, Barros Filho TEP. Epidemiologia e tratamento das úlceras de pressão: experiência de 77 casos. *Acta Ortop Bras* [Internet]. 2005 [cited 2011 June 10];13(3):124-33. Available from: http://www.scielo.br/scielo.php?pid=S1413-78522005000300005&script=sci_arttext
- Universidade Estadual Paulista. Faculdade de Medicina. Hospital das Clínicas. Seção de Arquivos e dados Médicos. Ano 2007-2008 [Internet]. 2009 [cited 2009 Feb 04]. Available from:

www.intranethc.fmb.unesp.br/estat/arquivo/rpt.

16. Costa NJ, Lopes MVO. Revisão sobre úlcera de pressão em portadores de lesão medular. RENE [Internet]. 2003 [cited 2009 Feb 04];4(1):109-15. Available from: <http://www.revistarene.ufc.br/revista/index.php/revista/article/download/875/pdf>.

17. Bergstrom N, Braden BJ, Kemp M, Champagne M, Ruby E. Multisite study of incidence of pressure ulcers and the relationship between risk level, demographic characteristics, diagnoses and prescription of preventive interventions. J Am Geriatr Soc [Internet]. 1996 [cited 2012 Jun 09]; 44(1):22-0. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/8537586>

18. Gomes FSL, Bastos MAR, Matozinhos FP, Temponi HR, Velásquez-Meléndez G. Avaliação de risco para úlcera por pressão em pacientes críticos. Rev Esc Enferm USP [Internet]. 2011 Apr [cited 2012 Mar 05];45(2):313-8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342011000200002&lng=pt

19. Dantas ALM, Araújo JDB, Ferreira PC, Valença CN, Diniz KD, Lira ALBC. Prevenção de úlceras por pressão segundo a perspectiva do enfermeiro intensivista. J Nurs UFPE on line [Internet]. 2013 [cited 2013 Apr 2];7(3):706-12. Available from: http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/3630/pdf_2152.

20. Whittington K, Patrick M, Roberts JL. A national study of pressure ulcer prevalence and incidence in acute care hospitals. J Wound Ostomy Continence Nurs [Internet]. 2000 [cited 2012 June 10];27(4):209-15. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/10896746>

21. Pernerger TV, Gaspoz JM, Rae AC, Borst F, Hélot C. Contribution of individual items to the performance of the Norton pressure ulcer prediction scale. J Am Geriatric Soc [Internet]. 1998 [cited 2012 Jun 09]; 46(10):1282-6. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/9777913>

22. Nijs N, Toppets A, Defloor T, Bernaerts K, Milisen K, Van Den Berghe G. Incidence and risk factors for pressure ulcers in the intensive care unit. J Clin Nurs [Internet]. 2009 [cited 2012 May 09];18(9):1258-66. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19077028>

23. Perrone F, Paiva AA, Souza LMI, Faria CS, Paese MCS, Aguilar-Nascimento JE et al.

Estado nutricional e capacidade funcional na úlcera por pressão em pacientes hospitalizados. Rev Nutr [Internet]. 2011 [cited 2012 Mar 05];24(3):431-8. Available from:

http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1415-52732011000300006&lng=en



Submission: 2014/05/23

Accepted: 2014/09/20

Publishing: 2014/10/15

Corresponding Address

Valéria de Castilho Palhares
Departamento de Enfermagem da Faculdade de Medicina de Botucatu
Universidade Estadual Paulista Júlio de Mesquita Filho - UNESP
Distrito de Rubião Júnior s/n
CEP 18618-970 – Botucatu (SP), Brazil