

PRESSURE ULCERS: CORRELATION BETWEEN THE BATES-JENSEN WOUND ASSESSMENT TOOL AND THE PRESSURE ULCER SCALE FOR HEALING

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ABSTRACT

Objective: to verify the correlation between the Bates-Jensen Wound Assessment Tool and the Pressure Ulcer Scale for Healing instruments for assessing pressure ulcers in adults.

Method: a cross-sectional study, carried out in the unit for patients with multidrug-resistant germs, in a Brazilian public hospital. Data collection took place in 2017, with a sample of 110 injuries, through direct inspection and application of the proposed instruments. The data were analyzed using descriptive and analytical statistics.

Results: the study included 36 patients with a mean age of 45.4±21.3 years old; 23 (63.9%) were male, with higher frequency of involvement of the sacral region (35; 31.9%), with 43 Stage II pressure ulcers (39.1%). The mean score of the Bates-Jensen Wound Assessment Tool was 35.5±8.9, and that of the Pressure Ulcer Scale for Healing was 11.75±3.57 ($r=0.74$ and $p<0.01$).

Conclusion: the study achieved its objective by verifying a strong correlation and a positive association between BWAT and PUSH. BWAT provides a thorough assessment of the injury while PUSH is easy and quick to apply. It is up to each Nursing service to decide which instrument is best suited to the reality regarding the work demand.

DESCRIPTORS: Pressure ulcer. Multidrug resistance. Nursing care. Adult. Hospitalization.

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LESÕES POR PRESSÃO: CORRELAÇÃO ENTRE *BATES-JENSEN WOUND ASSESSMENT TOOL* E *PRESSURE ULCER SCALE FOR HEALING*

RESUMO

Objetivo: verificar a correlação entre os instrumentos *Bates-Jensen Wound Assessment Tool* e da *Pressure Ulcer Scale for Healing* para avaliação de lesões por pressão em adultos.

Método: estudo transversal, realizado na unidade para pacientes com germes multirresistentes, em hospital público do Brasil. A coleta de dados ocorreu em 2017, com amostra de 110 lesões, mediante inspeção direta e aplicação dos instrumentos propostos. Os dados foram analisados através de estatística descritiva e analítica.

Resultados: fizeram parte do estudo 36 pacientes com idade média de 45,4±21,3 anos, 23 (63,9%) eram do sexo masculino, com maior frequência de acometimento da região sacra (35;31,9%), sendo 43 lesões por pressão (39,1%) de Estágio II. A média dos escores da *Bates-Jensen Wound Assessment Tool* foi 35,5±8,9 e da *Pressure Ulcer Scale for Healing* 11,75±3,57 ($r=0,74$ e $p<0,01$), respectivamente.

Conclusão: o estudo atingiu o objetivo ao verificar forte correlação e associação positiva entre a BWAT e a PUSH. A BWAT proporciona avaliação minuciosa da lesão enquanto a PUSH é de fácil e rápida aplicação. Compete a cada serviço de enfermagem decidir qual o instrumento que se adequa melhor a realidade quanto à demanda de trabalho.

DESCRITORES: Lesão por pressão. Resistência a múltiplos medicamentos. Cuidados de enfermagem. Adulto. Hospitalização.

ÚLCERAS POR PRESSIÓN: CORRELACIÓN ENTRE LA *BATES-JENSEN WOUND ASSESSMENT TOOL* Y LA *PRESSURE ULCER SCALE FOR HEALING*

RESUMEN

Objetivo: verificar la correlación entre los instrumentos *Bates-Jensen Wound Assessment Tool* y *Pressure Ulcer Scale for Healing* para evaluar úlceras por presión en adultos.

Método: estudio transversal, realizado en la unidad para pacientes con gérmenes multi-resistentes, en un hospital público de Brasil. La recolección de datos tuvo lugar en el año 2017, con una muestra de 110 lesiones, mediante inspección directa y aplicación de los instrumentos propuestos. Los datos se analizaron a través de estadística descriptiva y analítica.

Resultados: los participantes del estudio fueron 36 pacientes con una media de edad de 45,4±21,3 años; 23 (63,9%) eran del sexo masculino, con mayor frecuencia de afección en la región sacra (35;31,9%), con presencia de 43 úlceras por presión (39,1%) en Etapa II. El valor medio de las puntuaciones de la *Bates-Jensen Wound Assessment Tool* fue 35,5±8,9, y el de la *Pressure Ulcer Scale for Healing* fue 11,75±3,57 ($r=0,74$ y $p<0,01$).

Conclusión: el estudio logró su objetivo al verificar una fuerte correlación y una asociación positiva entre BWAT y PUSH. BWAT proporciona una evaluación minuciosa de la lesión, mientras que PUSH se aplica en forma sencilla y rápida. Es responsabilidad de cada servicio de Enfermería decidir cuál es el instrumento que mejor se adecúa a la realidad en términos de la demanda de trabajo.

DESCRIPTORES: Úlcera por presión. Resistencia a múltiples medicamentos. Atención de enfermería. Adulto. Internación.

INTRODUCTION

In recent years, many perspectives have focused on patient safety, understood as reducing the risk of unnecessary harms to health care to an acceptable minimum. Recognized as an adverse event, pressure ulcer (PU) is one of the five most common causes of harms to patients. In this context, the prevention of PU becomes an important challenge for the Nursing area, comprised of professionals who are responsible for direct and continuous assistance to patients, which gives it a prominent role in preventing the problem and implementing measures that minimize its sequelae, if they occur¹⁻². In addition to contributing to increased morbidity, mortality, length of stay and health care costs, PU is internationally considered as an adverse event and its high incidence is interpreted as a negative indicator in the quality of Nursing care. The knowledge of measures that assist in the assessment and documentation of the injuries allows for the choice of interventions that favor healing, reducing the patient's suffering³. PU is characterized by damages to the skin and/or to the underlying structures, usually bony prominences, caused by isolated pressure or combined with shear and/or friction, classified according to the degree of damage observed in the tissues⁴. It can be classified into four distinct stages: Stage I presents intact skin with erythema that does not whiten; Stage II is characterized by loss of skin in its partial thickness with exposure of the dermis; Stage III is characterized by loss of skin in its total thickness; and Stage IV, by loss of skin in its total thickness and tissue loss.

Furthermore, it is possible that a PU is of the non-classifiable type: when it presents loss of skin in its total thickness and non-visible tissue loss; or of the deep tissue PU type: when it presents persistent dark red, brown or purple discoloration, and that does not whiten⁵. In Brazil, in the period from January 2014 to July 2017, 23,722 (17.6%) pressure ulcers were reported, and their incidence can vary from 23.1% to 59.5%, mainly in patients in intensive care units⁶. It is estimated that, in the United States, approximately 2.5 million patients develop PUs per year, with an increase in PU development varying from 23% to 52%⁷. In Canada, prevalence is around 26% and, in Turkey, between 5.4% and 17.5%⁸. It is up to the nurse to evaluate, prevent, diagnose and care for injuries, using instruments based on scientific evidence, which enable standardization, effectiveness and cost reduction⁹. The literature points out a series of instruments that can be used for the evaluation of PUs. However, the existence of scales with different parameters can make it difficult to choose the most appropriate for each need¹⁰. Two widely used instruments are the Pressure Ulcer Scale for Healing (PUSH) and the Bates-Jensen Wound Assessment Tool (BWAT), valuable tools for assessing and treating PUs¹¹⁻¹². Although BWAT allows for a more detailed assessment of PUs, it is understood that the application of a scale with so many indicators can imply an increase in work for the nurses in view of the already existing large demand, which can render its application unfeasible. The application of an instrument in the monitoring of PUs is a tool that can contribute to give visibility to the result of the care provided to the patients. Thus, this study asks whether there is a correlation between PUSH and BWAT in the evaluation of PUs in adults. The relevance of the study is to adapt the application of the instruments to the nurses' work possibilities, without prejudice to the assessment result. To this end, the aim of this study was to verify the correlation between the Bates-Jensen Wound Assessment Tool and the Pressure Ulcer Scale for Healing instruments in the assessment of pressure ulcers in adults.

METHOD

A cross-sectional study conducted with patients hospitalized in an inpatient unit of a public and university hospital in southern Brazil. It is a sector with 34 beds available to receive clinical and surgical patients. Multidisciplinary care for patients with multidrug-resistant germs (MRGs) is one of the characteristics of the unit. The research population consisted of MRG patients with PUs caused within the institution or coming from the community. The patients included were those with PUs from Stage II, with any evolution time and in any anatomical region, and who remained at least 24 hours in the sector. Patients with PUs who were discharged before collection were excluded. Each readmission was treated as a new patient and a new injury, due to the possibility of worsening in other sectors or at the patient's home. Sample size was calculated using the WinPEPI (Programs for Epidemiologists for Windows) program, version 11.43, and based on the strength of the correlation estimated in Callegari-Jacques¹³. Considering a significance level of 5%, power of 85%, and an estimate of a minimum correlation coefficient of 0.3 between the variables, a minimum total of 97 injuries was obtained. Selection was made at random according to the hospitalization order. The data were collected by previously trained nurses, through the weekly application of the research protocol throughout the hospitalization, from January to April 2017, within 48 hours after admission to the unit. The protocol consisted of a patient and PU characterization instrument, by means of the BWAT and PUSH instruments, both validated for Brazilian Portuguese. PUSH considers three parameters for assessing the healing process and intervention results: area, amount of exudate and appearance of the PU bed. When added together, the sub-scores for these parameters or subscales generate a total score, with a possible variation from 0 to 17. Higher scores indicate worse PU conditions and lower scores indicate improvement in the PU healing process¹¹. BWAT contains 13 items that assess size, depth, edges, detachment, type and amount of necrotic tissue, type and amount of exudate, edema and hardening of the peripheral tissue, skin color around the PU, granulation tissue and epithelialization. The measurement scale is of the Likert type, with five points, where 1 indicates the best condition of the wound and 5, the worst condition. The total score is obtained with the sum of all the items and can vary from 13 to 65 points, with the highest scores indicating the worst PU conditions¹⁴. The data were collected through information from the patients' electronic medical record and through direct inspection of the pressure ulcers, grouped in Microsoft Excel for Windows® spreadsheets and analyzed with the aid of the "Statistical Package for the Social Sciences®" (SPSS) statistical package, version 20. The variables were analyzed individually through descriptive statistics (with mean and percentage) and Pearson's correlation test was used to analyze the correlation between the scales. *p*-values below 0.05 were considered statistically significant. The research was carried out after approval by the Research Ethics Committee of the institution involved and met the national and international standards of ethics in research involving human beings, according to Resolution 466/12 of the National Health Council.

RESULTS

A total of 110 PUs were evaluated in 36 patients with a mean age of 45.4±21.3 years old; 9 (25%) were older adults with more than one chronic non-communicable disease and 8 (22.2%) were diagnosed with paraplegia due to gunshot injury with osteomyelitis. The characteristics of the patients are described in Table 1.

Table 1 – Characteristics of the patients with multidrug-resistant germs with pressure ulcers. Porto Alegre, RS, Brazil, 2017. (n=36)

Sociodemographic data	Results
Age †	45.4±21.3
Male gender ‡	23 (63.9%)
Smoker ‡	10 (27.7%)
Nutritional status ‡	
Eutrophic	17 (47.2%)
Malnourished	17 (47.2%)
Overweight	2 (5.6%)
Diabetes Mellitus ‡	6 (16.7%)
Cardiovascular diseases ‡	14 (38.9%)
Origin ‡	
Emergency sector	13 (36.1%)
Other hospitalization units	10 (27.8%)
Intensive treatment center	8 (22.2%)
Other hospitals	5 (13.9%)
Braden †	12.1±1.9
No. of pressure ulcers per patient ‡	
One	13 (36.1%)
Two	8 (22.2%)
Three	6 (16.7%)
Four or more	9 (25%)

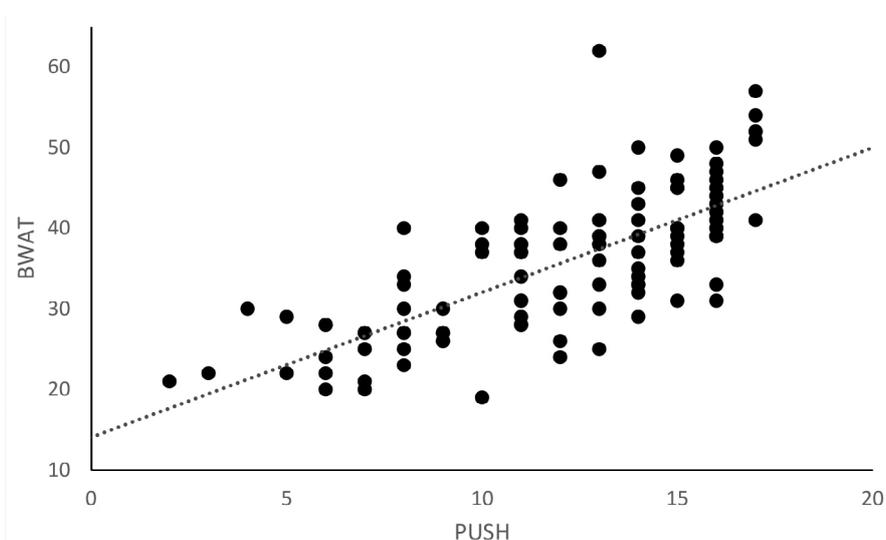
† mean/standard deviation ‡ n(%)

The anatomical region most affected by PUs was the sacral region, with 35 (31.9%) injuries, followed by trochanters (23- 21%) and glutes (15 - 13.6%). Anatomical regions such as calcaneus, ischia, malleoli, knees, back, tibia and auditory pavilion totaled 33.5%. The assessment of the injuries showed that 43 (39.1%) were Stage II; 29 (26.4%), Stage III; 24 (21.8%), Stage IV; and that 14 (12.7%) were classified as indefinite stage. The median extension of the PUs was 14 cm², varying between 0.25 cm² and 651 cm². The mean total value of BWAT was 35.5±8.9. The qualitative assessment of the scale's indicators showed that 72 (65.5%) PUs did not present detachment, 90 (81.2%) had less than 25% of the wound covered by epithelialization, 89 (89.9%) did not have edema on around the injury, 73 (66.6%) did not present hardening of the peripheral tissue, and 58 (52.7%) had defined edges, with a visible outline and at the same level of the wound base. Other characteristics are shown in Table 2.

The mean value of PUSH was 11.75±3.57. The assessment of the scale indicators showed that 56 (50.9%) injuries were 12.1 cm² in size, that 57 (51.81%) presented moderate or abundant exudate, and that 60 (54.55%) had devitalized tissue and/or necrosis. There was a strong correlation between BWAT and PUSH ($r=0.74$ and $p<0.01$), as shown in Figure 1.

Table 2 – Frequency (absolute and relative) distribution of the most relevant characteristics of the pressure ulcers in hospitalized patients. Porto Alegre, RS, Brazil, 2017. (n=110)

Item	Characteristics	n (%)
Depth	Damage to the epidermis and/or dermis	45 (40.9)
	Damage or necrosis of the subcutaneous tissue	35 (31.8)
	Total loss of skin thickness with extensive destruction, tissue necrosis or damage to muscle, bone or support structures	19 (17.3)
	Absent	41 (37.3)
Type of necrotic tissue	Non-viable white gray tissue and/or yellow non-adherent sphacelate	15 (13.6)
	Slightly adhered yellow sphacelate	28 (25.5)
	Black scab	26 (23.7)
Amount of necrotic tissue	Absent or less than 25% of the wound covered	71 (64.6)
	25% to 50% of the wound covered	14 (12.7)
	> 50% of the wound covered	25 (22.8)
Type of exudate	Absent	22 (20)
	Bloody or serous	51 (46.4)
	Purulent, thin or thick, between opaque brown and yellow, with or without odor	37 (33.6)
Amount of exudate	Absent, dry wound	19 (17.3)
	Scarce, moist wound, but with no evidence of exudate	20 (18.2)
	Small	23 (20.9)
Skin color around the injury	Moderate to large	45 (43.6)
	Pink or normal for the ethnic group	15 (13.6)
	Bright red and/or whitish to the touch	20 (18.2)
	White or pale gray or hypopigmented	23 (20.9)
	Dark red or purple and/or non-blanchable	20 (18.2)
Granulation tissue	Black or hyperpigmented	32 (29.1)
	75% to 100% of the wound filled	24 (21.8)
	< 75% and more than 25% of the wound filled	29 (26.4)
	< 25% of the wound	28 (25.5)
	Absence of granulation tissue	28 (25.5)



Pearson's Correlation Test.

Figure 1 – Demonstration of the correlation between BWAT and PUSH. Porto Alegre, RS, Brazil, 2017. (n=110)

DISCUSSION

The assessment of PUs is a recurring activity in the performance of Nursing professionals, requiring constant improvement for such. The use of instruments has been recommended in several guidelines, aiming at the qualification of care through standardization at the time of PU inspection, in addition to promoting effective communication among the professionals^{12,15}. However, the use of a large number of scales or instruments that are too complex can lead to work overload in nurses. Regarding the characteristics of the patients studied, two data drew attention in this study. The mean age of MRG patients with PUs, 45.4±21.3 years old, evidenced younger individuals than the literature points out¹⁶, a fact probably related to urban violence issues. Another point was the extent of the injuries. The population with MRGs has injuries with greater impairment of structures, when compared to hospitalized other adults, since only 43 (39.1%) were Stage II¹⁷. There are still few studies using BWAT, as well as institutions that apply this instrument in their routines. A research study carried out in a private tertiary-level hospital in Turkey identified that nurses assume direct responsibility for the prevention, assessment and management of pressure ulcers in stages I and II and that, in stages III and IV, multi-professional treatment occurs. Assessment of the injuries is conducted using BWAT and the result is recorded in an electronic medical chart. The mean total BWAT score in the evaluated patients was 22.8±5.72 (variation: 11.7–40)¹⁸, a value lower than that measured in MRG patients, with a mean total BWAT value of 35.5±8.9, a fact that can also be justified by the characteristics of the affected population. PUSH is one of the most used instruments for assessing PUs¹⁰. In the patients participating in this study, the mean PUSH value was 11.75±3.57. A study that evaluated patients admitted to intensive care verified a mean score of 8.99±3.82¹⁹. The difference between the values can be related to the fact that MRG patients have chronic injuries already from their homes, in addition to the issues of difficulty in accessing the health services and of lifestyle. It was verified that the BWAT and PUSH scales presented a strong correlation and a positive association in the sample under study, answering the research question. No other research studies were found that had the same objective. This result means that nurses will be able to use the instrument that best adapts to their reality without losing quality in the evaluation of PUs.

BWAT presents a more detailed result of the assessment of the PUs, as it has more characteristics to be measured. However, despite being used as a basis for the construction and validation of new scales, the literature points out the difficulty in interpreting indicators and scores, as well as in training for the application of the instrument, with greater reliability when applied by experienced professionals¹².

One study, however, compared the use of PUSH with traditional clinical assessment in venous ulcers and found it easy to apply, being an indicated tool for monitoring the healing process of different types of injuries, to measure the outcome of wound interventions and quality of care for services that treat injuries^{3,20}. It can also be used as an indicator to relate the cost with dressing materials and characteristics of the pressure ulcers, where the positive evolution was linked to a significant reduction in values. It is easy and quick to apply, reducing the risk of measuring bias²¹.

In view of the data presented, it is up to each service to decide which instrument is best suited to the reality experienced in relation to the work demand. It was verified that BWAT is a longer scale, which assesses the injury more thoroughly and that, for this reason, provides more details, while PUSH is shorter and quick to apply, being as valid as BWAT.

As a study limitation, the fact that the sample consisted of few patients is to be noted, despite the considerable number of injuries, and assisted a single institution. It is suggested to continue the research, increasing the number of assessments, enabling generalization of the results.

CONCLUSION

The study achieved the objective by establishing a strong correlation and a positive association between BWAT and PUSH. This result provides subsidies so that Nursing professionals can decide which instrument best suits their work reality, knowing that a shorter and easier to apply scale does not lose quality criteria, correlating with another that evaluates more indicators. It is noted that the use of PUSH and BWAT provided subsidies for the careful analysis of PUs and monitoring of wound healing, standardizing the language used and guiding the prescription of care.

REFERENCES

1. Mendes W, Sousa P. Segurança do paciente: conhecendo os riscos nas organizações de saúde [Internet]. 2nd ed. Rio de Janeiro, RJ(BR): Fiocruz; 2019. [cited 2020 Mar 28]. Available from: <https://doi.org/10.7476/9788575416419>
2. Vasconcelos JMB, Caliri MHL. Ações de enfermagem antes e após um protocolo de prevenção de lesões por pressão em terapia intensiva. *Esc. Anna Nery* [Internet]. 2017 [cited 2020 Sep 09];21(1):e20170001. Available from: <https://doi.org/10.5935/1414-8145.20170001>
3. Oliveira BGRB, Silva JA, Silveira IA, Santos NC, Carvalho MR. Instrumentos de avaliação clínica para úlceras de perna. *Rev Enferm Atual In Derme* [Internet]. 2019 [cited 2020 Mar 27];87. Available from: <https://revistaenfermagematual.com.br/index.php/revista/article/view/171/73>
4. Moraes JT, Borges EL, Lisboa CR, Cordeiro DCO, Rosa EG, Rocha NA. Conceito e classificação de lesão por pressão: atualização do National Pressure Ulcer Advisory Panel. *Rev Enferm Centro-Oeste Min* [Internet]. 2016 [cited 2019 Oct 6];6(2):2292-2306. Available from: <https://doi.org/10.19175/recom.v6i2.1423>
5. National Pressure Ulcer Advisory Panel. NPUAP. NPUAP announces a change in terminology from pressure ulcer to pressure injury and updates the stages of pressure injury [Internet]. 2016 [cited 2020 Mar 28]. Available from: <https://npiap.com/page/2019Guideline>
6. Brasil. Agência Nacional de Vigilância Sanitária. Boletim Segurança do Paciente e Qualidade em Serviços de Saúde nº 15: Incidentes Relacionados à Assistência à Saúde - 2016. [Internet] Brasília, D.F.(BR): ANVISA; 2017 [cited 2018 Aug 12]. Available from: https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/boletim-seguranca-do-paciente-e-qualidade-em-servicos-de-saude-n-15-incidentes-relacionados-a-assistencia-a-saude-2016?category_id=28
7. Galvão, Nariani Souza; Neto, David Lopes; Oliveira, Ana Paula Pessoa de. Aspectos epidemiológicos e clínicos de pacientes com úlcera por pressão internados em uma instituição hospitalar. *Rev Estigma* [Internet]. 2015 [cited 2020 Mar 28];13(3). Available from: <https://www.revistaestima.com.br/index.php/estima/article/view/106>
8. Gul A, Andsoy II, Ozkaya B, Zeydan A. A Descriptive, cross-sectional survey of Turkish nurses' knowledge of pressure ulcer risk, prevention, and staging. *Ostomy Wound Manage* [Internet]. 2017 [cited 2019 Oct 6];63(6):40-6. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28657899>
9. Vasconcelos J de MB, Caliri MHL. Nursing actions before and after a protocol for preventing pressure injury in intensive care. *Esc Anna Nery Rev Enferm* [Internet]. 2017 [cited 2019 Oct 6];21(1):e20170001. Available from: <https://doi.org/10.5935/1414-8145.20170001>
10. Garbuio DC, Zamarioli CM, Silva NCM da, Oliveira-Kumakura ARS, Carvalho EC. Instrumentos para avaliação da cicatrização de lesões de pele: revisão integrativa. *Rev Eletrônica Enferm* [Internet]. 2018 [cited 2020 Mar 28];20:v20a40. Available from: <https://doi.org/10.5216/ree.v20.49425>

11. Santos VLC de G, Azevedo MAJ, Silva TS da, Carvalho VMJ, Carvalho VF. Adaptação transcultural do Pressure Ulcer Scale for Healing (PUSH) para a língua portuguesa. *Rev Lat Am Enfermagem* [Internet]. 2005 [cited 2020 Mar 28];13(3):305-13. Available from: <https://doi.org/10.1590/S0104-11692005000300004>
12. Bates-Jensen BM, McCreath HE, Harputlu D, Patlan A. Reliability of the Bates-Jensen wound assessment tool for pressure injury assessment: The pressure ulcer detection study. *Wound Repair Regen* [Internet]. 2019 [cited 2019 Nov 25];27(4):386-95. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/wrr.12714>
13. Callegari-Jacques SM. *Bioestatística: princípios e aplicações*. Porto Alegre, RS(BR): Artmed; 2009.
14. Alves DF dos S, Almeida AO de, Silva JLG, Morais FI, Dantas SRPE, Alexandre NMC. Translation and adaptation of The Bates-Jensen Wound Assessment Tool for the Brazilian Culture. *Texto Contexto Enferm* [Internet]. 2015 [cited 2019 Nov 10];24(3):826-33. Available from: <https://doi.org/10.1590/0104-07072015001990014>
15. Gould L, Stuntz M, Giovannelli M, Ahmad A, Aslam R, Mullen-Fortino M, et al. Wound Healing Society 2015 update on guidelines for pressure ulcers. *Wound Repair Regen* [Internet]. 2016 [cited 2019 Aug 6];24(1):145-62. Available from: <https://doi.org/10.1111/wrr.12396>.
16. Souza NR, Freire DA, Souza MAO, Melo JTS, Santos LV, Bushatsky M. Fatores predisponentes para o desenvolvimento da lesão por pressão em pacientes idosos: uma revisão integrativa. *Rev Estima* [Internet]. 2017 [cited 2019 Aug 6];15(4):229-39. Available from: <https://www.revistaestima.com.br/index.php/estima/article/view/442/pdf>
17. Teixeira AKS, Nascimento TS, Sousa ITL, Sampaio LRL, Pinheiro ARM. Incidência de lesões por pressão em Unidade de Terapia Intensiva em hospital com acreditação. *Rev Estima* [Internet]. 2017 [cited 2019 Oct 10];15(2):152-60. Available from: <https://doi.org/10.5327/Z1806-3144201700030006>
18. Karahan A, Aabbasolu A, Işık SA, Çevik B, Saltan Ç, Elbaş NÖ, et al. Factors Affecting Wound Healing in Individuals with Pressure Ulcers: A Retrospective Study. *Ostomy Wound Manag* [Internet]. 2018 [cited 2020 Sep 15];64(2):32-9. Available from: <https://pubmed.ncbi.nlm.nih.gov/29481325/>
19. Alcan AO, Van Giersbergen MY, Dincarslan G, Hepcicici Z, Kaya E. Healing status of pressure injuries among critically ill patients in a Turkish hospital: A descriptive, retrospective study. *Wound Manag Prev* [Internet]. 2019 [cited 2020 Sep 15];65(10):30-6. Available from: <https://pubmed.ncbi.nlm.nih.gov/31702987/>
20. Choi, EP; Chin, WY; Wan, EY; Lam CL. Evaluation of the internal and external responsiveness of the Pressure Ulcer Scale for Healing (PUSH) tool for assessing acute and chronic wounds. *J Adv Nurs* [Internet]. 2016 [cited 2020 Mar 18];72(5):1134-43. Available from: <https://onlinelibrary.wiley.com/doi/pdf/10.1111/jan.12898>
21. Silva DRA, Bezerra SMG, Costa JP, Luz MHBA, Lopes VCA, Nogueira, LT. Curativos de lesões por pressão em pacientes críticos: análise de custos. *Rev Esc Enferm USP* [Internet]. 2017 [cited 2020 Mar 18];51:e03231. Available from: <https://doi.org/10.1590/s1980-220x2016014803231>

NOTES

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There is no conflict of interest.

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