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ORIGINAL ARTICLE

APPLICATION OF THE BRADEN Q SCALE AT A PEDIATRIC INTENSIVE CARE UNIT

APLICAÇÃO DA ESCALA DE BRADEN Q EM UNIDADE DE TERAPIA INTENSIVA PEDIÁTRICA

APLICACIÓN DE LA ESCALA DE BRADEN Q EN UNA UNIDAD DE CUIDADOS INTENSIVOS PEDIÁTRICOS

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ABSTRACT

Objectives: to apply the Braden Q Scale to verify the risk for the pediatric patient to develop pressure ulcer (PU), correlate important variables for its development and estimate its incidence. ***Method:*** cohort study, with 21 patients hospitalized at the pediatric ICU of a public teaching hospital. The researcher collected the data based on the clinical record of the patient and on the daily application of the Braden Q Scale. ***Results:*** 76.7% had a high-risk score (<22), 23.3%, low risk (≥22) for PU and an incidence of 28.5%. ***Conclusion:*** the high risk of developing PU confirmed the need to establish protocols for risk assessment and prevention of diseases. One expects that studies like this, which show the applicability and relevance of preventive instruments, make institutions aware of the importance of its implementation. ***Descriptors*:** Intensive Care Units; Nursing; Pressure Ulcer; Critical Care; Pediatrics.

RESUMO

Objetivos: aplicar a Escala de Braden Q para verificar o risco de o paciente pediátrico desenvolver úlcera por pressão (UPP), correlacionar importantes variáveis para seu desenvolvimento e estimar a incidência. ***Método:*** estudo de coorte, com 21 pacientes internados na UTI pediátrica de um hospital público de ensino. A coleta de dados foi feita pela pesquisadora a partir da ficha clínica do paciente e da aplicação da Escala de Braden Q diariamente. ***Resultados:*** obteve-se que 76,7% possuíam escore de alto risco (<22), 23,3% baixo risco (≥22) para desenvolvimento de UPP e incidência de 28,5%. ***Conclusão***: o alto risco de desenvolvimento de UPP constatado sugere a necessidade de estabelecer protocolos voltados para avaliação de risco e prevenção de agravos. Almeja-se que estudos como este que mostram a aplicabilidade e relevância de instrumentos preventivos conscientizem instituições da importância de sua implementação. ***Descritores:*** Unidades de Terapia Intensiva; Enfermagem; Úlcera por Pressão; Cuidados Críticos; Pediatria.

RESUMEN

Objetivos: aplicar la escala de Braden Q para comprobar el riesgo de los pacientes pediátricos desarrollaren úlceras por presión (UPP), correlacionar las variables importantes para su desarrollo y para estimar su incidencia. ***Método:*** estudio de cohorte con 21 pacientes ingresados en la UCI pediátrica de un hospital público de enseñanza. El investigador recogió los datos a través de los archivos de los pacientes y de la aplicación diaria de la escala de Braden Q. ***Resultados:*** 76,7% tenían puntuaciones de alto riesgo (<22), 23,3%, de bajo riesgo (≥22) para el desarrollo de UPP y incidencia de 28,5%. ***Conclusión:*** el alto riesgo de desarrollar UPP confirmó la necesidad de protocolos específicos para la evaluación de riesgos y la prevención de enfermedades. Se espera que estudios como este, que demuestran la aplicabilidad y la pertinencia de instrumentos preventivos, tornen las instituciones conscientes de la importancia de su aplicación. ***Descriptores:*** Unidades de Cuidados Intensivos; Enfermería; Úlcera por Presión; Cuidados Críticos; Pediatría.

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INTRODUCTION

In general, institutionalization is seen as an uncomfortable situation, with peculiar contours when it happens during childhood, a fundamental phase for establishing the basis of child development, in addition to affecting family life, causing ruptures in the routine of the whole family.[1,2]

The definition of pressure ulcer (PU) is "a local lesion on the skin and/or the underlying tissue or structure, usually on a bone prominence, resulting from isolated pressure or pressure combined with friction and/or shear".[3] PU incidence rates described internationally for those populations range from 0.29% to 27%.[4-8] There were no Brazilian studies on the prevalence of PU in the pediatric population in the database search.

In 1989, the National Pressure Ulcer Advisory Panel (NPUAP) based on the initial classification of Shea and the International Association of Enterostomal Therapy (IAET) and incorporated it into the Guidelines or Recommendations of the Agency for Health Care Policy and Research (AHCPR) for the prevention and treatment of PU. The PU classification of NPUAP establishes four stages - I, II, III and IV: I is characterized by intact skin, with hyperemia of a local area that does not whiten, usually on bone prominence; II as a partial loss of dermal thickness and presents as superficial ulcer with the bed of pale red color or with an intact or open/ruptured blister; III, with tissue loss in its total thickness and the subcutaneous fat may be visible without exposure of bone, tendon or muscle and the IV is characterized by total loss of tissue with bone, muscle or tendon exposure, with presence of smear in some parts of the wound bed.[3,9-10]

In pediatric patients, PU is an adverse event caused by the anatomophosiopathological conditions of childhood development, length of stay, physical mobility deficit, and new technologies adapted to the context of intensive pediatrics.[6,11] In the PICU, there are aggravating factors for the development of PU, such as assisted ventilation, vasoactive drugs, weight loss, little change of decubitus, nutritional deficits and edema.[12]

The anatomical regions that have a higher pressure point and predispose to the development of PU are the occipital region, nose, ears, coccyx, sacrum, knees and calcaneus.[13] When tissue destruction and necrosis occur, children experience pain related to the lesion, present alopecia in the affected region and are at risk of developing deep systemic infection, as well as may have their body image altered due to scars and deformities.[14-6]

The treatment protocols for PU in the PICU should also focus on the patient's physical, psychological and emotional suffering, since the PU prolongs the hospital stay, the morbidity and mortality rate and the hospital costs.[17-8]

The prevention of PU bases on the reduction or elimination of risks prone to interventions.[19] One of the most used instruments to help identifying the risk and preventing the development of those injuries is the Braden Q Scale, which, from the adult scale (Braden Scale), in 2004, was adapted to pediatric version by Curley and Quigley in the English language, and validated and adapted in Brazil by Maia in 2007.[20-1]

Thus, the application of the Braden Q Scale will enable to identify the risks of onset of PU in the pediatric population, and, with that, direct and optimize human and material resources to prevent those ulcers, as well as reduce the workload of the professionals and treatment cost, thus justifying the accomplishment of this study, which aims to:

- Apply the Braden Q Scale to verify the risk for the pediatric patient to develop pressure ulcer (PU).
- Correlate important variables for its development and estimate its incidence.

METHOD

A cohort study conducted at the PICU of a public teaching hospital in the interior of São Paulo, with seven beds and admitting children in the age group from 30 days to 15 years old. Data collection occurred in the period from July to September 2014.

The sample consisted of 21 patients admitted to the PICU. Inclusion criteria were: patient aged between 30 days and incomplete 15 years old and stay at the PICU for at least 24 hours. Exclusion criteria were: hospitalization of less than 24 hours; patients with mental illness and pathologies, with implicit risk of self-mutilation; patients admitted to the PICU that already presented with PU. Data were collected on a card containing: age, gender, current medical diagnosis, length of stay at the PICU; and the B-QS. B-QS has seven subscales: mobility, physical activity level, sensory perception, moisture, friction and shear, nutrition and tissue perfusion and oxygenation, scored from one (least favorable) to four (more favorable). The total sum will indicate the values between seven and 28 points. At the end of the assessment, the risk interpretation occurs

as follows: <22 means high risk, and ≥ 22, low risk. Therefore, the lower the score the greater the risk for the development of the PU.

From the first collection, the reassessments were performed every 24 hours, at a minimum, while the patient was hospitalized at the PICU, through a nursing physical examination. The data were entered in spreadsheet in the Microsoft Excel® program and analyzed by the SAS program for Windows, version 9.2. A descriptive statistic was performed for the qualitative variables; means, standard deviation, median, minimum and maximum for the quantitative variables; the Pearson's correlation was used to verify the correlation between the Braden Q scores and length of hospital stay, Braden Q scores and patient age, and length of hospital stay and patients' age.

The study was approved in the Brazil Platform under opinion No. 625.794 (CAAE 28423214.7.0000.5411). The Informed Consent Form was understood and signed by the parents or legal guardians of the hospitalized patients, and by the patients, aged between 12 and 18 years, after agreeing to participate in the study. This research was conducted in accordance with the required ethical standards.

RESULTS

♦ Sociodemographic characteristics and clinical profile of the study sample

There was prevalence of males 52.38%, mean age of 4.47 years and mean length of hospitalization of 11.9 days. The morbidities were: diseases of the respiratory system (23.80%), nervous system, neoplasms and renal diseases (14.30% for each one), and other pathologies (33.3%).

♦ B-QS variables

Among the 21 children evaluated on average four times, in the minimum interval of 24 hours, 76.7% had a high-risk score (<22) and 23.3% were assessed as low risk (≥22). At the end of the data collection, there was an PU incidence of 28.5% (6), and two patients developed two lesions. In 86 observations made by the researcher, the mean of the total scores was 18.7, which shows a high risk of developing PU in relation to the score attributed by the B-QS (Table 1).

Table 1. Risk of developing PU according to the Braden Q Scale. Botucatu (SP), Brazil, 2014.

Braden Q Scale Score	Total of patients	Evaluation Mean/Patient	Total of observations (N=21)	Average Score	Low risk n(%)	High risk n(%)	PU Incidence n(%)
7 to 28	21	4	86	18.7	5(23.3)	16(76.7)	6(28.5)

♦ Correlation between the variables

The Pearson's correlation enabled verifying the correlation between the variables. Figure 1 shows the variables, the B-QS score and hospitalization time, P= -0.49766, perfect negative correlation. The longer the hospitalization time, the lower the B-QS score and the higher the risk of developing PU.

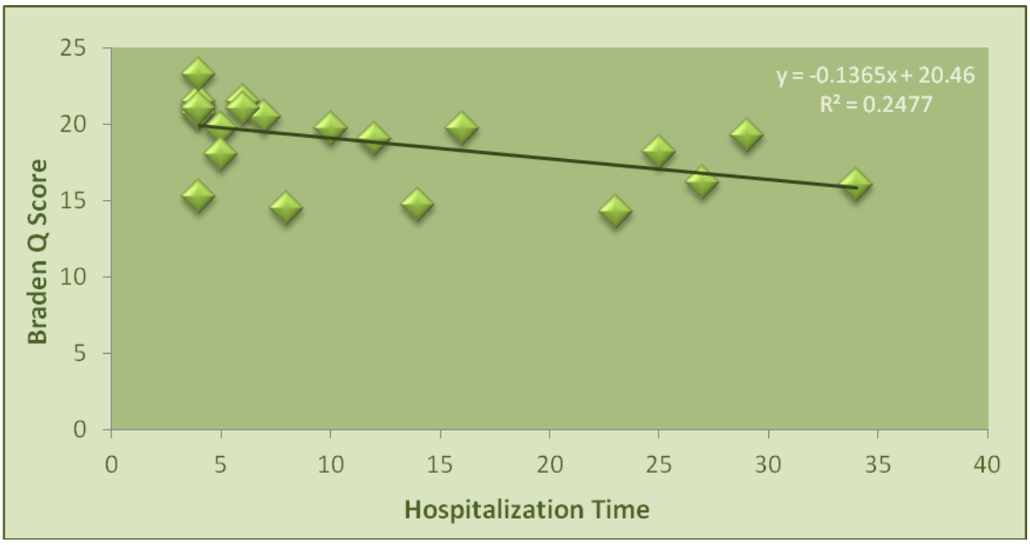

Figure 1. Correlation between Braden Q score and hospitalization time. Botucatu (SP), Brazil, 2014.

Figure 2 shows the correlation between the B-QS score and the age of the hospitalized patient, obtaining P=0.40187, a perfect positive correlation; the higher the age, the higher the score and the lower the risk of developing PU.

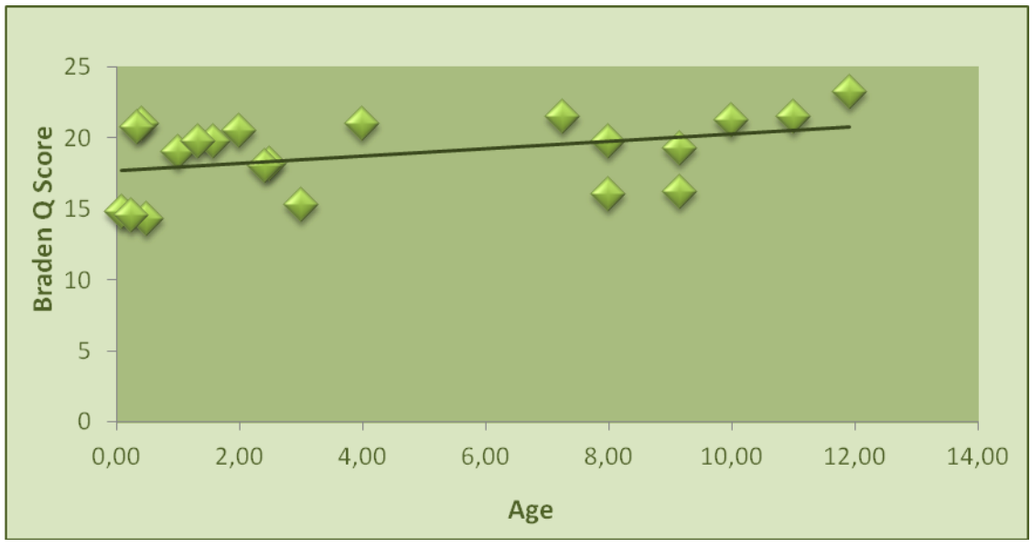

Figure 2. Correlation between the Braden Q Score and the patients' age. Botucatu (SP), Brazil, 2014.

The correlation between the hospitalization time and the age of the pediatric patient did not show a significant correlation, P=0.17803 (Figure 3).

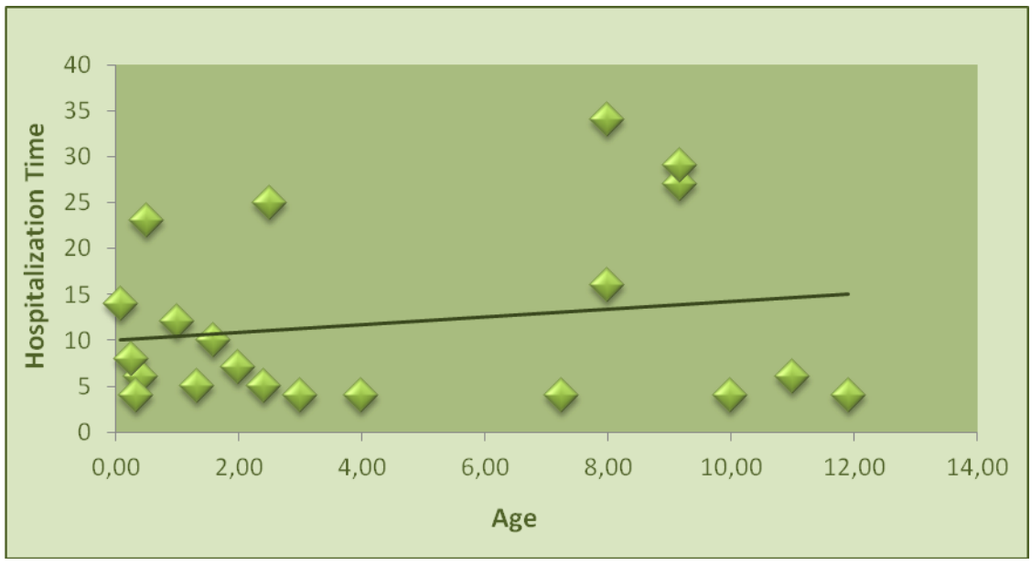

Figure 3. Correlation between hospitalization time and the patients' age. Botucatu (SP), Brazil, 2014.

DISCUSSION

In this study, the frequency of hospitalization for males was similar to the one identified at four pediatric hospital institutions in Switzerland[18]. The variables of mean age and hospitalization time were lower than those obtained in a study[10] at a PICU of a pediatric hospital in the USA. Regarding the main morbidities characterizing the sample, the highest frequency was for diseases of the respiratory system, being similar to the findings of the study[22] carried out at a PICU of a university hospital in Rio Grande do Sul.

The application of the B-QS enabled to identify the high risk (76.7%) for the pediatric patients to develop PU, and, of the 21 evaluated, 19% presented lesions. In a retrospective study[23] conducted over a 12-month period at a PICU in northwestern England, with 891 children, 13 (1.5%) developed PU.

There were associations between the time of hospitalization and the Braden Q score, because the longer the hospitalization time, the lower the B-QS score and the higher the risk of developing PU. This result is similar to the study[16] performed with children admitted to nine PICUs of USA hospitals, in which the patients at the greatest risk of developing PU were those who were four days or more under intensive care.

There was a perfect positive correlation between the variables Braden-Q score and patient age, showing that the higher the age, the higher the score and the lower the risk of developing PU. This finding is different from the one found in the study[24], which evaluated 204 children admitted to 13 hospitals in Switzerland, in which older children (>12) were at higher risk and also developed more PU due to ineffective positioning and reduced mobility.

Therefore, when using a measurement instrument, such as the B-QS, to identify the risk of developing PU in children, nurses contribute to the construction, strengthening of knowledge and the care process based on scientific evidence.

CONCLUSION

The application of the B-QS at the PICU allowed verifying that the risk of developing PU is greater for those who present smaller scale scores and longer hospitalization time.

In view of the high risk of development of PU in children, there is a need to establish prevention protocols, including risk assessment in order to incorporate specific interventions into the nursing planning of patients with greater risks, optimizing human and material resources. The use of the B-QS may not contribute to reduce the incidence of PU, but focuses, in the care process, on the need to evaluate the skin of critically ill patients.

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Escala de Braden Q

MOBILIDADE **Capacidade de Mudar e controlar a posição do corpo.**	**1. Completamente Imóvel:** **Não faz mudanças, nem mesmo pequenas, na posição do corpo ou das extremidades, sem ajuda.**	**2. Muito limitado:** **Faz pequenas mudanças ocasionais na posição do corpo ou extremidades, mas é incapaz de fazer mudanças completamente sozinho.**	**3. Levemente limitado:** **Faz mudanças frequentes, embora pequenas, na posição do corpo ou das extremidades, sem ajuda.**	**4. Nenhuma limitação:** **Faz mudanças Importantes e frequentes na posição do corpo, sem ajuda.**
ATIVIDADE **Grau de atividade física.**	1. Acamado: Permanece no leito o tempo todo.	2. Restrito à cadeira: A capacidade de deambular está gravemente limitada ou inexistente. Não consegue sustentar o próprio peso e/ou precisa de ajuda para sentar-se em uma cadeira ou cadeira de rodas.	3. Deambulação ocasional: Deambula ocasionalmente durante o dia, porém por distâncias bem curtas, com ou sem ajuda. Passa a maior parte do turno no leito ou na cadeira.	4. Crianças jovens demais para deambular ou deambulam frequentemente: Deambula fora do quarto pelo menos duas vezes por dia e dentro do quarto pelo menos uma vez a cada duas horas durante as horas está acordado.
PERCEPÇÃO SENSORIAL **Capacidade de responder de maneira apropriada ao desconforto relacionado à pressão**	1. Completamente limitada: Não responde ao estímulo doloroso (não geme, não se encolhe ou se agarra), devido à diminuição do nível de consciência, ou sedação ou limitação da capacidade de sentir dor na maior parte da superfície corporal.	2. Muito limitada: Responde apenas ao estímulo doloroso. Não consegue comunicar desconforto, exceto por gemido ou inquietação; ou apresenta alguma disfunção sensorial que limita a capacidade de sentir dor ou desconforto em mais da metade do corpo.	3. Levemente limitada: Responde aos comandos verbais, mas nem sempre consegue comunicar o desconforto ou a necessidade de ser mudado de posição, ou apresenta alguma disfunção sensorial em uma ou duas extremidades que limita a capacidade de sentir dor.	4. Nenhuma alteração: Responde aos comandos verbais. Não apresenta déficit sensorial que limite a capacidade de sentir ou comunicar dor ou desconforto.
UMIDADE **Grau de exposição da pele à umidade.**	1. Constantemente úmida: A pele fica constantemente úmida por suor, urina, etc. A umidade é percebida cada vez que o paciente é movimentado ou mudado de posição.	2. Frequentemente úmida: A pele está frequentemente, mas nem sempre, úmida. A roupa de cama precisa ser trocada pelo menos a cada oito horas.	3. Ocasionalmente úmida: A pele está ocasionalmente úmida, necessitando de troca de roupa de cama a cada 12 horas.	4. Raramente úmida: A pele geralmente está seca, as trocas de fraldas são feitas de rotina e as roupas de cama necessitam ser trocadas apenas a cada 24h.
FRICÇÃO E CISALHAMENTO **Fricção: a pele se move contra as estruturas de suporte.** **Cisalhamento: a pele e a superfície óssea adjacente deslizam uma sobre a outra.**	1. Problema importante: A espasticidade, a contratura, o prurido ou a agitação levam a criança debater-se no leito e há fricção quase constante.	2. Problema: Necessita de ajuda moderada a máxima para se mover. É impossível se levantar completamente sem deslizar sobre os lençóis do leito ou cadeira, necessitando de reposicionamento frequente com o máximo de assistência.	3. Problema Potencial: Movimenta-se com dificuldade ou necessita de mínima assistência. Durante o movimento, provavelmente ocorre atrito entre a pele e os lençóis, cadeira, coxins ou outros dispositivos. A maior parte do tempo mantém uma posição relativamente boa na cadeira e no	4. Nenhum problema aparente: Capaz de levantar-se completamente durante uma mudança de posição. Movimenta-se sozinho na cadeira e no leito, e tem força muscular suficiente para levantar-se completamente durante o movimento. Mantém uma posição adequada no leito e na cadeira o tempo todo.

			leito, mas ocasionalmente escorrega.	
NUTRIÇÃO **Padrão habitual de consumo alimentar.**	1. Muito pobre: Em jejum e/ou mantido com ingesta hídrica ou hidratação IV por mais de 5 dias ou albumina < 2,5 mg/dl ou nunca come uma refeição completa. Raramente come mais da metade de algum alimento oferecido. O consumo de proteínas inclui apenas duas porções de carne ou derivados de leite por dia. Ingere pouco líquido. Não ingere suplemento dietético líquido.	2. Inadequada: Dieta líquida por sonda ou NPP que fornece calorias e minerais insuficientes para a idade ou albumina < 3 mg/dl ou raramente come uma a refeição completa. Geralmente come apenas a metade de algum alimento oferecido. O consumo de proteínas inclui apenas três porções de carne ou derivados de leite por dia. Ocasionalmente ingere suplemento dietético	3. Adequada: Dieta por sonda ou NPP que fornece calorias e minerais suficientes para a idade ou come mais da metade da maioria das refeições. Consome um total de quatro porções de proteínas (carne, derivados de leite) por dia. Ocasionalmente recusa uma refeição, mas geralmente toma suplemento dietético, se oferecido.	5. Excelente: Dieta geral que fornece calorias suficientes para a idade. Por exemplo, come/bebe a maior parte de cada refeição/alimentação. Nunca recusa uma refeição. Geralmente come um total de quatro ou mais porções de carne e derivados de leite. Ocasionalmente, come entre as refeições. Não necessita de suplementação.
PERFUSÃO TECIDUAL E OXIGENAÇÃO	1. Extremamente comprometida: Hipotenso (PAM <50 mmHg; <40 mmHg em recém-nascido) ou o paciente não tolera as mudanças de posição.	2. Comprometida: Normotenso. Apresenta saturação de oxigênio <95% ou a hemoglobina <10 mg/dl ou o tempo de enchimento capilar >2 segundos. O pH sérico <7,40.	3. Adequada: Normotenso. Apresenta saturação de oxigênio <95% ou a hemoglobina <10 mg/dl ou o tempo de enchimento capilar >2 segundos. O pH sérico é normal.	4. Excelente: Normotenso. Apresenta saturação de oxigênio >95%, a hemoglobina normal e o tempo de enchimento capilar <2 segundos.