RESEARCH

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Assessment of the risk of pressure ulcer development among hospitalized HIV/Aids patients

Avaliação do risco de úlceras por pressão em pacientes hospitalizados com HIV/Aids

Evaluación del riesgo de úlceras por presión en pacientes hospitalizados con el VIH/SIDA

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ABSTRACT

Objective: to assess the risk of pressure ulcer development among hospitalized HIV/Aids. **Metod:** study quantitative descriptive with 35 patients admitted to an infectious diseases hospital in Curitiba-PR-BR. Characterized clinical and epidemiological of patients using a data collection instrument and the Braden Scale. Data was compiled using Excel® and a simple descriptive analysis. **Results:** two patients were found to have pressure ulcers and the most common comorbidities associated with HIV/Aids were pneumocystis pneumonia, caused by pneumocisti cariini (16), and pulmonary tuberculosis (13). The lowest scores were obtained in the friction and shear subscale, followed by the activity, nutrition, mobility and moisture subscales. The highest score was obtained in the sensory perception subscale. Two patients were classified as 'very high risk', six as 'high risk', three as 'low risk', and the rest as 'no risk'. **Conclusion:** risk assessment using scales provides objective information to assist with systemized and targeted nursing decision-making.
Key words: Pressure Ulcer; Acquired Immune Deficiency Syndrome; Risk Factors; Nursing Care; Chronic Disease.

RESUMO

Objetivo: avaliar o risco de desenvolver úlcera por pressão em pacientes hospitalizados com HIV/Aids. **Método:** estudo quantitativo descritivo com 35 pacientes de um Hospital de Infectologia de Curitiba-PR em um instrumento de coleta de dados e utilização da Escala de Braden e analisados pelo programa Excel®. **Resultados:** a incidência de UP foi observada em 2 pacientes, e as comorbidades associadas ao HIV/Aids de maior relevância foram a pneumocistose por *pneumocisti cariini* (16) e a tuberculose pulmonar (13). Evidenciou-se que a subescala fricção e força de deslizamento obtiveram menor escore, seguida pelas subescalas atividade e nutrição, mobilidade e umidade. A percepção sensorial obteve o maior escore. Dois pacientes classificados com "altíssimo risco", 6 para "alto risco", 3 para "baixo risco" e os demais "sem risco". **Conclusão:** a classificação de risco utilizando escalas fornece informações objetivas para a tomada de decisões de enfermagem de forma sistematizada e direcionada.
Descritores: Úlcera por Pressão; Síndrome da Imunodeficiência Adquirida; Fatores de Risco; Cuidados de Enfermagem; Doença Crônica.

RESUMEN

Objetivo: evaluar el riesgo de desarrollar úlceras por presión en pacientes hospitalizados con VIH/SIDA. **Método:** estudio cuantitativo descriptivo con 35 pacientes. Caracterización epidemiológica y clínica de los pacientes en un instrumento mediante la Escala de Braden. Las variables se realizaron en forma descriptiva simple, por números absolutos. **Resultados:** la incidencia de la PU observada en 2 pacientes, y las comorbilidades fueron neumocistosis pneumocisti carinii y tuberculosis pulmonar. Se reveló que la subescala de fricción y fuerza de deslizamiento obtuvo una puntuación más baja, seguido por actividad y la nutrición, la movilidad y la humedad. La percepción sensorial obtuvo la puntuación más alta. Dos pacientes fueron clasificados

como de "alto riesgo" a 6 de "alto riesgo", 3 para "bajo riesgo" y el otro "ningún riesgo". **Conclusión:** la calificación de riesgo, mediante el uso de escalas proporciona información objetiva para la toma de decisione de enfermería a un modo específico.
Palabras clave: Úlcera por Pressão; Síndrome da Imunodeficiência Adquirida; Fatores de Risco; Atención en Enfermería; Enfermedad Crónica .

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INTRODUCTION

Medically compromised patients require care that addresses problems of a physical, mental, spiritual and social nature from a comprehensive perspective. Despite the incessant search for health care progress, complications and iatrogeneses that are not directly related to the disease being treated, such as pressure ulcers, is commonplace in hospital settings. Apart from being a major health problem that has profound physical, psychological and social consequences, the financial costs associated with pressure ulcers are high[1].

Pressure ulcers cause considerable harm to patients and their prevention is a challenge for health professionals. Various factors related to the care process and the patient's general physical condition are directly involved in the development of these wounds[2]. A pressure ulcer is a localized injury to the skin and/or underlying tissue, usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction[3].

The prevalence of pressure ulcers has grown in recent years due to an increase in life expectancy associated with advances in medicine that prolong the survival of patients with serious and previously lethal illnesses, transforming these conditions into chronic, slowly debilitating diseases[4]. The epidemiology of pressure ulcers demonstrates that the development of wounds is dependent on individual characteristics and that the risk of developing ulcers is greater in the elderly and in patients with chronic degenerative diseases.

One particular group that falls into this category of illness are hospital patients affected by diseases triggered by human immunodeficiency virus (HIV), whose complexity makes this condition a particular challenge for health professionals. As a result of the length of duration of infection with HIV/Aids, toxicity of the treatment, and the habits and life styles and individual characteristics of patients, this disease requires integrated precautionary and care actions to cope with adverse events, aging and the psychosocial impacts of the disease[5].

The delivery of comprehensive care to people living with HIV/Aids and respect for their rights and dignity, alongside prevention actions and wide-scale access to treatment, are the main reasons for the gains in life expectancy and quality life experienced by these patients[6].

Given the risk of pressure ulcer development among these patients due to the lengthy period of treatment, changes in quality of life associated with the diagnosis, follow-up procedures, and likelihood of comorbidities that lead to long hospital stays, nurses must continually be aware of research and the scientific basis for care and its importance to nursing practice[7].

In this sense, the prior evaluation of the risk of pressure ulcer development confers scientificity to the profession, especially when founded on scientifically proven methods.

The Braden Scale is widely employed by the European Pressure Ulcer Advisory Panel (EPUAP) and American National Pressure Ulcer Advisory Panel (NUAPU) to assess the risk of pressure ulcer development[3].

The Braden Scale has been translated into Portuguese and validated for use in Brazil[8] and Ministry of Health guidelines for the prevention of pressure ulcers in the health service provided though the National Patient Safety Program (*Programa Nacional para Segurança do Paciente* - PNSP) recommend its use to improve health care[9].

The prevention and assessment of pressure ulcers is part of a dynamic care process, which seeks to investigate, identify and understand potential shortcomings of health care services. Based on the above, this study posed the following guiding question: what is the risk of pressure ulcer development among hospitalized HIV/Aids patients?

It is important to highlight that the systematic assessment of patients to ensure prevention and effective treatment of pressure ulcers is the role of nurses. These wounds can affect individuals who are immobile or bedridden for long periods, as occurs with HIV/Aids patients in acute stages of the disease. Understanding the specific risk factors for developing pressure ulcers among this group and how to avoid complications is therefore essential.

Generally, studies addressing pressure ulcers in Brazil are conducted in settings such as intensive care units (ICUs) or nursing homes, which hinders the generalization of findings and the identification of specific factors associated with HIV/Aids patients[10]. The objective of this study was therefore to determine the clinical and epidemiological characteristics of hospitalized HIV/Aids patients and assess the risk of pressure ulcer development among this group using the Braden Scale.

METHOD

Quantitative descriptive study using a sample of hospitalized HIV/Aids patients admitted to a public infectious diseases hospital and center of reference for the treatment of HIV/Aids in Curitiba in the State of Paraná, Brazil. Subsidized by the Paraná State Government, the facility has 30 hospital beds for HIV/Aids patients, who are treated under the Unified Health System (*Sistema* Único *de Saúde* - SUS).

The sample was composed of 35 patients admitted to the hospital during the data collection period, which comprised a total of 33 days (23 September to 25 October 2013).

Participants had to be inpatients, be aged 18 years or over, and give their consent to physical examination and

assessment of pressure ulcer development risk using the Braden Scale.

Data collection was carried out in two stages: determination of the clinical and epidemiological characteristics of the sample members using the patients' medical records; assessment of risk of pressure ulcer development using the Braden Scale. In the second stage, the assessment was performed up to four times, depending on the length of time the patient had been in hospital. The final risk assessment score for each patient comprised the arithmetical average of each assessment.

The Braden Scale has six subscales with a maximum score of 23: sensory perception, moisture, activity, mobility, nutrition, and friction and shear. The higher the final score, the lower the risk of pressure ulcer development[8].

Each category is rated on a scale of 1 to 4, except the "friction and shear" category, which is rated on a scale of 1 to 3. The combined possible score of the six subscales is therefore between 6 and 23. Risk is classified according to the total score as follows: 6 to 9, very high risk; 10 to12, high risk; 13 to14, moderate risk; 15 to 18, mild risk; 19 to 23, no risk[8]. The results of the assessment were compiled into tables using Excel. A simple descriptive analysis of the variables was performed using absolute values.

The study complied with all relevant ethical norms and regulations regarding research with human subjects in Brazil and was approved by the Research Ethics Committee.

RESULTS

Twenty-three of the participants were male and 12 were female. Participants' age varied between 20 and 59 years and average age was 38. Nineteen of the participants were single, seven married, four widows, and five were separated. With regard to income, three earned up to one minimum salary, six said that they did not have a source of income, and 26 preferred not to inform their income.

The following information regarding individual characteristics is based on the answers provided by the patients and information contained in the medical records. With regard to sexual orientation, the sample was predominantly heterosexual: 24 patients were heterosexual; seven were homosexual; and one bisexual. Six of the participants were in a stable relationship, and 12 were not. Eighteen of the participants had had children after being diagnosed with HIV/Aids and eight confirmed that they did not have children. Regarding mode of exposure to HIV/Aids, 28 patients informed that they contracted HIV through sexual contact, five through injecting drugs and two did not know.

With respect to the use of condoms after infection, six patients said they used them in all sexual relations, five stated that they never used them and 19 mentioned that they used them sometimes. With regard to home sharing, four patients lived with their partners, seven with their partners and children, 14 lived alone, and six lived with others.

In relation to treatment, 12 had adhered to antiretroviral therapy (ART), six did not receive ART and 17 preferred not to provide this information (cited here since this fact is considered relevant to the clinical characterization of these patients).

With regard to length of stay in hospital, 12 patients had been hospitalized for up to 10 days, eight for between 11 and 20 days, six for between 21 and 30 days, two for between 31 and 40 days, and seven for over 41 days. Thirty-three of the patients did not have pressure ulcers, while one patient had pressure ulcers in the sacral region and two in the sacrum and trochanteric region.

With regard to symptoms, 31 of the patients experienced pain and 17 dyspnea. The following table shows the comorbidities associated with HIV infection among the patients.

Table 1 - Comorbidities associated with HIV infection among the 35 patients admitted to a hospital specializing in infectious diseases in Curitiba, State of Paraná, Brazil, 2013

Comorbidities associated with HIV infection	n
Cerebral toxoplasmosis	7
Pneumocystis pneumonia	16
Candidiasis	9
Neuropathy	3
Tuberculosis	13
Viral meningitis	1
Neoplasms	2
Hepatitis B	3
Syphilis	3
Stroke	2
High blood pressure	1

The following box shows the results of the Braden Scale.

Box 1 - Scores of the subscales of the Braden Scale for the 35 patients admitted to a hospital specializing in infectious diseases in Curitiba, State of Paraná, Brazil, 2013

Subscale	Score 1	Score 2	Score 3	Score 4
Sensory perception	Completely limited	Very limited	Slightly limited	No impairment
	0	4	7	24
Moisture	Skin constantly moist	Skin very moist	Skin occasionally moist	Skin rarely moist
	6	2	5	22
Activity	Bedfast	Chairfast	Walks occasionally	Walks frequently
	12	4	2	17
Mobility	Completely immobile	Very limited	Slightly limited	No impairment
	6	4	9	16
Nutrition	Very poor	Probably inadequate	Adequate	Excellent
	4	8	18	5
Friction and shear	Problem	Potential problem	No apparent problem	
	8	7	20	

Table 2 - Summary of pressure ulcer development risk assessment among the patients based on the Braden Scale (N = 35), Curitiba, Brazil, 2013

Classification of risk of pressure ulcer development (Braden Scale score)	n
Very high risk: 6-9	2
High risk: 10-12	6
Moderate risk: 13-14	4
Low risk: 15-18	3
No risk: 19-23	20

DISCUSSION

The ratio of men to women in the sample was approximately 2:1, which is similar to the findings of a study published in 2012 that showed that the prevalence rate of HIV/Aids is greater among men and a decline in the male-to-female ratio of Aids cases since the beginning of the epidemic[11-12].

The majority of the sample were aged over 40 years (n = 18) and 14 of these participants were in 40 to 49 years age group. It is important to note that the sample did not include any elderly patients (i.e., aged 60 or over). Ministry of Health data show that there has been an increase in the number of notified cases of Aids among women and the elderly; however, the results of the present study did not corroborate these findings[11-12].

It is important to note that 19 of the participants were single. The hospitalization of HIV/Aids patients is generally the result of a decline in the clinical condition of the patient that can include the risk of death. Patients therefore require more intensive treatment and support from family members and carers, particularly when care is extended to the home environment.

Six patients stated that they did not have any source of income. Income is an extremely important issue when it comes to care outside hospital. Although HIV/Aids medication is provided free of charge by the public health service, a patient's capacity to deal with the demands posed by the disease is directly related to factors such as living conditions, diet, housing, and urban mobility.

The results show that the majority of patients were heterosexual, highlighting that sexual contact is the predominant mode of HIV transmission among these patients and corroborating the findings of a study of sexual orientation in Brazil published by the Ministry of Health[12].

The present study shows that several participants never use condoms and the majority only use them only sometimes. The Ministry of Health recommends that even seroconcordant partners should practice protected sex, given that viral load tends to be higher in sexual fluids. It is also important to note that the fact that an HIV/Aids patient is undergoing antiretroviral therapy does not dispense with the need to use condoms and other safe sex practices[13].

Six patients stated that they had a stable relationship, 12 had an unstable relationship, and 17 declined to provide information. With respect to partners, twelve of the participants said that their partners were HIV-positive, while 23 declined to provide this information. Six of the women interviewed by the researchers confirmed that they had children after being diagnosed with HIV/Aids, who were thus exposed to the risk of HIV transmission. ART during pregnancy and pediatric antiretroviral therapy prevents vertical HIV transmission[13]. It was not possible verify from the medical records whether the participants' children underwent ART.

The results showed a minimum and maximum length of stay in hospital of five and 90 days, respectively; 12 patients were hospitalized for 12 days, eight for between 11 and 20 days, six for between 21 and 30 days, two for between 31 and 40 days, and seven for over 41 days.

Only two of the 35 patients developed pressure ulcers. It is important to note however that, according to the clinical examination carried out upon hospital admission, these patients already had skin lesions when they were admitted to the hospital.

The most common comorbidities associated with HIV/Aids were pneumocystis pneumonia cause by *pneumocisti cariini*, which was diagnosed in 16 patients, followed by tuberculosis, which was contracted by 13 patients. The least common comorbidities were viral meningitis and high blood pressure, which were diagnosed in only one patient. It is known that HIV positive patients are more likely to have comorbidities due to immunosuppression and that adhesion to ART reduces the incidence of comorbidities and mortality.

Ministry of Health data show that tuberculosis is the main cause of death among HIV/Aids patients. A study using meta-analysis methodologies showed that early treatment is strongly associated with a reduction in the incidence of tuberculosis. ART in the early stages of infection is therefore recommended not only because it is efficacious in decreasing transmission of infection, but also as a strategy for reducing morbidity and mortality and specific diseases such as tuberculosis. These findings reinforce the importance of promoting adhesion to ART to ensure that this strategy is able to reach its objectives[13].

With regard to the Braden Scale, the lowest score was obtained in the friction and shear subscale, with a score of 2.4, followed by the activity and nutrition subscales, both with a score of 2.7, mobility and moisture, with 3.2, and sensory perception with 3.6.

A study that analyzed the assessment results of 1,503 hospital patients to evaluate the association between changes in the Braden Scale subscale categories and risk of pressure ulcer development observed that the incidence of pressure ulcers was greater in patients who obtained poor scores in the sensory perception, mobility, activity and moisture subscales.

No evidence was found of an association between the nutrition subscale and the incidence of pressure ulcers[10]. However, studies show a statistically significant association between nutrition and risk of pressure ulcer development[14]. Poor nutritional status is regarded as a determining factor for pressure ulcer development since it contributes to a reduction in tissue tolerance to pressure and delays the healing process[15].

The score of the activity subscale was lower than that of the mobility and moisture subscales. Although the present study does not show an association between pressure ulcer development and low scores for mobility and moisture, studies using larger samples have shown that low poor scores in the activity, mobility, moisture, and sensory perception increased the risk of pressure ulcer development by over eight, seven, four and three times, respectively[10].

Another study showed that the predominance of sensory perception might be associated with the need for care provided by nurses or other carers. It is important to highlight that the Braden Scale defines sensory perception as the patient's ability to respond meaningfully to pressure-related discomfort. A lack of sensory perception means that patients are incapable of communicating discomfort, making them more vulnerable to pressure ulcer development[15-16].

With respect to the moisture subscale, constantly moist skin makes it more susceptible to pressure ulcer development. The score obtained for this subscale indicates that the skin is often, but not always, moist, therefore frequent changes of diapers and clothes are necessary. Skin exposed to moisture is more susceptible to friction wounds, skin irritation and colonization with microorganisms. A number of preventative measures may be taken to reduce moisture, including the use of topical protective barriers (creams, zinc oxide ointment, and transparent film dressings), disposable absorbent diapers, and urinary collection devices[15].

The activity subscale is interrelated with 'mobility' and is of particular concern given that bedfast and gravely ill patients are more vulnerable to pressure ulcers. Six patients were completely immobile, four had very limited mobility, nine slightly limited mobility, and 16 had no mobility limitation.

The data shows a relatively high prevalence of bedfast and dependent patients who need special care. Such information is important to enable nurses to define appropriate preventative measures to reduce the factors that contribute to the formation of pressure ulcers. Prevention measures and individual care should be tailored to patients' specific needs and can include changing positions every two hours, use of air mattresses and pads and cushions, and moisturizing the body at least twice a day.

The Braden Scale is an effective nursing tool for predicting the individual risk of pressure ulcer development in each patient and defining a care plan that adequately targets the prevention and control of this problem[17].

Nutrition was very poor and probably inadequate in four and eight patients, respectively. Although no association was found between nutrition and increased risk of pressure ulcer development, it is important to highlight that 12 patients were deficient in proteins, vitamins and minerals, suggesting inadequate nutrient intake, which can compromise skin integrity, particularly collagen.

Findings show that the majority of the sample (20 patients) had no apparent problem with regard to the friction and shear subscale, while eight participants had problems, requiring assistance in moving, and seven had a potential problem. These results highlight the importance of adequate measures for the mobilization of bedfast patients including the use of repositioning and slide sheets to lift, turn or transfer patients, with a minimum of two health professionals and following ergonomic guidelines for manual handling. It is also recommended that nurses should elaborate an individual care plan for each patient to ensure the adequate implementation of prevention measures[15].

The total scores show that two patients were classified as 'very high risk', six as 'high risk', three as 'low risk' and twenty as 'no risk' with respect to pressure ulcer development.

Risk classification using assessment scales provides a common language for thinking and communicating risk factors, and objective information for decision-making. A prescription of individualized nursing care tailored to the needs of each patient is essential. After identifying the risk factors, it is up to nurses to define appropriate preventative measures and work together with other members of the health team to reduce existing factors and prevent the emergence of other factors that can contribute to the development of pressure ulcers[15].

Another study recommends the use of this scale to assist health professionals to identify high-risk patients when the patient is admitted to hospital in order to guide the adoption of preventative care measures.

CONCLUSION

The study shows that the hospitalized HIV/Aids patients that made up this sample were mainly young adults with hospital-acquired pneumocystis pneumonia. Twenty patients were at no risk of developing pressure ulcers; however, those who were at risk demanded special nursing care.

We believe that important conclusions can be drawn from the findings of this study with 35 patients representing all patients admitted to an infectious diseases hospital in Curitiba, given that the objective of this study was to assess the risk of pressure ulcer development among hospitalized HIV/Aids patients. The use of the Braden Scale was particularly useful and its effectiveness demands effective planning of nursing care that focuses on safety and pressure ulcer prevention measures.

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