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Prevalence of incontinence-associated dermatitis and associated factors in intensive care patients

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ABSTRACT

Objective: To determine the prevalence of incontinence-associated dermatitis (IAD) and factors associated with its occurrence in adult patients admitted to intensive care units (ICUs). **Method:** This is an observational, epidemiological, cross-sectional, point-prevalence study conducted in ICUs with a sample of 40 patients. The following statistical tests were applied: Fisher's exact test, Student's *t*-test, Mann-Whitney test, and logistic regression. **Results:** The prevalence of IAD was found to be 22.5%. After univariate and bivariate analysis of associated factors, logistic regression was performed on variables with a p-value less than 0.20. Only the variable "sedated patient" was found to be statistically significant, which means that a sedated patient is 5.4-fold more likely to develop IAD compared to the population without IAD. **Conclusion:** The prevalence of IAD found in this study may assist in the planning of healthcare resources, interventions, and prevention strategies, as well as help institutions compare IAD indicators in similar populations. In addition, the finding that sedated ICU patients were 5.4-fold more likely to develop IAD may be useful in developing targeted prevention strategies for this population.

DESCRIPTORS: Prevalence. Intensive care units. Enterostomal therapy. Diaper rash.

Prevalência de dermatite associada à incontinência e seus fatores relacionados em pacientes de terapia intensiva

RESUMO

Objetivo: Identificar a prevalência da dermatite associada à incontinência (DAI) e os fatores associados à sua ocorrência em pacientes adultos internados nas Unidades de Terapia Intensiva. **Método:** Estudo observacional, epidemiológico, transversal, de prevalência pontual, realizado em unidades de terapia intensiva com uma amostra de 40 pacientes. Para as análises estatísticas, adotaram-se os testes: exato de fisher, *t* de Student, Mann-Whitney e regressão logística. **Resultados:** A prevalência de DAI entre a amostra analisada foi de 22,5%. Após análise univariada e bivariada de fatores associados, foi realizada regressão logística entre as variáveis que possuíam valor p menor que 0,20, e foi identificado que houve significância estatística somente da variável "paciente com sedação", demonstrando que um paciente com sedação possui 5,4 vezes mais chances de desenvolver DAI quando comparado à população sem DAI. **Conclusão:** A prevalência de DAI encontrada neste

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estudo pode auxiliar no planejamento de recursos de saúde, intervenções e estratégias de prevenção, bem como assessorar instituições na comparação de indicadores de DAI em população congênere. Ainda, a associação que demonstra que pacientes de terapia intensiva em uso de sedativos apresentam 5,4 vezes mais chances de ter DAI pode ser útil para desenvolver estratégias de prevenção direcionadas a essa população.

DESCRITORES: Prevalência. Unidades de terapia intensiva. Estomaterapia. Dermatite das fraldas.

Prevalencia de dermatitis associada a la incontinencia y sus factores relacionados en pacientes de cuidados intensivos

RESUMEN

Objetivo: Identificar la prevalencia de dermatitis asociada a la incontinencia (DAI) y los factores asociados a su ocurrencia en pacientes adultos ingresados en Unidades de Cuidados Intensivos. **Método:** Estudio observacional, epidemiológico, transversal, de prevalencia puntual, realizado en unidades de cuidados intensivos con una muestra de 40 pacientes. Para los análisis estadísticos se adoptaron las siguientes pruebas: prueba exacta de Fisher, prueba *t* de *Student*, Mann-Whitney y regresión logística. **Resultados:** La prevalencia de DAI entre la muestra analizada fue del 22,5%. Luego del análisis univariado y bivariado de los factores asociados, se realizó una regresión logística entre las variables que tuvieron un valor de p inferior a 0,20, y se identificó que hubo significación estadística sólo para la variable "paciente con sedación", demostrando que un paciente con sedación tiene 5,4 veces más probabilidades de desarrollar DAI en comparación con la población sin DAI. **Conclusión:** La prevalencia de DAI encontrada en este estudio puede ayudar a planificar recursos de salud, intervenciones y estrategias de prevención, así como ayudar a las instituciones a comparar indicadores de DAI en poblaciones similares. Además, la asociación que muestra que los pacientes de cuidados intensivos que utilizan sedantes tienen 5,4 veces más probabilidades de tener DAI puede ser útil para desarrollar estrategias de prevención dirigidas a esta población.

DESCRIPTORES: Prevalencia. Unidades de cuidados intensivos. Estomaterapia. Dermatitis del pañal.

INTRODUCTION

Patients admitted to intensive care units (ICUs) require highly complex care that places significant demands on the entire health care team, including the need for interventions to maintain skin integrity, as these patients are considered at high risk for developing skin lesions[1].

Due to the fragility of the skin in these patients, moisture-associated skin damage (MASD) has gained attention not only in direct patient care but also in research. The concept of MASD encompasses four types of lesions: incontinence-associated dermatitis (IAD), periwound dermatitis, peristomal dermatitis and intertriginous dermatitis. IAD is the most common, especially in the ICU setting[2].

IAD is defined as an inflammatory response of the skin to prolonged exposure to feces and/or urine[3]. Skin lesions are often associated with increased length of hospital stay and, consequently, increased health care costs[4]. In addition, research has shown that urinary incontinence increases the likelihood of developing a pressure injury (PI) by a factor of 1.9 (95% CI 95% 1.54-2.38), and dual incontinence increases this risk to a factor of 4.9 (CI 95% 2.62-9.50)[3]. Risk factors for developing IAD include age, acute and chronic medical conditions, urinary and fecal incontinence, impaired oxygenation and perfusion, use of diapers, impaired mobility, mechanical friction, and altered cognitive status[5].

Regarding the prevalence of IAD, data from a systematic review conducted in China showed a prevalence of 1.44% in a sample of 40,039 cases. In addition, a cohort study conducted in a public hospital in Minas Gerais, Brazil, found that 32 of the 157 patients enrolled in the study developed IAD, resulting in a global incidence of 20.4%[7]. Robust epidemiological studies on the prevalence and incidence of IAD in the Brazilian population are still lacking.

In light of the above, and in an attempt to compare currently available data, this study aimed to determine the prevalence of IAD and the factors associated with its occurrence in adult and older patients admitted to the ICU.

METHODS

This is an observational, epidemiologic, cross-sectional study focused on point prevalence over a single day. The study was conducted in the ICU of a large, private, high-complexity teaching and research hospital in São Paulo. The hospital has 51 adult ICU beds, distributed as follows: general ICU (30 beds), cardiac ICU (32 beds), and semi-intensive ICU (11 beds). In addition, the institution has a team of stomal therapy nurses responsible for the prevention and treatment of skin lesions, stomas, and incontinence.

Study population was composed of adult and older patients admitted to the ICUs on the day of data collection (n=60). The sample (n=40) included patients admitted to the ICUs who were 18 years of age or older. Exclusion criteria were patients who were not present in the unit on the day of data collection, patients who were discharged before being evaluated, patients who refused to participate in the study, and patients whose clinical condition did not allow verbal communication. In these cases, family members were asked to decide about the patient's participation in the study.

In-hospital data collection was conducted on a single day (November 11, 2021) over a 24-hour period by eight expert nurses. These nurses received specific training that was divided into two sessions. In the first session, a pretest was administered with questions related to the differentiation of stages of lesions and their recognition on images, based on a consensus on the topic. This was followed by a training session focused on conceptual alignment and capacity building, facilitated by the coordinators of the multicenter study, covering concepts of lesion types and differential diagnoses.

Seven days after the initial meeting, a second meeting was held to discuss issues related to the data collection day and the workflow at each hospital. The data collection instrument designed by the coordinators of the multicenter study was demonstrated, along with instructions for completing the data and clarification of any questions the nurses had. Finally, a posttest was administered with the same questions as the pretest. Only after achieving 100% accuracy on these questions were the nurses considered qualified to participate in the research. The total training time was four hours.

Data collection tool consisted of four sections: I-Sociodemographic and Clinical Data; II-Elimination Characteristics; III-IAD Characterization; IV-Pressure Injury. The instrument was completed using data from the patient's medical records as well as a personal skin inspection by a pair of researchers.

Statistical analysis was initially performed using summary measures such as mean, median, minimum and maximum values, standard deviation (SD), and absolute and relative frequencies (percentages). Inferential analyses used to confirm or refute evidence found in the descriptive analysis included Fisher's exact test or its extension[8], Student's t-test for independent samples[9], Mann-Whitney test[10], and logistic regression[11]. A 5% (alpha) significance level was used for all inferential conclusions. Data were entered into Excel® 2010 for Windows spreadsheets for appropriate information storage. Statistical analysis was performed using the Statistical Package for the Social Sciences — IBM SPSS Statistics®, version 24.

For prevalence, the point prevalence was calculated using the formula: point prevalence rate of IAD = number of patients with IAD on the study day/total number of patients evaluated on the study day × 100. The study was approved by the research ethics committee under opinion no. 4.778.220. Ethical principles of the Brazilian National Health Council resolution no. 466/2012 were followed, and all study participants or their legal representatives signed the Informed Consent Form (ICF).

RESULTS

In terms of prevalence, 22.5% of the 40 patients had IAD. Regarding the clinical profile, the mean age of the study participants was 74.7 years, with a standard deviation (SD) of 14.4, a minimum age of 31 years, and a maximum age of 96 years. Males predominated with 77.5% (31 patients), 82.5% (33) were white, and 60% (24) were admitted to the general ICU, followed by 27.5% (11) to the cardiac ICU. Mean weight was 81.0 kg, with a SD of 18.5, a minimum of 48.7 kg, and a maximum of 151.0 kg. The mean height was 1.69 meters, with an SD of 11, a minimum of 1.40 meters, and a maximum of 1.96 meters. The mean body mass index (BMI) was 28.2 kg/m^2, with a minimum of 16.9 and a maximum of 55.1, and an SD of 6.7.

In terms of risk scores and severity scales, the Sequential Organ Failure Assessment (SOFA) score, which assesses mortality in critical health states, had an average score of 5.1 points, indicating less than 10% mortality across the entire sample. The Acute Physiology and Chronic Health Evaluation (APACHE) score, which has a similar objective, had an average of 18 points with an SD of 6.3, suggesting a mortality rate of approximately 25%. Regarding the risk of developing pressure injuries (PI), the Braden scale score showed heterogeneity, with a predominance of low PI risk (score of 15 to 18 points) in 35% (14) of patients, followed by 30% (12) at high PI risk, with a mean score of 13.6 points and an SD of 3.7.

In terms of clinical diagnoses, 27.5% (11 patients) were diagnosed with an infection and the same 27.5% (11 patients) were diagnosed with a neurological condition. The mean general hospital stay was 25 days with an SD of 43, ranging from a minimum of two days to a maximum of 216 days, while the mean ICU stay was 22.8 days with an SD of 43.1, ranging from one day to 216 days.

Regarding medical history and comorbidities, 30% (12) of the patients had COVID-19 at the time of data collection; 60% (24) had systemic arterial hypertension; 25% (10) had diabetes mellitus; 27.5% (11) had dyslipidemia; 12.5% (5) had heart failure; 7. 5% (3) had chronic renal failure; 17.5% (7) had chronic obstructive pulmonary disease; 12.5% (5) had a history of stroke; 20% (8) had cancer; 2.5% (1) had peripheral vascular disease; 2.5% (1) were smokers; and 7.5% (3) had a history of alcohol use.

Regarding medications, 20% (8) of the patients were taking sedatives, 32.5% (13) were taking vasopressors, 22.5% (9) had taken enteric stimulants in the previous 24 hours, 82.5% (33) were taking antibiotics, 60% (24) were taking corticosteroids, and 2.5% (1) were taking immunosuppressants.

Regarding the method of feeding for the entire sample, 40% (16) were on enteral nutrition. Regarding urinary elimination characteristics, 7.5% (3) were incontinent, 90% (36) were continent, 2.5% (1) were anuric, and 42.5% (17) were using diapers. Regarding fecal elimination, 45% (18) had fecal incontinence and 55% (22) were continent. Additionally, the frequency of bowel movements in 24 hours was analyzed and showed that 40% (16) of the patients had no bowel movements, 45% (18) had up to three bowel movements, and 15% (6) had more than three bowel movements. The stool consistency was predominantly soft in 54.2% (13) of the cases. Regarding the variable of PIs, 35% (14) of patients had PIs in the sacral region.

Based on this information, after identifying the demographic and clinical profile of the entire sample, a univariate analysis was performed to compare patients with and without IAD to identify possible associated factors, as shown in Table 1 and Table 2, respectively.

Table 1. Demographic characterization of critical care patients with and without incontinence-associated dermatitis. São Paulo (SP), Brazil, 2021.

Variables	Incontinence-associated dermatitis				p-value
	No		Yes		
	N	%	N	%	
Type of ICU*					
Cardiac	9	29.0	2	22.2	0.736
COVID-19	3	9.6	2	22.2	
General	19	61.3	5	55.5	
Sex					
Female	7	22.5	2	22.3	>0.999
Male	24	77.4	7	77.7	
Age†					
Mean (SD)	75.2 (±14.8)		73.1 (±13.8)		0.708
Skin color*					
White	27	87.1	6	66.6	>0.999
Brown	1	3.2	-		
Unknown	-		1	11.1	
Not declared	3	9.6	2	22.2	

Continue...

Table 1. Continuation.

Variables	Incontinence-associated dermatitis				p-value
	No		Yes		
	N	%	N	%	
Weight (kg)‡					
Mean (SD)	83.0 (±18.7)		74.2 (±17.3)		0.316
Height (cm)†					
Mean (SD)	169.6 (±11.3)		168.6 (±10.9)		0.817
Body mass index (kg/m²)‡					
Mean (SD)	29.0 (±7.1)		25.9 (±4.3)		0.089
SOFA‡					
Mean (SD)	4.8 (±4.7)		6.1 (±5.4)		0.494
APACHE†					
Mean (SD)	17.6 (±6.5)		19.0 (±6.1)		0.579
Escala de Braden†					
Up to 9	4	12.1	2	22.2	0.655
10 to 12	10	32.2	2	22.2	
13 to 14	4	12.9	1	11.1	
15 to 18	10	32.2	4	44.4	
19 or more	3	9.6	-		
Diagnosis category					
Cardiac condition	6	19.35	-		
Gastrointestinal condition	2	6.45	-		
Infection condition	6	19.35	5	55.5	
Neurological condition	8	25.80	4	44.4	
Orthopedic condition	2	6.45	-		
Pulmonary condition	5	16.12	-		
Renal/urinary condition	1	3.22	-		
Trauma condition	-	-	-		
Others	1	3.22	-		
Length of hospital stay (days)‡					
Mean (SD)	23.6 (±41.9)		31.3 (±48.6)		0.638
ICU stay (days)‡					
Mean (SD)	20.6 (±42.5)		30.4 (±47.2)		0.217
COVID-19*	24	77.4	4	44.4	0.097

SD: Standard deviation. *Fisher's exact test; †Student's t-test for independent samples; ‡Mann-Whitney test.

Table 2. Clinical characterization of critical care patients with and without incontinence-associated dermatitis. São Paulo (SP), Brazil, 2021.

Variables	Incontinence-associated dermatitis				p-value
	No		Yes		
	N	%	N	%	
History and comorbidities*					
Yes	7	22.6	5	55.6	>0.999
No	1	3.2	-	-	
Systemic arterial hypertension*					
Yes	30	96.8	9	100.0	0.717
No	13	41.9	3	33.3	
Diabetes mellitus*					
Yes	18	58.1	6	66.7	0.453
No	19	61.3	7	77.7	

Continue...

Table 2. Continuation.

Variables	Incontinence-associated dermatitis				p-value
	No		Yes		
	N	%	N	%	
Dyslipidemia*					
Yes	12	38.7	2	22.2	0.686
No	23	74.2	6	66.6	
Heart failure*					
Yes	8	25.8	3	33.3	>0.999
No	27	87.1	8	88.8	
Chronic kidney disease*					
Yes	4	12.9	1	11.1	>0.999
No	28	90.3	9	100.0	
Chronic obstructive pulmonary disease*					
Yes	3	9.6	-		>0.999
No	25	80.6	8	88.8	
Stroke*					
Yes	6	19.4	1	11.1	>0.999
No	27	87.1	8	88.8	
Neoplasm*					
Yes	4	12.9	1	11.1	>0.999
No	25	80.6	7	77.7	
Peripheral vascular disease*					
Yes	6	19.4	2	22.2	0.225
No	31	100.0	8	88.8	
Smoking*					
Yes	-		1	11.1	>0.999
No	30	96.8	9	100.0	
Alcohol use*					
Yes	1	3.2	-		>0.999
No	28	90.3	9	100.0	
Liver failure					
Yes	3	9.6	-		-
No	31	100.0	9	100.0	
Patient sedated*					
Yes	27	87.1	5	55.5	0.059
No	4	12.9	4	44.4	
Mechanical ventilation*					
Yes	21	67.7	3	33.3	0.120
No	10	32.2	6	66.6	
Vasoactive drugs*					
Yes	20	64.5	7	77.7	0.690
No	11	35.4	2	22.2	
Intestinal stimulant (last 48 hours)*					
Yes	24	77.4	7	77.7	>0.999
No	7	22.5	2	22.2	

Continue...

Table 2. Continuation.

Variables	Incontinence-associated dermatitis				p-value
	No		Yes		
	N	%	N	%	
Antibiotic*					
Yes	5	16.1	2	22.2	0.645
No	26	83.8	7	77.7	
Corticosteroid*					
Yes	12	38.7	4	44.4	>0.999
No	19	61.2	5	55.5	
Immunosuppressant*					
Yes	30	93.8	9	100.0	>0.999
No	1	3.2	-		
Enteral nutrition*					
Yes	21	67.7	3	33.3	0.120
No	10	32,2	6	66,6	

SD: Standard deviation. *Fisher's exact test.

When analyzing the presence or absence of PIs in the sacral region, it was found that in the population without IAD, 64.5% (20) had no PIs and 35.4% (11) had PIs in the sacral region. In the population with IAD, 66.6% (6) had no PIs in the sacral region and 33.3% (3) had PIs in the sacral region, with a p-value of>0.999.

Regarding the characteristics of the incontinence-associated dermatitis found in the study, the lesions were categorized according to the following variables: presence of IAD; grade of IAD (category 1A, 2A, 1B, 2B); location of IAD (vulvar/scrotal area, right inguinal region, left inguinal region, suprapubic area, inner right thigh, inner left thigh, perianal area, intergluteal cleft, dorsal right thigh, dorsal left thigh, right buttock, left buttock, and perineal area) (Table 3).

Table 3. Elimination characteristics of critical care patients with and without incontinence-associated dermatitis. São Paulo (SP), Brazil, 2021.

Variables	Incontinence-associated dermatitis				p-value
	No		Yes		
	N	%	N	%	
Urinary elimination*					
Anuric	1	3.2	-		0.656
Continent	28	90.3	8	88.8	
Incontinent	2	6.4	1	11.1	
Diaper use*					
No	16	51.6	7	77.7	0.256
Yes	15	48.3	2	22.2	
Fecal elimination*					
Continent	17	54.8	5	55.5	>0.999
Incontinent	14	45.2	4	44.4	
Bowel movement frequency (24 hours)*					
Absent	15	48.3	1	11.1	0.060
Up to 3 times	13	41.9	5	55.5	
More than 3 times	3	9.6	3	33.3	
Stool consistency*					
Liquid	4	25.0	2	25.0	0.854
Semi-liquid	4	25.0	1	12.5	
Soft	8	50.0	5	62.5	

*Fisher's exact test.

IAD was classified by using the Ghent Global IAD Categorisation Tool (GLOBIAD)[12]. IAD has four categories: categories 1A and 1B are characterized by persistent erythema without clinical signs of infection and persistent erythema with clinical signs of infection, respectively; category 2A is defined by skin loss without clinical signs of infection; and category 2B includes skin loss with clinical signs of infection. These classifications and locations of IAD in the sample population are shown in Table 4.

Table 4. Point prevalence of incontinence-associated dermatitis, lesion classification, and location characteristics in the sampled patients with incontinence-associated dermatitis hospitalized in intensive care units. São Paulo (SP), Brazil, 2021.

Variables	N	%
Presence of IAD		
No	31	77.50
Yes	9	22.50
IAD assessment		
Category 1A	5	55.5
Category 2A	4	44.4
Category 1B		
Category 2B		
IAD location		
Inner left thigh	2	22.20
Bilateral inguinal	1	11.10
Right inguinal	1	11.10
Left inguinal	1	11.10
Perianal	3	33.30
Bilateral inguinal	1	11.10
Right inguinal	1	11.10
Left inguinal	1	11.10
Perianal	3	33.30
Vulvar/penile	1	11.10

IAD: incontinence-associated dermatitis.

A total of 55.5% (5) of the lesions were classified as 1A and 44.4% (4) were classified as 2A, meaning that no patient in the sample showed clinical signs of infection in the lesion.

After univariate and bivariate analysis, logistic regression was performed on the variables with a p-value less than 0.20 (Table 5). After regression, only the variable "sedated patient" showed statistical significance.

Table 5. Analysis of variables with p-value < 0.20. São Paulo (SP), Brazil, 2021.

Variables	p-value
Body mass index (kg/m^2)	0.089
COVID-19	0.097
Patient sedation	0.059
Mechanical ventilation	0.120
Enteral nutrition	0.120
Bowel movement frequency (24 hours)	0.060

Regarding the logistic regression analysis of the variable "sedated patient," the affirmative option for the variable resulted in an odds ratio (OR) of 5.400 with a 95% confidence interval for the OR (1.004 to 29.051) and a p-value of 0.049.

DISCUSSION

The prevalence of IAD in this study was 22.5%, although there are limitations in comparing this figure with current national data. A study conducted in the general ICU of a private hospital in Northwest Paraná reported a prevalence of 15.27% in a total sample of 72 patients[13]. Another study conducted in the ICU of a private hospital in São Paulo showed a prevalence of IAD of 40.9% in a sample of 93 patients[14]. Brazil shows significant heterogeneity, being a country with differences in patient profiles and hospital facilities. In addition, the lack of a validated and widely accepted international tool for assessing the risk of developing IAD complicates the standardized collection of IAD prevalence data, as evidenced by the discrepancy in the results of studies conducted in the country.

International studies[15] also show a global prevalence ranging from 5.6% to 50%, which demonstrates the wide variation discussed earlier. A study conducted at a central hospital in Portugal, which included 804 patients, reported a prevalence of IAD of 10.94%[16]. Besides, a study in Norway involving four hospitals found a prevalence of 7.6% in a sample of 340 patients admitted to wards and ICUs[17]. These studies highlight the significant variation in the prevalence of IAD between countries and institutions.

The profile of the hospital where this research was conducted should be considered. The hospital follows an evidence-based protocol for the prevention of IAD. This protocol includes accepted and effective preventive measures such as incontinence management and structured skin care. Incontinence management includes assessing and treating reversible causes of incontinence, optimizing nutrition, using hygiene techniques, and implementing PI prevention plans. Skin care focuses on proper cleansing after fecal and/or urine contact, using products that closely match the skin's pH, maintaining normal intercellular lipid levels through skin hydration, and protecting the skin with a moisture barrier product[12].

In addition to prevalence studies, it is essential to identify recognized and proven risk factors from the literature, such as the presence of incontinence (fecal, urinary, or both), frequency of incontinence episodes, use of occlusive containment products, poor skin condition, impaired mobility, reduced cognitive awareness, inability to perform personal hygiene, pain, elevated body temperature, use of medications such as antibiotics and immunosuppressants, poor nutritional status, and the presence of critical illness[(12)].

Consistent with most studies on associated and risk factors for the development of IAD, no significant associations were found for most variables analyzed in this study, except for the use of sedation, which showed statistical significance (p=0.049; OR=5.400; 95% CI for OR=1.004/29.051), indicating that a sedated patient is 5.4-fold more likely to develop IAD.

When comparing the populations with and without IAD in our study, sedation was more common in the population with IAD. Among patients without IAD, only four (12.9%) received some form of sedation, whereas 44.4% of the population with IAD received sedation.

The use of sedation is common in the ICU and is indicated to reduce anxiety, agitation, pain, stress, and oxygen consumption; to prevent unpleasant memories; and to stabilize patients during the initiation and weaning of mechanical ventilation — factors that can prolong the ICU stay of critically ill patients. However, continuous evaluation by the multidisciplinary team is necessary to avoid prolonged and unnecessary sedation and prevent adverse events[18]. Although some studies include sedation as a variable in data collection instruments, it is rare to find statistically significant relevance of sedation as an associated factor for IAD. International consensus on the prevention of IAD recognizes medication use as a risk factor, but typically focuses on antibiotics and immunosuppressants[3].

The high prevalence of sedation in this study may also be related to the high prevalence of mechanical ventilation in the population with IAD, where 66.6% of patients (six individuals) were on mechanical ventilation. However, only sedation showed statistical significance as an associated factor, as patients under sedation and mechanical ventilation often have impaired physical mobility, significant cognitive deficits, impaired elimination, and reduced self-care abilities, all of which are risk factors for the development of IAD[3].

While the statistical analysis did not confirm that other variables previously reported in the literature as associated factors were significant in this study — likely due to the sample size — the mean age of patients with IAD was found to be 73 years. This is consistent with the literature that aging makes the skin more susceptible to lesions due to decreased elasticity and increased sensitivity. In addition, the elderly are more likely to develop incontinence[5].

According to the literature, the development of skin lesions during hospitalization significantly increases the length of stay, which is evident in this study. When comparing patients with and without IAD, those with IAD had a mean length

of hospital stay of 31 days compared to a mean of 23 days for those without IAD, showing an eight-day difference. When comparing the mean length of ICU stay between patients with and without IAD, the former group had an average stay of 30 days compared to 20 days for the latter, a ten-day difference.

COVID-19 was also an important variable in this study, although it cannot be confirmed as an associated factor. The presence of coronavirus was detected in 55.5% of the population with IAD, a finding that cannot be compared with previous research due to the relatively recent nature of the pandemic.

This research was conducted during the COVID-19 pandemic, a situation that had a direct impact on health care settings, especially ICUs. The pandemic overwhelmed health care workers, causing physical and mental stress, especially among nurses who are responsible for providing comprehensive patient care. This resulted in staff turnover, which led to a decline in the quality of care, which in turn reduced their performance[19]. These conditions directly mirror the prevalence found in this study, even though it was conducted in a site with evidence-based prevention protocols.

Limitations of the study

Limitations of this study include the small sample size, which hindered the statistical significance of other variables. In addition, the data collection methodology was conducted at a single point in time, which limited the potential for increasing the sample size due to patient turnover in the hospital.

Recommendations

The study identified sedation as an associated factor. Therefore, further research into this relationship should be conducted with larger population samples to ensure more rigorous and continuous assessment of skin integrity in sedated patients, who are at higher risk for developing IAD. In addition, preventive measures related to sedation protocols should be implemented.

CONCLUSION

The prevalence of IAD of 22.5% in ICU patients found in this study may assist in the planning of health care resources, interventions, and prevention strategies as well as assist institutions in comparing IAD indicators in similar populations. In addition, the finding that sedated ICU patients are 5.4-fold more likely to develop IAD may be useful in developing targeted prevention strategies for this population.

Prevalence studies in health care are known to play a critical role in understanding the distribution of disease in a population, providing essential data to guide interventions, allocate resources, and improve public health. Because of the high prevalence of IAD in ICUs, prevalence and associated factors studies with robust sample sizes are recommended to better elucidate the associated factors, to support the implementation of evidence-based practices for the prevention and management of IAD, and to invest in continuing education.

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