

CLINICAL-EPIDEMIOLOGY INDICATORS ASSOCIATED WITH PRESSURE ULCERS IN A HOSPITAL OF LIMA

INDICADORES CLÍNICO-EPIDEMIOLÓGICOS ASOCIADOS A ÚLCERAS POR PRESIÓN EN UN HOSPITAL DE LIMA

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ABSTRACT

Objective: To determine the clinical-epidemiological indicators associated with pressure ulcers (PU) in patients of the Medical Service of the Hipólito Unanue National Hospital in 2016-2017. **Methods:** Observational, analytical and retrospective study, based on the review of medical records. A non-probabilistic sample was obtained for convenience, calculating the odds ratio (OR), applying the 95% confidence interval and using the chi-square test, with a p-value of <0.05 being statistically significant. **Results:** In the study, 93 patients fulfilled the study criteria. The male subjects formed 50.5% of the total population, the average age was 68 years old (+21 years), and 74.19% of the total population consisted of elderly adults. The most frequent locations of PU were at the sacral area (77%) and heel (12.9%); likewise, the most common stages were II (32.3%), IV (31.2%) and III (26.9%). The presence of severe PU was associated to old age (OR: 3.12, 95% CI: 1.2-8.2), hypoalbuminemia (OR: 6.23, 95% CI: 1.8-21.1), anemia (OR: 4.31, 95% CI: 1.2- 14.9) and lymphopenia (OR: 3.68, 95% CI: 1.5-9). **Conclusion:** Elderly patients with hypoalbuminemia, anemia or lymphopenia are at greater risk of developing severe pressure ulcers, which significantly decreases their quality of life.

Key words: Pressure ulcer; Hypoalbuminemia; Anemia; Lymphopenia. (source: MeSH NLM)

RESUMEN

Objetivo: Determinar los indicadores clínico-epidemiológicos asociados a úlceras por presión (UPP) en pacientes del servicio de Medicina del Hospital Nacional Hipólito Unanue durante los años 2016-2017. **Métodos:** Estudio observacional, analítico y retrospectivo, basándose en la revisión de historias clínicas. Se obtuvo una muestra no probabilística por conveniencia, calculándose el odds ratio (OR), aplicando intervalo de confianza al 95% y se utilizó la prueba del chi cuadrado, con un valor de p<0.05 como estadísticamente significativo. **Resultados:** Para la muestra se obtuvo 93 pacientes que cumplieron con los criterios del estudio; el 50,5% fueron varones, con una media de edad de 68 años (+21 años), siendo el 74.19% de la población total adultos mayores. Las localizaciones más frecuentes de UPP fueron a nivel sacro (77%) y talón (12.9%); asimismo, los estadios más frecuentes fueron: II (32.3%), IV (31.2%) y III (26.9%). La presencia de UPP grave estuvo asociada a: ser adulto mayor (OR: 3.12; IC95%: 1.2-8.2), hipoalbuminemia (OR: 6.23, IC95%: 1.8-21.1), anemia (OR: 4.31, IC95%: 1.2-14.9) y linfopenia (OR: 3.68; IC95%: 1.5-9). **Conclusión:** Los pacientes adultos mayores que presenten hipoalbuminemia, anemia o linfopenia tienen mayor riesgo para presentar úlceras por presión graves, las cuales interfieren de manera significativa en su calidad de vida.

Palabras clave: Úlcera por presión; Hipoalbuminemia; Anemia; Linfopenia. (fuente: DeCS BIREME)

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INTRODUCTION

Pressure ulcers (PU) currently represent a significant health problem in which not only patients and family members are affected, but also generates a high impact on the health systems. Nowadays, the incidence and prevalence of PU are in considerable quantities and are increasing throughout the world. The existence of a pressure ulcer is of an iatrogenic nature. Its appearance can be prevented with an appropriate organization in health centers, which could increase the quality of care in health facilities of all levels¹.

A pressure ulcer is defined as an injury of ischemic origin and is located in the skin and deeper tissues. The loss of skin tissue is evident and happens at the time of continuous pressure or friction between two hard surfaces². The hospital environment is considered one of the most significant places for the appearance of these lesions because there is no adequate mobilization of the patient, and a prolonged stay of the patient can coexist with the presence of a pressure ulcer. It can complicate and even prevent the treatment to be effective³.

Many of these injuries occur in public hospitals, especially in the Intensive Care Units and internal medicine services - geriatrics⁴. According to the National Pressure Ulcer Advisory Panel (NPUAP), the United States treatment and prevention on PU estimated that 2.5 million patients have pressure ulcers per year and at the hospital level the incidence is 2.5% per year, reaching 60,000 deaths per year⁵.

In Spain, in the year 2013, the 4th National Prevalence Study of PU was carried out, in which a high prevalence was found in the Intensive Care Unit, reaching up to 22%. In the same way, similar results are shown in other countries. Germany presented 24.5%, Brazil showed 32.7%, and China reached 11.9%. Likewise, in this study, it was highlighted that the proportion of PU that develop within the hospital environment reached up to 65%⁶.

At the Latin America level, two multicenter studies were carried out in Mexico which indicated that the crude prevalence of PU was 12.94% and 17%, respectively⁷. In South America, Brazil reports a prevalence of 41.1%, and Chile has a prevalence of

up to 38% in the Intensive Care Unit⁸; while in Peru studies show prevalences between 11.4% and 16%⁹.

Because they have the property of being preventable, legal demands concerning UPs are very frequent. Currently, they are increasing in developed countries such as the United Kingdom and the United States. According to specialists, they will soon be all around the world, due to its great importance with the effect on the deterioration of health, economic loss, on the quality of life and in health systems¹⁰.

Concerning everything expressed, the present study is proposed to determine the clinical-epidemiology indicators associated with pressure ulcers in patients hospitalized in the Medical Service of the Hipólito Unanue National Hospital in 2016-2017.

METHODS

An observational, analytical and retrospective. The population was made up of all hospitalized patients in the service of Medicine with the diagnosis of pressure ulcers of the Hipólito Unanue National Hospital in 2016 -2017.

In total, we reviewed and analyzed 93 clinical histories, and used a data collection card with the following study variables: sex, age, the severity of pressure ulcer, stage, location, levels of albumin, hemoglobin, absolute lymphocytes, and pathology.

A recollection of data was collected in Excel that was subsequently made in SPSS version 25, in which it was performed a descriptive, bivariate and multivariate analysis by using the Chi-square test, with a p-value <0.05 as statistically significant to obtain the necessary results for the investigation.

RESULTS

We analyzed the medical records of 93 patients, who met the inclusion and exclusion criteria of the investigation. Figura 1.

In table 1, the prevalence of pressure ulcers is shown in hospitalized patients in the internal medicine service during 2016 - 2017. These results found a global incidence of 1.61%, of which when distributing them according to age group, in the population of elderly adults, it was observed that the prevalence increased to 7.43%, thus showing 69 patients with PU.

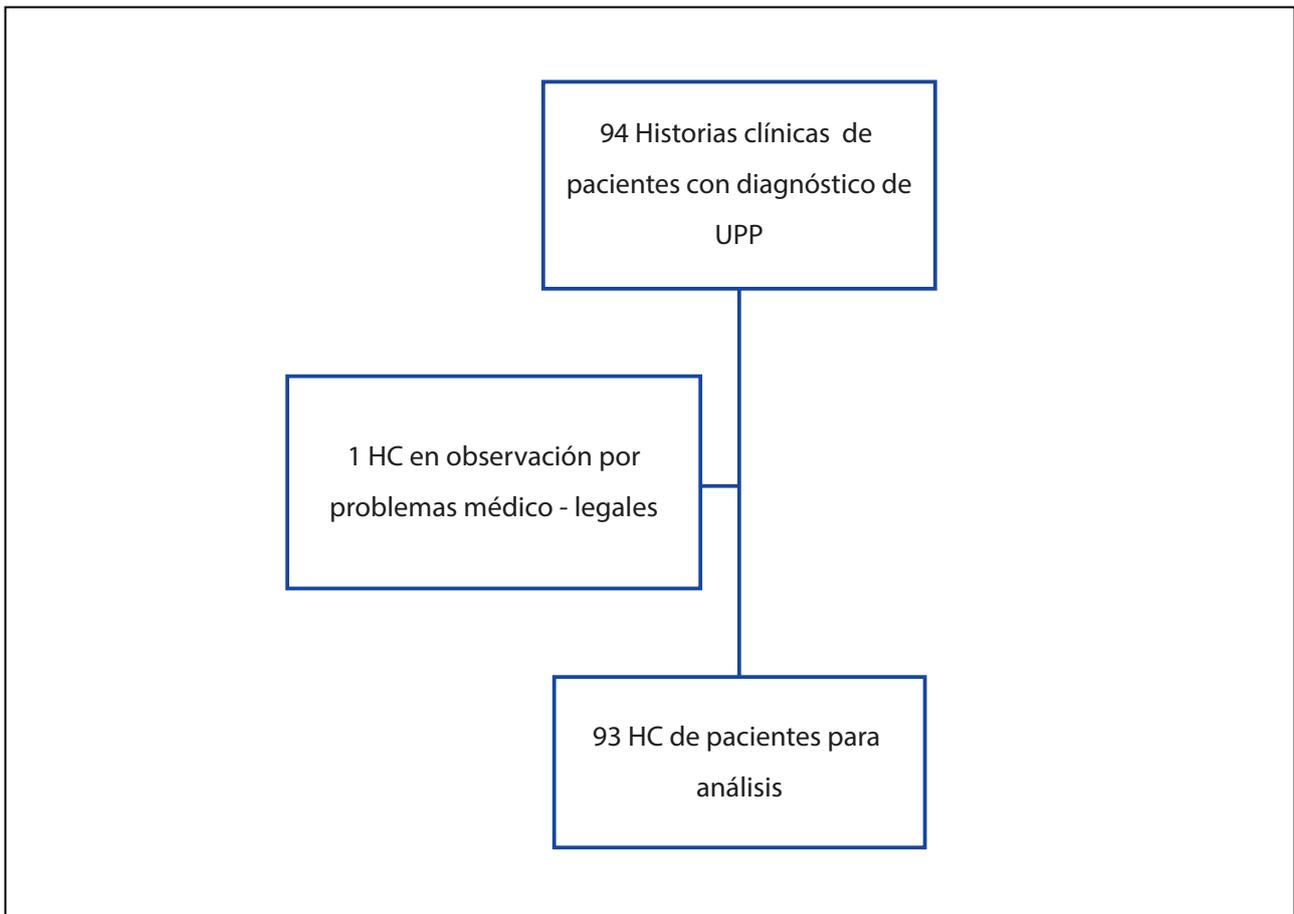


Figure 1. Flow diagram of the number of patients in the study.

Table 1. Prevalence of pressure ulcers according to age group.

		MEDICINE SERVICE		PREVALENCE (%)
		HOSPITALIZED PATIENTS (N)	PATIENTS WITH PU (N)	
Adults Medicine Service 2016 - 2017	<60 years	4897	25	0.51%
	>60 years	929	69	7.34%
Total		5826	94	Global Prevalence: 1.61%

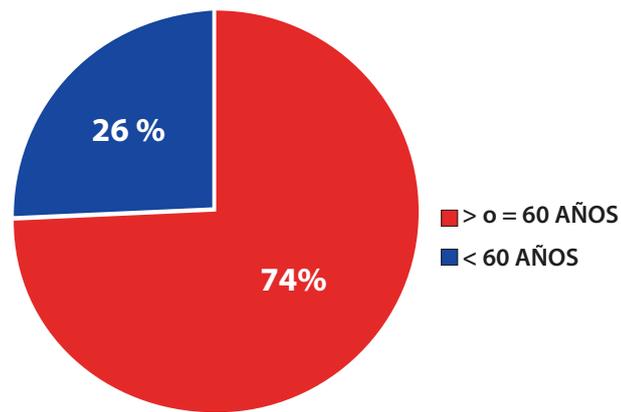
Regarding the epidemiological characteristics, it was observed that of the 93 patients in this study, 50.5% were male (Table 2). By the same way, it was found that the median age was 68.72 years old (+ 21.12). The youngest patient was 18 years old, and the oldest

patient was 96 years old. Grouping the patients by age group shows that 69 of the patients in the study (74%) were older than 60 years old, graph 2.

Table 2. Distribution by sex of patients with pressure ulcer.

	FREQUENCY (N)	PERCENTAGE (%)
Female	46	49,5%
Male	47	50,5%
Total	93	100,0%

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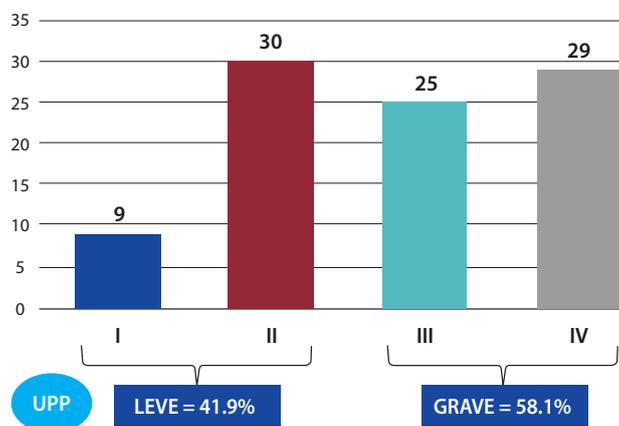
EDAD	N	MÍNIMO	MÁXIMO	MEDIA
	93	18	96	68.72 (+21.12)

Source: Data found in analyzed clinical histories.

Graph 1. Percentage according to age group characteristics in the population.

Figure 3 shows the frequency of patients with pressure ulcer according to the stage presented, finding that stage II is the most frequent with 30 patients presenting this lesion, followed by the stage IV what

account with 29 patients and the stage III with 25. However, when grouping these injuries by severity, it displays that the severe state, which includes stages III and IV, is the most frequent with 54 patients affected.



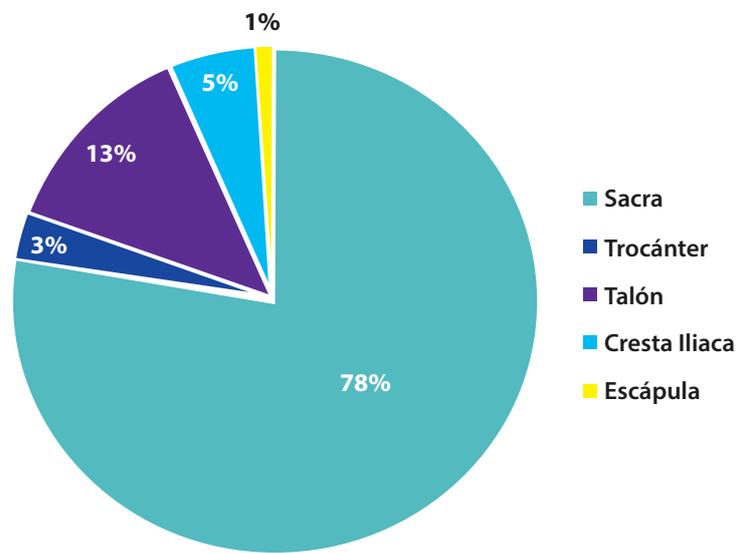
Source: Data found in analyzed clinical histories.

Graph 2. Frequency according to stage and percentage according to severity.

Figure 4 shows the frequency concerning the location of the pressure ulcers. It was found that the most representative location was in the sacral area because

it was found in most of the patients in the study (72). Twelve patients presented pressure ulcers at the heel level.

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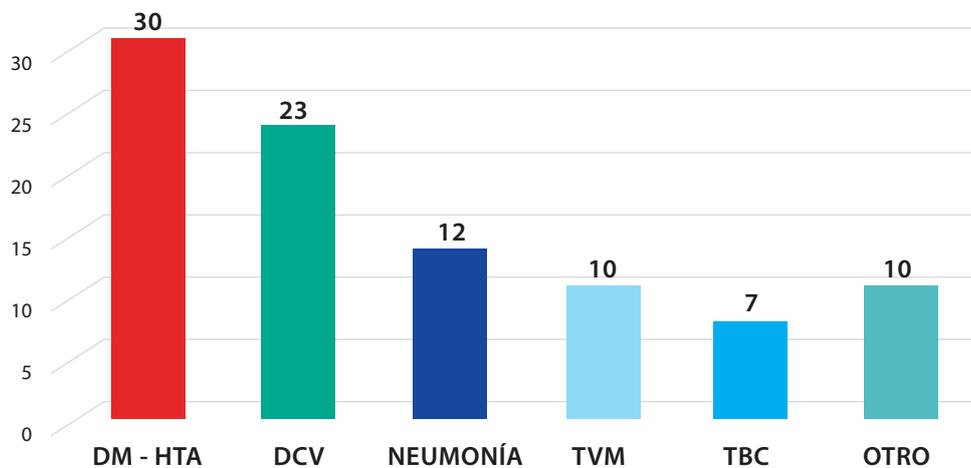


Source: Data found in analyzed clinical histories.

Graph3. Frequency according to location.

Graph 5, shows the pathologies found in the patient, of whom 30 had a history of DM - HTN (diabetes mellitus and hypertension), followed by 23 patients with a history of DCV, 12 patients with pneumonia, 10 with spinal cord injury, 7 had TBC and 10 patients other

pathologies. Concerning the affected system, it was observed that the neurological affection was the most frequent with 45.2%, followed by involvement of the cardiovascular system (34.4%).



Source: Data found in analyzed clinical histories.

Graph 4. Most frequent pathologies found in hospitalized patients with pressure ulcers.

Table 3. Bivariate and multivariate analysis of the indicators clinical-epidemiology indicators associated with ulcer by pressure ulcers.

	GRAVITY PU			ANALYSIS BIVARIATE		ANALYSIS MULTIVARIATE	
	SERIOUS	NOT SERIOUS	TOTAL	P(X ²)	OR (IC 95%)	P(X ²)	OR(IC95%)
Patients, n	55 (59.14)	38 (40.86)	93				
Sex							
Female	29 (63.04)	17 (36.96)	46	0.34	1.50 (0.7 - 3.4)		
Male	27 (57.45)	20 (42.55)	47				
Age							
≥ 60 years	45 (65.22)	24 (34.78)	69	0.02	3.13 (1.2 - 8.2)	0.08	2.61 (0.9 - 7.9)
≤ 60 years	9 (37.50)	15 (62.50)	24				
Anemia							
Yes	50 (63.3)	29 (36.7)	79	0.015	4.31 (1.2 - 14.9)	0.38	1.98 (0.4 - 9.23)
NO	4 (28.6)	10 (71.4)	14				
Hypoalbuminemia							
Yes	50 (65.8)	26 (34.2)	76	0.001	6.25 (1.9 - 21.1)	0.005	4.38 (1-19.3)
Lymphopenia							
Yes	42 (68.9)	19 (31.1)	61	0.004	3.68 (1.5 - 9.0)	0.02	3.15 (1.2 - 8.6)
No	12 (37.5)	20 (62.5)	32				
The n () values indicate the percentage (%) IC95%. 95% confidence interval; OR Odds Ratio, p = p-value (ideal <0.05)							

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Table 3, shows the bivariate analysis of the clinical-epidemiology indicators. Concerning the sex factor, it was found that it was not statistically significant with a p-value of 0.34, as well as containing the unit within the 95% confidence interval. When evaluating the age variable, it was found that old age (age > 60 years) is a significant risk factor, where the possibility of presenting an ulcer by severe pressure indicates 3.13 times more risk in comparison to a young adult of 60 years. This association is statistically significant since the p-value was found to be 0.02. With hypoalbuminemia, it was found that its presence is a risk factor that increases by six times the possibility of having an ulcer due to severe pressure, this finding is

statistically significant due to its value p = 0.001.

Likewise, when evaluating the variable of anemia, it can be seen that its presence increases by four times the risk of severe PU, being statistically significant by its value p = 0.015. When studying the lymphopenia variable, its association correlates with the presence of severe PU. Lymphopenia is shown as a risk factor that increases in 3.68 times the probability of the existence of severe PU, with a statistical significance of p = 0.004.

Subsequently, the multivariate analysis was performed, in which variables of hypoalbuminemia (OR = 4.38, 95% CI 1-19.31, p = 0.05) and lymphopenia (OR = 3.15, 95% CI 1.15 - 8.60, p = 0.02) are shown to be

statistically significant to the presence of severe PU in relation to all the other indicators studied.

DISCUSSION

In recent years, pressure ulcer (PU) has been generating a high impact within the health public since it has been established. It is currently considered as a priority problem to solve within the health system because it has a significant impact on the quality of life, especially in elderly adults, with multiple comorbidities. Elderly adults are more vulnerable to present of PU and can include both a degree of prostration or disability in the motor area⁴.

The results obtained in the present study showed that the prevalence of pressure ulcers in hospitalized adult patients was 1.61%. However, when considering only the elderly adult population, it was observed that the prevalence increased to 7.43%. This prevalence is much lower than in other studies. A study conducted in 2016, in Mexico¹¹, showed a crude prevalence of 11.6%, and in elderly adults a prevalence of 16.9%. Likewise, in the United States¹² the prevalence of PU in hospitalized patients varies between 3% and 11% and, in Australia¹³ the prevalence is approximately 5.6%. In a study conducted at the Cayetano Heredia Hospital⁹, a prevalence of PU was found in adults over 11.4%. A low prevalence of pressure ulcers in the study could be because the health team at the admission of the patient to the hospital did a poor evaluation and diagnosis of injuries.

In Peru, according to the technical report of 2018 provided by the INEI, it indicates that the population of older adults is 10.4% from the general population. It is estimated that by 2025, this population may reach 12.5%¹⁴. In that sense, in the present study, the population of the older adult was 69 patients who represented approximately 74% of the population studied, with an average of 68.72 years (+ 21.12). Also, the distribution by sex shows a slightly higher prevalence in males (50.5%). Concerning other studies, the mean age was 75 years and the prevalence according to sex was of minimal difference in favor to males (51.6%). In the study conducted by Eduardo Barrera et al¹¹, the median age is 48.9 years, because the population of the study also encompassed pediatric patients; likewise, males were more frequent in the sex variable with 57.3%.

The most frequent stage found in the present study was stage II (32.3%) followed by stage IV (31.2%). In

contrast to this finding, a study conducted in Mexico by Barreda et al¹¹, shows that the most frequent stage was I with 3.4%. On the other hand, in another study of Godoy and Huamani¹⁵ carried out in Peru in 2017, shows that the prevalence of PU stages was greater in stage II with 54%, similar to our study. Regarding the location of PU in the majority of the studies consulted, the sacral level is the most frequent (77.4%), followed by the area of the heels (12.9%), these findings being very similar to those found in the present study.

The elderly adult is considered a fragile being because it acquires multiple pathologies over the years due to the poor functioning of their systems. The main comorbidities of PU were examined, and it found a group of greater prevalence that had some neurological pathology (45.2%), within them, the cerebrovascular disorder and the spinal cord injury are the leading causes of prostration in patients that presented these types of pathologies. Second, the pathologies of cardiovascular disease (34.4%), mainly hypertension and diabetes mellitus that affect the microvasculature level as time passes and chronicity. It affects multiple systems. Concerning other studies, these indicate that the most frequent pathologies of hospitalization admission in patients with PU are: pneumonia, urinary tract infections, sepsis, and stroke^{16,17}.

In patients, the nutritional factor is one of the most important to prevent the appearance of pressure ulcers. The deficit in nutritional status can influence the vulnerability of tissues regarding external factors such as permanent pressure on surfaces⁹. For such reason, the present study established a parameter to assess the nutritional status like the value for serum albumin in patients with PU. The study found the presence of hypoalbuminemia (albumin value <3.5 g/dL) and this is a risk factor of importance. Due to its presence, there is a 6.25 times more chance of presenting ulcer by severe pressure (95% CI 1.85 - 21.10, p = 0.001). The study conducted by Isabel Gonzales¹ in Spain in 2016, takes as a variable to study the nutritional state. It takes into account albumin values according to the degree of risk of malnutrition. That study concludes that the presence of generalized edema, as an indirect indicator of nutrition depletion and hypoalbuminemia is a risk factor that increases in 3.89 times the possibility of present a pressure ulcer (95% CI 1.31 - 11.54), having a p-value of 0.009 making it of statistically significant association in both studies.

As for the presence of anemia, in the present study was obtained that as a risk factor increasing up to 4.31 times the probability of the present an ulcer due to severe pressure. Among the studies consulted, in the study of Bautista and Bocanegra¹⁷ it was estimated the prevalence of anemia in patients with pressure ulcers, resulted in 42.9% of patients, within which were transfused up to 36%, following established protocols for blood transfusion.

The study conducted by Martínez and Llerena¹⁸ described the probable association between previously described factors. It also takes into count the lymphocyte count under the foundation that after considering the immunological parameters of those patients with a pressure ulcer, it was found that the decrease in cell-type immunity, represented by lymphocytes, is more significant in the patients who had pressure ulcers. In such a way, when evaluating the parameter in the present study, it was found that as a risk factor increases by 3.68 times plus the possibility of presenting a severe pressure ulcer (95% CI 1.50 - 9.04), being statistically representative ($p = 0.004$).

The importance of the present study is to pay due attention to the significant impact that causes pressure ulcers and to understand from the preventive rather than the therapeutic point of view. Not preventing them and not giving it the proper importance, makes PU go under-diagnosed. Leaving it without treatment could complicate and not solve the reason why the patient became hospitalized.

Pressure ulcers is preventable, so the multidisciplinary approach and teamwork as well as doctors, nurses and

other health workers should establish an adequate work plan that could contribute to the control and decrease of the incidence, thus achieving a lower rate of complications.

CONCLUSION

In the study carried out, it is concluded that those older patients (> 60 years) are the group that is most affected by pressure ulcers due to the degeneration of the skin over the years as well as extrinsic factors. When making the bivariate and multivariate analysis, we obtain that the presence of indirect signs of malnutrition as hypoalbuminemia is closely related to the presence of greater severity in pressure ulcers. Also, the presence of lymphopenia, the indicator of the compromise of the immunological state, is also significantly associated with the presence of ulcer due to severe pressure, showing that an adequate response cannot be generated against an injury.

Recommendations: Conduct further evaluation by a thorough physical examination to prevent patients can be complicated during their hospital stay.

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