RIASE
REVISTA IBERO-AMERICANA DE SAÚDE E ENVELHECIMENTO
REVISTA IBERO-AMERICANA DE SALUD Y ENVEJECIMIENTO

ASSOCIATION OF SOCIODEMOGRAPHIC, HEALTH AND CLINICAL CHARACTERISTICS WITH THE HEALING STATUS OF VENOUS ULCERS IN OLDER ADULTS

ASSOCIAÇÃO DAS CARACTERÍSTICAS SOCIODEMOGRÁFICAS, DE SAÚDE E CLÍNICAS COM STATUS DE CICATRIZAÇÃO DE ÚLCERAS VENOSAS EM IDOSOS

ASOCIACIÓN DE LAS CARACTERÍSTICAS SOCIODEMOGRÁFICAS, SANITARIAS Y CLÍNICAS CON EL ESTADO DE CICATRIZACIÓN DE LAS ÚLCERAS VENOSAS EN PERSONAS MAYORES

Matheus Medeiros de Oliveira[1], Mario Lins Galvão de Oliveira[1], Isadora Costa Andriola[1], Sandra Maria da Solidade Gomes Simões de Oliveira Torres[2], Mayara Priscilla Dantas Araújo[1], Gilson de Vasconcelos Torres[1].

[1]Federal University of Rio Grande do Norte, Natal, Brazil.
[2]Municipal Government of Natal, Department of Health, Natal, Brazil.

Received/Recebido: 2025-01-13 Accepted/Aceite: 2025-01-13 Published/Publicado: 2025-01-13

DOI: http://dx.doi.org/10.60468/r.riase.2024.10(2).710.124-138

ABSTRACT

Introduction: Venous ulcers are caused by the sum of genetic and environmental factors. Their healing process and the outcome of the lesion are influenced by various sociodemographic, health, and clinical characteristics of the patient. Together, they have an impact on the well-being and general condition of those suffering from the lesions.

Objective: This study aimed to analyze the association between sociodemographic, health, and clinical characteristics and the maintenance of active lesions in older patients undergoing venous ulcer treatment.

Method: This is a cross-sectional, quantitative study carried out in Primary Health Care in the municipality of Parnamirim, Brazil, between 2020 and 2021. Data was collected using sociodemographic, clinical, and health forms. The data was analyzed using Pearson's Chi-square test and Fisher's Exact Test. The study was approved by the Ethics Committee.

Results: The following were identified as associated factors for maintaining the ulcer active: profession/occupation, living situation, presence of neoplasm, use of medication, altered mental state and mobility; altered lesion edge, devitalized tissue, recurrences, pain, edema, exudate, care carried out by an untrained professional, not being accompanied in a specialized center, not using compressive therapy and perilesional area with severe alterations.

Conclusion: The study showed an association between sociodemographic, health, and clinical characteristics and the maintenance of active ulcers in older patients.

Keywords: Aged; Leg Ulcer; Ulcer; Wound Healing.

RESUMO

Introdução: As úlceras venosas são ocasionadas pela soma de fatores genéticos e ambientais, seu processo de cicatrização e o desfecho da lesão são influenciados pelas características sociodemográficas, de saúde e clínicas do paciente. Juntos, elas impactam no bem-estar e estado geral dos portadores das lesões.

Objetivo: Analisar a associação entre as características sociodemográficas, de saúde e clínicas com a manutenção de lesões ativas em pessoas idosas em tratamento de úlceras venosas.

Método: Trata-se de um estudo transversal, quantitativo, realizado no Atenção Primária à Saúde do município de Parnamirim, Brasil, entre 2020 e 2021. A coleta de dados ocorreu por meio de formulários sociodemográficos, clínicos e de saúde. Os dados foram analisados utilizando o Teste Qui-quadrado de Pearson, de correlação e Exato de Fisher. O estudo foi aprovado pelo Comitê de Ética.

Resultados: Identificaram-se como fatores associados à manutenção da úlcera ativa a profis-

são/ocupação, situação de moradia, presença de neoplasia, uso de medicação, alteração do estado mental e mobilidade; borda da lesão alterada, tecido desvitalizado, recidivas, dor, edema, exsudato, cuidados realizado por profissional não treinado, não ser acompanhado em um centro especializado, não usar terapia compressiva e área perilesional com alterações severas.

Conclusão: O estudo evidenciou a associação das características sociodemográficas, de saúde e clínicas com a manutenção da úlcera ativa em pacientes idosos.

Palavras-chaves: Cicatrização; Idoso; Úlcera de perna; Úlcera Varicosa.

RESUMEN

Introducción: Las úlceras venosas están causadas por la suma de factores genéticos y ambientales, y en el proceso de curación y el resultado de la lesión influyen diversas características sociodemográficas, sanitarias y clínicas del paciente. En conjunto, repercuten en el bienestar y el estado general de quienes padecen las lesiones.

Objetivo: Analizar la asociación entre las características sociodemográficas, sanitarias y clínicas y el mantenimiento de las lesiones activas en ancianos sometidos a tratamiento de úlceras venosas.

Método: Se trata de un estudio transversal, cuantitativo, realizado en la Atención Primaria de Salud del municipio de Parnamirim, Brasil, entre 2020 y 2021. Los datos se recogieron mediante formularios sociodemográficos, clínicos y de salud. Los datos se analizaron mediante la prueba Chi-cuadrado de Pearson y la correlación Odds Ratio. El estudio fue aprobado por el Comité de Ética.

Resultados: Fueron identificados como factores asociados a el mantenimiento de la úlcera activa: profesión/ocupación, situación habitacional, presencia de neoplasia, uso de medicación, alteración del estado mental y de la movilidad; borde de la lesión alterado, tejido desvitalizado, recidivas, dolor, edema, exudado, cuidados realizados por profesional no entrenado, no acompañamiento en centro especializado, no utilización de terapia compresiva y área perilesional con alteraciones severas.

Conclusión: El estudio mostró una asociación entre las características sociodemográficas, sanitarias y clínicas y el mantenimiento de úlceras activas en pacientes mayores.

Descriptores: Cicatrización de Heridas; Persona Mayor; Úlcera de la Pierna; Úlcera Varicosa.

INTRODUCTION

Leg ulcers are breaks on the surface of the skin on the lower limbs, usually resulting from an inflammatory process related to metabolic imbalance. Their clinical manifestations are determined by etiology, mostly venous (estimated at 60% to 80% of cases)[1]. Venous ulcers (VU), also known as varicose ulcers, are associated with defects in the venous system and its valves and may be related to genetic factors, sex, age, and obesity. This condition involves venous hypertension, impaired blood flow to the skin and accessory structures, as well as difficulties in cellular metabolism, being the most severe consequence of chronic venous insufficiency (CVI)[2].

In general, these ulcers are characterized by an extensive area of epidermal rupture, with a superficial depth and exudative, located mainly in the medial malleolar region. Complete healing usually takes around 6 to 12 months[3]. Their prevalence and incidence are directly linked to the age of the patient, so that older adults (> 60 years) have a higher chance of developing it, in addition to presenting greater chances of a negative impact on healing, such as chronicity, recurrence, and poor treatment adherence. Therefore, age is considered a risk factor for VU[1].

Healing is prolonged and involves repair and restoration stages of the anatomical and functional integrity of the skin. This process is mediated by a set of molecules that participate in a complex biochemical network of tissue repair. With aging, physical and physiological changes occur naturally, compromising this functioning, such as vascular changes and reduced cellular responsiveness to proliferative stimuli. Consequently, there will be a delay in wound closure and scarring failure[4].

In addition to advanced age and aging-related changes, other factors such as the patient's condition, environment, and lesion, including odor, tissue loss, and the presence of comorbidities, also affect the VU outcome. Thus, sociodemographic, health, and clinical characteristics cause changes in basic, instrumental, and advanced activities of daily living, interfering with quality of life (QoL) and causing mood changes, body image issues, and impacts on work and family and social relationships[2,4].

VU is a serious public health problem, especially due to high recurrence rates, costs, and difficulties associated with treatment, as well as functional, financial, socioeconomic, and psychological repercussions for patients[2]. Therefore, this study aims to analyze the association between sociodemographic, health, and clinical characteristics and the maintenance of active wounds in older adults undergoing venous ulcer treatment.

MATERIAL AND METHOD

This research is a cross-sectional study with a quantitative approach, conducted between August 2020 and November 2021 at the Specialized Center for the Prevention and Treatment of Chronic Ulcers (CEPTUC) in the municipality of Parnamirim, Rio Grande do Norte, Brazil. CEPTUC is a reference unit that receives users referred from Primary Health Care (PHC) units. An estimated 205 patients with VU reside in this municipality; based on this, a sample size formula for a finite population was applied, resulting in a total of 112 people for this study sample.

The inclusion criteria for the first stage of the study were as follows: age over 18; being linked to the specialized PHC center; and having an active VU (ankle-brachial index between 0.8 and 1.3) in 2020. The exclusion criteria included: leg ulcers of mixed etiology, arteriovenous, or of origins other than CVI; discharge due to death, change of address outside the coverage area, or complete healing.

During the research, a sample of 103 people was obtained, as 9 participants were excluded due to death, relocation, or complete healing.

Data collection was conducted by undergraduate and graduate health students from the Federal University of Rio Grande do Norte through the use of researcher-administered instruments during scheduled nursing and medical consultations, with an average duration of 60 minutes. This process was supervised by the study coordinators, and participants did not receive incentives or remuneration for their involvement.

The instruments used were structured forms with sociodemographic, health, and clinical characteristics. Variables analyzed during the interviews included: sex, age, marital status, education, income, occupation, housing, and health situations, such as smoking, alcohol use, mobility, and underlying diseases, among others. During physical and clinical assessments, aspects such as wound location, wound size, treatment duration, recurrences, exudate, odor, and wound bed characteristics were considered.

Statistical analysis included descriptive and inferential data analysis. Data were initially organized in Microsoft Excel® spreadsheets and tabulated using Statistical Package for Social Science for Windows (SPSS) IMB version 20.0 software. The Kolmogorov-Smirnov test indicated non-normality of the sample. Descriptive analysis included absolute and relative frequencies of the studied variables, with their respective differences based on Pearson's Chi-square Test or Fisher's Exact Test, when frequency was less than 5. A p-value < 0.005 was adopted, with a 5% margin of error.

The study was approved by the Ethics Committee of the Federal University of Rio Grande do Norte under opinion number 156.068. Before data collection, participants signed the informed consent form, aware of the risks, benefits, objectives, and relevance of the research. Data were identified only with the patients' initials and stored securely.

RESULTS

Throughout this study, associations were identified between sociodemographic, health, and clinical variables and the healing status of Venous Ulcers among 103 individuals. For analysis purposes, the research participants were subdivided into two groups according to the following outcome: having an active Venous Ulcer or having it healed over the last year of treatment. Among these individuals, 61 had an active Venous Ulcer at the time of data collection (59.2%), and 42 had a healed VU.

Participants' sociodemographic characteristics indicated a predominance of females (72.8%), individuals over 60 years old (62.1%), unmarried (51.5%), with elementary education (73.8%), no economic activity (57.3%), income of up to one minimum wage (67%), and home ownership (82.5%). Among sociodemographic variables, occupation/profession ($p < 0.001$) and housing situation ($p = 0.037$) showed statistical significance between the groups (Table 1↗).

Regarding health characteristics (Table 2↗), individuals were characterized as hypertensive (72.8%), diabetic (57.2%), non-current medication users (90.2%), with normal mobility (73.7%) and mental status (80.5%). Neoplasia presence ($p < 0.001$) altered mental status ($p < 0.001$), medication use ($p = 0.037$), and altered mobility ($p = 0.006$) showed significant correlation with maintaining an active VU (Table 2↗).

The clinical characterization of the VUs in these individuals showed: lesion in the process of closing or decreasing (75.8%), no recurrences (80.6%), usual or absent pain frequency (82.5%), edema sometimes present or absent (83.5%), edema intensity moderate to mild or absent (83.5%), essentially granulated wound bed (75.8%), with perilesional skin moderately altered or hydrated—moderate scaling, ochre dermatitis, itching, lipodermatosclerosis (75.7%), with a small amount of exudate (84.5%), no odor (91.3%), normal edges (71.9%), treatment duration over 6 months (88.4%), and use of compression therapy (86.4%).

Factors significantly associated ($p < 0.001$) with the risk of maintaining an active ulcer included altered wound edge; care provided by the patient themselves or an untrained professional; presence of devitalized tissue in the wound bed; increase or no change in lesion size; one or more recurrences; high pain intensity; frequent or constant pain; persistent edema; intense edema; high quantity of exudate; being monitored by the Primary Health Care Unit; not using compression therapy; and a perilesional area with more severe alterations (Table 3↗).

DISCUSSION

VUs have been a public health concern, with their prevalence progressively increasing alongside population aging and the tendency toward chronicity. It is estimated that approximately 1% to 3% of the older adult population may be affected by these lesions. Besides high prevalence, the associated financial, functional, and psychosocial costs underscore its impact on individuals, healthcare systems, and society[5].

The sociodemographic profile (Table 1↗) of this study primarily consists of women over 60 years old. This finding aligns with studies by other authors in the field, which also show a higher incidence in females compared to males, as well as among those over 65 years old[6]. Scenario is explained, for example, by the predominance of CVI, the primary cause of leg ulcers, in women, which contributes to a greater susceptibility to developing and maintaining these lesions under treatment[7].

In profession/occupation, the sample largely consists of economically inactive individuals. Among those interviewed, 35% with active VUs had a professional occupation, compared to 7.8% with healed VUs. Thus, being active could be a risk factor for maintaining an active VU, as patients may be unable to establish a better rest routine with lower limb elevation, adherence to compression therapy, and physical exercise. These measures are essential for the treatment of these lesions, as they improve local circulation, thereby promoting healing and enhancing QoL[8,9].

The treatment of VUs is very costly, especially for patients and their families, most of whom have low income or are financially dependent on family members[4,8]. Thus, treatment demands considerable dedication, resilience, and resources to afford specialist consultations, exams, and wound care products, which are often not provided by public health services.

Besides these expenses, patients face other costs, such as those related to housing. These costs, coupled with financial difficulties, cause substantial psychosocial impact, anxiety, and concern, which negatively affect healing[4].

Other determinates factors for keeping the VU active include the presence of neoplasia, altered mental status, and mobility findings consistent with American, Australian, and Brazilian research that showed prolonged VU duration in patients with these characteristics[8,10]. Therefore, physical, functional, and cognitive conditions not only worsen the disease but may also determine a poor prognosis and increase the severity of the wounds[11].

As an example of the mobility impairment, whose decrease in muscle strength and reduced range of motion in the lower limbs, along with edema and pain, lead to physical inactivity and reduced efficacy of calf muscle pumping, delaying the healing process and exacerbating VU severity[11]. Neoplastic diseases, which due to the imbalance of tissue proliferation, also contribute to this deterioration, as does the use of medications like corticosteroids[4,12].

CVI is also intrinsically related to poor wound healing. It interferes with the calf muscle pump, causes venous reflux, thrombosis, and blood flow obstruction, leading to ischemia. Consequently, it degenerates tissue and triggers an exacerbated inflammatory cascade, hindering tissue regeneration and promoting ulceration. Thus, early identification, differential diagnosis, and effective decision-making are crucial to reduce the risks of maintaining ulcers and their implications[5,13].

Within this context, the pro-inflammatory environment of the healing process involves a series of clinical manifestations arising from physiological changes, such as pain, edema, and exudate[10]. Based on the clinical factors analyzed (Table 3↗) it is possible to identify the following risk profile associated with maintaining an active VU: altered wound edge, devitalized tissue in the wound bed, increased lesion size, recurrences, constant and frequent pain, intense edema, high exudate quantity, and more severe perilesional area changes.

Such aspects, similar to clinical analysis studies of VUs, can have deleterious effects, causing problems such as sleep loss, fatigue, limited daily living activities, mood changes, depression, body image concerns, and impaired family and social relationships. These factors contribute to poorer QoL and prolonged VU treatment. Consequently, the general state of the wound directly affects the physical and emotional state of patients[8-10].

In what concerns the therapy, the cares provided by the patient or an untrained professional, monitoring in non-specialized centers, and lack of compression therapy were identified as risk factors for maintaining an active VU. Systematic reviews reveal that compression therapy is essential for treating VUs, as its use is associated with decreased recurrence rates, preventing the reopening of healed wounds, and is recommended as an early intervention. Specialized center monitoring can also bring significant improvements in wound healing[8,9].

Therefore, VUs with extensive tissue damage, non-viable tissue in the wound bed, macerated edges, exudate, intense edema, and severe pain may remain active[7,10-11]. Thus, thorough clinical evaluation, appropriate cleaning and aseptic techniques, control of non-viable tissue, use of wound dressings specific to each situation, and guidance on edema prevention and pain management are essential to promote an ideal healing environment[4,9].

Moreover, strengthening and improving integral, effective, efficient, quality, and person and family centered care, especially in PHC, is essential. Early risk factor identification, prevention actions, biopsychosocial assessment, differential diagnosis, and the creation of a multidisciplinary, interdisciplinary, and unique therapeutic plan based on patient needs, focused on significant wound healing improvements and positive patient outcomes[11].

CONCLUSION

This study concludes that sociodemographic, health, and clinical characteristics are directly associated with the maintenance of active ulcers in older adults undergoing venous ulcer treatment. In this context, VUs were found to be more prevalent among older women over 60 years of age. Sociodemographic risk factors for maintaining active lesions included having an economic activity and rented housing.

On the other hand, health conditions such as the presence of neoplasia, altered mental status, medication use, and impaired mobility were shown to be risk factors. Regarding clinical characteristics, factors like altered wound edges, care provided by untrained professionals, presence of non-viable tissue, recurrences, pain, edema, exudate, lack of specialized center follow-up, lack of compression therapy, and alterations in the perilesional area were also risk indicators.

These variables not only contribute to wound persistence but also negatively impact QoL and physical, emotional, and social well-being, as they impair mobility, limit daily activities, cause mood changes, body image concerns, and impair family and social relationships. Therefore, they directly influence negative VU outcomes.

It is thus essential to strengthen and expand PHC for comprehensive, multidisciplinary, specialized, and quality care for individuals with VUs. The goal is to ensure early risk factor identification, differential diagnosis, health education, and effective decision-making to guarantee positive outcomes in this context.

REFERENCES

1. Probst S, Saini C, Gschwind G, Stefanelli A, Bobbink P, Pugliese MT, et al. Prevalence and incidence of venous leg ulcers – A systematic review and meta-analysis. Int Wound J. 2023 Jun 9. Available from: https://doi.org/10.1111/iwj.14272

2. Santos ECSV, Frutuoso AKM, Machado AS, Leite CL, Sousa HR de, Lima KVM, et al. Qualidade de vida de pacientes portadores de úlceras varicosas. Res Soc Dev. 2022 Nov 21;11(15):e394111532381. Available from: https://doi.org/10.33448/rsd-v11i15.32381

3. Hinkle JL, Cheever KH, Overbaugh KJ. Brunner & Suddarth: Tratado de enfermagem médico-cirúrgica. Rio de Janeiro: Guanabara Koogan; 2023.

4. Raffetto JD, Ligi D, Maniscalco R, Khalil RA, Mannello F. Why Venous Leg Ulcers Have Difficulty Healing: Overview on Pathophysiology, Clinical Consequences, and Treatment. J Clin Med. 2020 Dec 24;10(1). Available from: https://doi.org/10.3390/jcm10010029

5. Robles-Tenorio A, Lev-Tov H, Ocampo-Candiani J. Venous Leg Ulcer [Internet]. PubMed. Treasure Island (FL): StatPearls Publishing; 2022. Available from: https://www.ncbi.nlm.nih.gov/books/NBK567802/

6. Berenguer Pérez M, López-Casanova P, Sarabia Lavín R, González de la Torre H, Verdú-Soriano J. Epidemiology of venous leg ulcers in primary health care: Incidence and prevalence in a health center – A time series study (2010-2014). Int Wound J. 2018 Nov 4;16(1):256-65. Available from: https://doi.org/10.1111/iwj.13026

7. Chan KS, Zhiwen Joseph Lo, Wang Z, Priya Bishnoi, Yi Zhen Ng, Chew S, et al. A prospective study on the wound healing and quality of life outcomes of patients with venous leg ulcers in Singapore – Interim analysis at 6 month follow up. Int Wound J. 2023 Mar 13;20(7):2608-17. Available from: https://doi.org/10.1111/iwj.14132

8. Lentsck MH, Baratieri T, Trincaus MR, Mattei AP, Miyahara CTS. Quality of life related to clinical aspects in people with chronic wound. Rev Esc Enferm USP. 2018 Dec 3;52(0). Available from: https://doi.org/10.1590/S1980-220X2017004003384

9. González de la Torre H, Quintana-Lorenzo ML, Perdomo-Pérez E, Verdú J. Correlation between health-related quality of life and venous leg ulcer's severity and characteristics: a cross-sectional study. Int Wound J. 2016 Apr 25;14(2):360-8. Available from: https://doi.org/10.1111/iwj.12610

10. Finlayson K, Miaskowski C, Alexander K, Liu WH, Aouizerat B, Parker C, et al. Distinct Wound Healing and Quality-of-Life Outcomes in Subgroups of Patients With Venous Leg Ulcers With Different Symptom Cluster Experiences. J Pain Symptom Manage. 2017 May;53(5):871-9. Available from: https://doi.org/10.1016/j.jpainsymman.2016.12.336

11. Silva WT, Ávila MR, Frois L, Nepomuceno I, Geraldo L, Madureira FP, et al. Differences in health-related quality of life in patients with mild and severe chronic venous insufficiency: A systematic review and meta-analysis. J Vasc Nurs. 2021 Dec 1;39(4):126-33. Available from: https://doi.org/10.1016/j.jvn.2021.09.002

12. Pontes WF, Bernardo THL, Cartaxo AR, Moreira A da S, Sarmento P de A. Tecnologias para mensuração de feridas crônicas. REAS [Internet]. 2024 Jan 28 [cited 2024 May 10];24(1):e14404. Available from: https://acervomais.com.br/index.php/saude/article/view/14404

13. Lazar M, Ershadi S, Bolton L, Phillips T. Patient-centered Outcomes for Individuals with a Venous Leg Ulcer: A Scoping Review. Adv Skin Wound Care. 2023 Jan;36(1):10-7. Available from: https://doi.org/10.1097/01.ASW.0000902496.57391.80

Authors
Matheus Medeiros de Oliveira
https://orcid.org/0000-0002-1747-3141
Mario Lins Galvão de Oliveira
https://orcid.org/0009-0008-2246-7361
Isadora Costa Andriola
https://orcid.org/0000-0003-3446-675X
Sandra M.ª da Solidade Gomes Simões de Oliveira Torres
https://orcid.org/0000-0003-3843-4632
Mayara Priscilla Dantas Araújo
https://orcid.org/0000-0002-0611-2949
Gilson de Vasconcelos Torres
https://orcid.org/0000-0003-2265-5078

Corresponding Author/Autora Correspondente
Matheus Medeiros de Oliveira – Universidade Federal do Rio Grande do Norte, Natal, Brasil.
matheusmedeiros473@hotmail.com

Authors' contributions/Contributos dos autores
MMO: Writing – original draft.
MO: Writing – original draft.
IA: Writing – original draft.
ST: Writing – original draft.
MA: Writing – original draft.
GT: Conceptualization, formal analysis, supervision, writing – review & editing.
All authors have read and agreed with the published version of the manuscript.

Ethical Disclosures
Conflicts of Interest: The authors have no conflicts of interest to declare.
Financial Support: The present work was carried out with the support of the Coordination for the Improvement of Higher Education Personnel – Brazil (CAPES) – Financing Code 001.
Provenance and Peer Review: Not commissioned; externally peer reviewed.

Responsabilidades Éticas
Conflitos de Interesse: Os autores declararam não possuir conflitos de interesse.
Suporte Financeiro: O presente trabalho foi realizado com apoio da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) – Código de Financiamento 001.
Proveniência e Revisão por Pares: Não comissionado; revisão externa por pares.

Table 1 – Distribution of sociodemographic aspects by patient outcome. Natal/RN, 2024.

Sociodemographic aspects		Venous ulcer		p-value
		Active n (%)	Healed n (%)	
Gender	Female	46(44.7)	29(28.2)	0.476
	Male	15(14.6)	13(12.6)	
Age Group	≥ 60 years	37(35.9)	31(30.1)	0.166
	Up to 59 years	24(23.3)	11(10.7)	
Marital Status	Single, widowed, divorced	29(38.3)	24(23.3)	0.338
	Married/Stable Union	32(31.1)	18(17.5)	
Income (MW)	Up to 1 MW	38(36.9)	31(30.1)	0.222
	> 1 MW	23(22.3)	11(10.7)	
Occupation	Active	36(35)	8(7.8)	**<0.001**
	Non-active	25(24.3)	34(33)	
Housing Situation	Rented	9(8.7)	1(1.0)	**0.037***
	Owned	52(50.5)	41(39.8)	
Education	Illiterate/literate Elementary school	41(39.8)	35(34.0)	0.068
	High school and college	20(19.4	7(6.8)	

MW: Minimum wage.
*Fisher's Exact Test.

Table 2 – Distribution of health characteristics by patient outcome. Natal/RN, 2024.[ᴿᴿ]

Health characteristics		Venous ulcer		p-value
		Active n (%)	Healed n (%)	
Hypertension	Present	46(44.7	29(28.2)	0.476
	Absent	15(14.6	13(12.6)	
Diabetes	Present	35(34)	24(23.3)	0.981
	Absent	26(25.2)	18(17.5)	
Neoplasia	Present	36(35)	8(7.8)	**<0.001**
	Absent	25(24.3)	34(33)	
Medications	Using	9(8.7)	1(1)	**0.037***
	Not using	52(50.5)	41(39.8)	
Drinking/Smoking	Present	41(39.8)	35(34)	0.068
	Absent	20(19.4)	7(6.8)	
Allergies	Present	23(22.3)	13(12.6)	0.480
	Absent	38(36.9)	29(28.2)	
Vesical elimination	Altered	8(7.8)	2(2.9)	0.159*
	Normal	53(51.5)	40(38.8)	
Intestinal elimination	Altered	10(9.7)	6(5.8)	0.772
	Normal	51(49.5)	36(35)	
Body hygiene	Altered	16(15.5)	6(5.8)	0.146
	Normal	45(43.7)	36(35)	
Mobility	Altered	22(21.4)	5(4.9)	**0.006**
	Normal	39(37.9)	37(35.9)	
Mental status	Altered	19(18.4)	1(1)	**<0.001***
	Normal	42(40.8)	41(39.8)	

*Fisher's Exact Test.

Table 3 – Distribution of clinical characteristics by patient outcome. Natal/RN, 2024.[55]

Clinical characteristics		Venous ulcer		p-value
		Active n (%)	Healed n (%)	
Lesion size	Increase or remained the same	25(24.3)	0(0.0)	**<0.001***
	Closure/reduction of lesion	36(35)	42(40.8)	
Recurrences	One or more times	20(19.4)	0(0.0)	**<0.001***
	No recurrences	41(39.8)	42(40.8)	
Pain frequency	Constant	18(17.5)	0(0.0)*	**<0.001**
	Sometimes or absent	43(41.7)	42(40.80	
Pain intensity	High (8 to 10)	22(21.4)	0(0.0)*	**<0.001**
	Moderate (4 to 7), Low (0 to 3) or absent (0)	39(37.9)	42(40.8)	
Edema presence	**Constant**	17(16.5)	0(0.0)	**<0.001***
	Sometimes or absent	44(42.7)	42(40.8)	
Edema intensity	Intense (4+/4+)	17(16.5)	0(0.0)	**<0.001***
	Moderate (2+ a 3+/4+), Low (1+/4+) or absent	44(42.7)	42(40.8)	
Lesion location	Malleolar/foot	34(33)	18(17.5)	0.199
	Middle third, upper leg	27(26.2)	24(23.3)	
Wound bed	Fibrin/Necrosis	25(24.3)	0(0.0)	**<0.001***
	Granulation, Epithelialized or Healed	36(35)	42(40.8)	
Perilesional area	Dehydration/Extensive Hemosiderosis, Itching, and Lipodermatosclerosis	20(19.4)	5(4.9)	**0.015**
	Peeling/Moderate Hemosiderosis, itching, Lipodermatosclerosis or Hydrated	41(39.8)	37(35.9)	
Number of wounds	Two or more	10(9.7)	3(2.9)	0.165*
	One wound	51(49.5)	39(37.9)	
Exudate quantity	High/Moderate	16(15.5)	0(0.0)	**<0.001**
	Low/Absent	45(43.7)	42(40.8)	
Exudate type	Purulent/Bloody	10(9.7)	0(0.0)	**0.006***
	Serous/Absent	51(49.5)	42(40.8)	
Odor	Present	9(8.7)	0(0.0)	**0.009***
	Absent	52(50.5)	42(40.8)	
Lesion Edge	Altered	29(28.2)	0(0.0)	**<0.001***
	Normal or healed	32(31.1)	42(40.8)	
Treatment Duration	More than 6 months	61(59.2)	29(29.2)	**<0.001***
	<6 months	0(0.0)	13(12.6)	
Treatment Location	UBS, USF, HUOL, municipal Hospital	61(59.2)	42(40.8)	–
Who performs out-of-hospital bandage	Own Patient/ Untrained professional	35(34)	4(3.9)	**<0.001***
	Professional/trained caregiver	26(25.2)	38(36.9)	
User tracking	UBS	13(12.6)	0(0.0)	**0.001***
	CEPTUC	48(46.6)	42(40.8)	
Use of compression therapy	No	14(13.6)	0(0.0)	**0.001***
	Yes	47(45.6)	42(40.8)	
Blood tests	Absent	8(7.8)	3(2.9)	0.335*
	Present	53(51.5)	39(37.9)	
Urine tests	Absent	61(59.2)	41(939.8)	0.226*
	Present	0(0.0)	1(1.0)	
Doppler examination	Absent	46(44.7)	34(33)	0.507
	Present	15(14.6)	8(7.8)	

CEPTUC: Specialized Center for the Prevention and Treatment of Chronic Ulcers; HUOL: Onofre Lopes University Hospital; UBS: Basic Health Unit; USF: Family Health Unit.
*Fisher's Exact Test.