




# Frailty syndrome, feelings of impotence and functional capacity in elderly patients with venous ulcers

*Síndrome de fragilidade, sentimento de impotência e capacidade funcional em idosos portadores de úlcera venosa*

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## ■ ABSTRACT

**Introduction:** Chronic venous ulcers have a negative impact on the physical, psychic, and social domains, affecting the quality of life of patients, especially the elderly. This study aimed to assess frailty, functional capacity, and feelings of helplessness in older people with venous ulcers. **Method:** 112 older people were divided into two groups according to the presence or absence of venous ulcers. All patients were interviewed using the Edmonton Frail Scale (EFS), Health Assessment Questionnaire-20 (HAQ-20), and the Impotence Feelings Measurement Instrument (IMSI) from May 2017 to August 2018. **Results:** Regarding the EFS score, 76.8% of patients with venous ulcers were classified as vulnerable and frail, compared to 28.6% of patients in the group without ulcers. Scores on the HAQ-20 showed statistically significant differences between groups in all categories of the instrument, indicating that older people with venous ulcers had reduced general functional capacity compared to older people without ulcers. The mean IMSI score was 41.2 for the group with venous ulcers and 33.4 for the group without ulcers. **Conclusion:** Venous ulcers had a negative impact on functional capacity and increased frailty and feelings of powerlessness in the elderly.

**Keywords:** Aged; Frail elderly; Aging; Varicose ulcer; Quality of life.

## ■ RESUMO

**Introdução:** Úlceras venosas crônicas exercem impacto negativo nos domínios físico, psíquico e social, afetando a qualidade de vida de pacientes, especialmente os idosos. O objetivo deste estudo foi avaliar o nível de fragilidade, capacidade funcional e sentimento de impotência em idosos com úlcera venosa. **Método:** Um total de 112 idosos foram distribuídos em dois grupos de acordo com a presença ou ausência de úlcera venosa. Todos os pacientes foram entrevistados utilizando-se os questionários Edmonton Frail Scale (EFS), Health Assessment Questionnaire-20 (HAQ-20) e o Instrumento de Medida de Sentimento de Impotência (IMSI) no período de maio de 2017 a agosto de 2018. **Resultados:** Em relação à pontuação na EFS, 76,8% dos pacientes com úlcera venosa foram classificados como vulneráveis e frágeis, em comparação a 28,6% dos pacientes do grupo sem úlcera. Pontuações no HAQ-20 mostraram diferenças estatisticamente significantes entre os grupos em todas as categorias do instrumento, indicando que idosos com úlcera venosa apresentavam redução da capacidade funcional geral em comparação aos idosos sem úlcera. A pontuação média para o IMSI foi de 41,2 para o grupo com úlcera venosa e 33,4 para o grupo sem úlcera. **Conclusão:** Úlceras venosas causaram impacto negativo na capacidade funcional e aumento de fragilidade e sentimento de impotência nos idosos.

**Descritores:** Idoso; Idoso fragilizado; Envelhecimento; Úlcera varicosa; Qualidade de vida.

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## INTRODUCTION

Since the middle of the last century, significant changes have been taking place in the demographic and health patterns of the world's population, leading to significant growth in the elderly population, many of whom have some chronic diseases. It is estimated that, in 2025, Brazil will have the sixth largest elderly population in the world, around 32 million people<sup>1-4</sup>.

The negative impact of chronic venous ulcers on quality of life is particularly reported concerning pain, physical function, and mobility domains<sup>5-8</sup>. Depression and social isolation are also reported as manifestations resulting from the presence of venous ulcers<sup>7-11</sup>.

Most older people with venous ulcers feel frustrated, impotent, lose faith in the treatment and feel vulnerable, unable to carry out daily activities<sup>8,12-15</sup>, culminating in growing dependence, whose evolution can change and even be prevented or reduced if there is adequate environment and assistance<sup>11,16</sup>. Dependence can also be considered as a state in which people find themselves lacking or losing autonomy (physical, psychological, social) and needing help to carry out basic activities. It is a serious health problem that interferes with the quality of life of the elderly and their caregivers<sup>14,17</sup>.

When evaluating the functional capacity of older people with venous ulcers, it is observed that patients have a reduced capacity for self-care and meeting basic needs<sup>6,9,12</sup>. Functional capacity or limitation can be defined as the individual's ability to maintain physical and mental capacities in basic and instrumental activities<sup>15,16</sup>.

The frailty in the elderly with venous ulcers becomes chronic, resulting in a feeling of impotence, low self-esteem, and self-image<sup>16-19</sup>.

Most studies about the frailty syndrome and elderly individuals with chronic diseases are justified because this condition makes this population more prone to progressive reduction in functional capacity, repeated hospitalizations, and greater demand for health services at different levels<sup>17,18,20-24</sup>.

In this sense, the frailty syndrome acquires importance as a target for investigations and interventions because of the impact on elderly individuals, especially those with venous ulcers, their families, and society as a whole. No national or international literature studies evaluated the frailty syndrome and its consequences (decreased functional capacity in activities of daily living and instrumental activities of daily living, feelings of impotence and its consequences) in elderly patients with venous ulcers and who also consider pre-frail individuals.

## OBJECTIVE

Assess the level of frailty, feelings of powerlessness, and functional capacity in older people with venous ulcers.

## METHOD

Analytical, cross-sectional, descriptive, controlled study, approved by the Institutional Ethics Committee, on opinion: 2,939,899, whose data were collected at the Federal University of São Paulo from March 2017 to August 2018.

Two groups of participants over 60 were established: with venous ulcer and without ulcer, each group with 56 patients.

The inclusion criteria for both groups were: 60 years or older and being literate, adding an ankle/arm index between 1.0 and 1.4 for the group with venous ulcers. The non-inclusion criteria for both groups were: mixed or arterial ulcer, sequelae of stroke, or lower limb amputation.

Data were collected through interviews using self-administered and public domain questionnaires, including a form for collecting demographic data, the Edmonton Frail Scale (EFS) instrument<sup>18</sup>, the Health Assessment Questionnaire-20 (HAQ-20)<sup>21</sup>, and the Instrument for Measuring Feelings of Powerlessness (IMSI)<sup>15</sup>.

The EFS was chosen to assess whether individuals in both groups were frail or pre-frail. This instrument assesses the level of frailty in nine domains represented by 11 items, including cognition, general health status and health description, functional independence, social support, medication use, nutrition, mood, continence, and functional performance. The scoring ranges for frailty level analysis are 0-4, no frailty; 5-6, apparently vulnerable; 7-8, mild frailty; 9-10, moderate frailty; 11 or more, severe frailty, with a maximum score of 17<sup>18</sup>.

The HAQ-20 consists of 20 questions divided into eight categories representing functional activities – getting dressed, getting up, eating, walking, hygiene, reaching, gripping, and other activities. The patient's responses are measured on a scale ranging from zero (no difficulty) to three (unable to do). The final score is calculated by the sum of the components divided by 8 and can be classified as HAQ-20 from 0 to 1, mild deficiency; HAQ-20 >1 to 2, moderate deficiency; and HAQ-20 >2 to 3, severe deficiency<sup>21</sup>.

The IMSI consists of 12 Likert-type questions with a five-point frequency ranging from "never" to "always." In this scale, the following scores are assigned to items that mean the presence of a feeling of powerlessness: 1 = never; 2 = rarely; 3 = sometimes, 4 = often, and 5 = always, totaling a maximum of 60 points. The 12 questions are divided into three domains: the ability to perform a behavior (Cronbach's alpha = 0.845), the perceived ability to make decisions (Cronbach's alpha = 0.834), and the emotional response to controlling situations (Cronbach's alpha = 0.578). The scores are

added by domain and total score; the higher the score, the more intense the feeling of powerlessness<sup>15</sup>.

Data were entered and analyzed using the SPSS-8.0 statistical program (SPSS Inc., Chicago, IL, USA). Pearson’s chi-square test was used to assess the homogeneity of responses, comparing the two study groups, with a significance level equal to 0.05 (p<0.05). Comparison between groups was performed using the Mann-Whitney test. Spearman’s correlation test was applied to assess the correlation of continuous variables with semicontinuous variables.

### RESULTS

The sample consisted of 112 patients with the following sociodemographic characteristics: 68 (60.7%) were female, 56 (50.0%) had venous ulcers, 64 (57.1%) were 70 years old or older, 43 (38.4%) could read, and write; 88 (78.6%) were retired; 45 (40.2%) were married, 40 (35.7%) lived with family members, 100 (89.3%) used medication, 60 (53.6%) had an adequate body mass index (BMI), 76 (67.9%) did not practice physical activity, and 84 (75.0%) suffered a fall in the 30 days prior to the interview.

According to the mean overall EFS score by group (Table 1), patients with venous ulcers were considered vulnerable (mean EFS = 6.46) in contrast to patients without ulcers who were identified as not vulnerable (mean EFS = 3.38), with a statistically significant difference between groups (p=0.001).

**Table 1.** Comparison of Edmonton Frail Scale scores between groups.

Group	EFS - Overall Score				p-Value
	n	Mean	Median	SD	
With ulcer	56	6.46	6.0	3,086	
No ulcer	56	3.38	3.0	2,253	0.001*
Total	112	4.92	5.0	3.105	

EFS: Edmonton Frail Scale; n: sample size; SD: standard deviation; \*: significance level p<0.05 (Chi-square test).

Regarding the EFS score by category, patients in the ulcer group were concentrated in the “apparently vulnerable” and “mildly frail” categories, while the group without ulcers was concentrated in the “non-frail” category. Table 2 indicates that 76.8% (n=43) of patients with venous ulcers were classified as vulnerable and fragile, compared to 28.6% (n=16) of patients in the group without ulcers, with a statistically significant difference between groups (p=0.001).

Table 3 shows that patients with venous ulcers had greater difficulty performing activities of daily living (mean overall HAQ-20 = 1.08) compared to patients without ulcers (mean overall HAQ-20 = 0.37), with a difference statistically significant between groups (p=0.002).

Patients with venous ulcers had a stronger feeling of powerlessness than those without it. It is observed in Table 4 that the average score for the IMSI was 41.2 for the group with venous ulcer and 33.4 for the group without ulcer, with a statistically significant difference between groups (p=0.001).

### DISCUSSION

When the older person acquires a wound, he may find it difficult to carry out various activities in his daily life. Often, these changes in activities of daily living can cause emotional, psychological, and biological suffering in individuals, leading to changes in style and quality of life and sleep, making it impossible for them to carry out their social activities, perform self-care, and participate in leisure and family life, in addition to causing absenteeism at work and even loss of work functions in the productive age group. These factors can make the elderly feel fragile<sup>22-26</sup>.

In this study, most older people without ulcers were not frail, while most older people with venous ulcers were vulnerable.

Being frail was related to higher incidences of hospitalization during follow-up. Results were shared

**Table 2.** Distribution of the level of frailty in the study groups according to Edmonton Frail Scale.

Level of Fragility	Group						p-Value
	With ulcer		Without ulcer		Total		
	n	%	n	%	n	%	
Does not present Fragility	13	23.2	40	71.4	53	47.3	
Apparently Vulnerable	16	28.6	11	19.6	27	24.1	0.001*
Mild frailty	12	21.4	4	7.1	16	14.3	
Moderate frailty	11	19.6	0	0.0	11	9.8	
Severe frailty	4	7.1	1	1.8	5	4.5	
Total	56	100	56	100	112	100	

EFS: Edmonton Frail Scale; n: sample size; \*: significance level p<0.05 (Chi-square test)

**Table 3.** Comparison of mean scores in Health Assessment Questionnaire-20 categories between groups.

Categories	Group									p-Value
	With ulcer			Without ulcer			Total			
	No	Mean	SD	n	Mean	SD	n	Mean	SD	
Dress up/ Take care of himself	56	0.86	0.841	56	0.20	0.401	112	0.53	0.735	0.001*
Wake up	56	1.07	0.912	56	0.39	0.593	112	0.73	0.838	0.002*
Eat	56	0.52	0.687	56	0.13	0.384	112	0.32	0.586	0.002*
To walk	56	1.59	0.890	56	0.57	0.759	112	1.08	0.969	0.001*
Hygiene	56	1.00	0.653	56	0.29	0.594	112	0.64	0.815	0.001*
Catch up	56	1.13	0.974	56	0.61	0.679	112	0.87	0.875	0.001*
Hold	56	1.18	1.081	56	0.36	0.616	112	0.77	0.968	0.001*
Others Activities	56	1.32	0.917	56	0.43	0.599	112	0.87	0.892	0.001*
General	56	1.08	0.729	56	0.37	0.407	112	0.73	0.686	0.002*

HAQ-20: Health Assessment Questionnaire-20; n: sample size; SD: standard deviation; \*: significance level  $p < 0.05$  (Mann-Whitney non-parametric test).

**Table 4.** Comparison of the mean score in the Feelings of Powerlessness Measurement Instrument domains between groups.

Domains	Group									p-Value
	With ulcer			Without ulcer			Total			
	n	Mean	SD	n	Mean	SD	n	Mean	SD	
Ability to perform Behavior	56	15.59	2,130	56	9.04	3.063	112	12.31	4.211	0.001*
Ability to take instructions	56	11.96	2,607	56	13.95	3,272	112	12.96	3.109	0.001*
Emotional response to control situations	56	13.54	2,565	56	10.57	3.173	112	12.05	3.235	0.001*
General	56	41.21	4,853	56	33.41	7.081	112	37.31	7.202	0.001*

IMSI: Instrument for Measuring Feelings of Powerlessness; n: sample size; SD: standard deviation; \*: significance level  $p < 0.05$  (Mann-Whitney non-parametric test).

with other scientific evidence, especially when there was a prevalence ranging from 50% to 80% of frail among hospitalized elderly<sup>25-29</sup>.

In a study in which the authors verified the levels of frailty and functional independence in instrumental activities of daily living among the elderly identified as frail, it was found: 29.8% with minimal dependence/supervision and 81.9% with partial dependence for instrumental activities of daily living<sup>30</sup>. The authors showed greater dependence on activities in frail older people, with females having a higher prevalence of frailty<sup>30</sup>.

In this research, the means of the total score of elderly patients with venous ulcers in the HAQ-20 and IMSI instruments were high, indicating that these individuals have difficulties performing some daily living activities.

Deficits in functional, cognitive, and psychic capacity are the main causes of loss of independence<sup>1,15</sup>, leading the elderly to need greater care to carry out activities of daily living.

This issue has become a challenge to be faced by elderly patients with venous ulcers since the population's

life expectancy has increased, leading to a consequent growth in the number of older people with chronic disease and functional disabilities.

Bearing in mind that the functional capacity of human beings declines with age, it is necessary to plan strategies that improve the lifestyle of these individuals with or without wounds, especially concerning programs that promote and improve muscle and joint strength, with social integration inside and outside the family context. These actions would make it possible to minimize the dependence of these individuals on family, social, leisure, and daily activities<sup>28,29</sup>.

This research reinforces the need to direct the health care of elderly patients with venous ulcers, seeking to identify, in the daily routine of health services, whether in hospitals, outpatient clinics, the Family Health Program, and others, the presence of reduced functional capacity and increase in fragility and a feeling of powerlessness among patients who live with the wound in their daily lives, the main care needs of this population and the caregiver's knowledge to deal with the assisted person's disabilities. Furthermore,

given the needs that have arisen in recent decades with the increase in chronic diseases and patients with wounds, it is imperative that the academic training and qualification of health professionals value the content and care practice.

## CONCLUSION

Venous ulcers negatively impact functional capacity and increase frailty and feelings of powerlessness in the elderly.

## COLLABORATIONS

**EGA** Analysis and/or data interpretation, Conception and design study, Conceptualization, Data Curation, Final manuscript approval, Formal Analysis, Investigation, Methodology, Project Administration, Realization of operations and/or trials, Resources, Visualization, Writing - Original Draft Preparation, Writing - Review & Editing.

**LMF** Analysis and/or data interpretation, Conception and design study, Conceptualization, Final manuscript approval, Formal Analysis, Methodology, Project Administration, Supervision, Visualization, Writing - Review & Editing.

**GMS** Analysis and/or data interpretation, Conception and design study, Conceptualization, Final manuscript approval, Formal Analysis, Methodology, Project Administration, Supervision, Visualization, Writing - Original Draft Preparation, Writing - Review & Editing.

## REFERENCES

- Rudnicka E, Napierała P, Podfigurna A, Męczekalski B, Smolarczyk R, Grymowicz M. The World Health Organization (WHO) approach to healthy ageing. *Maturitas*. 2020;139:6-11.
- Carvalho JA, Rodríguez-Wong LL. The changing age distribution of the Brazilian population in the first half of the 21st century. *Cad Saúde Pública*. 2008;24(3):597-605.
- Da Mata FA, Pereira PP, Andrade KR, Figueiredo AC, Silva MT, Pereira MG. Prevalence of Frailty in Latin America and the Caribbean: A Systematic Review and Meta-Analysis. *PLoS One*. 2016;11(8):e0160019. DOI: 10.1371/journal.pone.0160019
- Brasil. Instituto Brasileiro de Geografia e Estatística (IBGE). *Projeção da população do Brasil e das Unidades de Federação [Internet]*. Rio de Janeiro: IBGE; 2021. [acesso 2021 Nov 15]. Disponível em: <http://www.ibge.gov.br/apps/populacao/projecao/index.html>
- Salomé GM, de Almeida SA, Pereira MT, Massahud Junior MR, Moreira CN, de Brito MJ, et al. The impact of venous ulcers on body image and self-esteem. *Adv Skin Wound Care*. 2016;29(7):316-21.
- Barnsbee L, Cheng Q, Tulleners R, Lee X, Brain D, Pacella R. Measuring costs and quality of life for venous leg ulcers. *Int Wound J*. 2019;16(1):112-21.
- de Almeida SA, Salomé GM, Dutra RA, Ferreira LM. Feelings of powerlessness in individuals with either venous or diabetic foot ulcers. *J Tissue Viability*. 2014;23(3):109-14.
- Pereira RC, Santos EF, Queiróz MA, Massahud Junior MR, Carvalho MR, Salomé GM. Depression and wellness in elderly patients with venous ulcers. *Rev Bras Cir Plást*. 2014;29(4):567-74.
- Salomé GM, de Brito MJ, Ferreira LM. Impact of compression therapy using Unna's boot on the self-esteem of patients with venous leg ulcers. *J Wound Care*. 2014;23(9):442-6.
- Santos LS, Camacho ACLF, Oliveira BGRB, Nogueira GA, Joaquim FL. Influence of venous ulcer on patients' quality of life: an integrative review. *Rev Enferm UFPE On Line*. 2015;9(Suppl. 3):7710-22.
- Araujo MOPH, Ceolim MF. Assessment of the level of independence of elderly residents in long-term care institutions. *Rev Esc Enferm USP*. 2007;41(3):378-85.
- Salomé GM, de Almeida SA, Ferreira LM. Association of sociodemographic factors with hope for cure, religiosity, and spirituality in patients with venous ulcers. *Adv Skin Wound Care*. 2015;28(2):76-82.
- Borges CL, Freitas MC, Guedes MVC, Silva MJ, Leite SFP. Nursing clinical practice in the frail elderly care: reflection study. *Rev Enferm UFPE On Line*. 2016;10(Suppl. 2):914-8.
- Nakatani AY, Silva LB, Bachion MM, Nunes DP. Functional capacity in elderly in the community and interventions proposed in the team health. *Rev Eletr Enferm*. 2009;11(1):144-50.
- Braga CG, Cruz DALM. Powerlessness Assessment Tool for adult patients. *Rev Esc Enferm USP*. 2009;43(esp):1063-70.
- Pegorari MS, Tavares DM. Factors associated with the frailty syndrome in elderly individuals living in the urban area. *Rev Latino-Am Enferm*. 2014;22(5):874-82.
- Ferraresi JR, Prata MG, Scheicher ME. Assessment of balance and level of functional independence of elderly persons in the community. *Rev Bras Geriatr Gerontol*. 2015;18(3):499-506.
- Fabrizio-Wehbe SC, Schiaveto FV, Vendrusculo TR, Haas JV, Dantas RA, Rodrigues RA. Cross-cultural adaptation and validity of the 'Edmonton Frail Scale - EFS' in a Brazilian elderly sample. *Rev Latino-Am Enferm*. 2009;17(6):1043-9.
- Liu M, Hou T, Nkimbeng M, Li Y, Taylor JL, Sun X, et al. Associations between symptoms of pain, insomnia and depression, and frailty in older adults: a cross-sectional analysis of a cohort study. *Int J Nurs Stud*. 2021;117:103873. DOI: <https://doi.org/10.1016/j.ijnurstu.2021.103873>
- Sposito G, Neri AL, Yassuda MS. Advanced Activities of Daily Living (AADLs) and cognitive performance in community-dwelling elderly persons: Data from the FIBRA Study - UNICAMP. *Rev Bras Geriatr Gerontol*. 2016;19(1):7-20.
- Ferraz MB, Quaresma MR, Aquino LR, Atra E, Tugwell P, Goldsmith CH. Reliability of pain scales in the assessment of literate and illiterate patients with rheumatoid arthritis. *J Rheumatol*. 1990;17(8):1022-4.
- Bôas NC, Salomé GM, Ferreira LM. Frailty syndrome and functional disability among older adults with and without diabetes and foot ulcers. *J Wound Care*. 2018;27(7):409-16.
- Salomé GM, Ferreira LM. The impact of decongestive physical therapy and elastic bandaging on the control of pain in patients with venous ulcers. *Rev Col Bras Cir*. 2018;45(2):e1385. DOI: 10.1590/0100-6991e-20181385
- Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. *Lancet*. 2013;381(9868):752-62.
- Makary MA, Segev DL, Pronovost PJ, Syin D, Bandeen-Roche K, Patel P, et al. Frailty as a predictor of surgical outcomes in older patients. *J Am Coll Surg*. 2010;210(6):901-8.
- Espauella-Ferrer M, Espauella-Panicot J, Noell-Boix R, Casals-Zorita M, Ferrer-Sola M, Puigoriol-Juventeny E, et al. Assessment of frailty in elderly patients attending a multidisciplinary wound care centre: a cohort study. *BMC Geriatr*. 2021;21(1):727. DOI: 10.1186/s12877-021-02676-y

27. Vicente JB, Mariano PP, Buriola AA, Paiano M, Waidman MA, Marcon SS. Acceptance of patients with mental illness: a family perspective. *Rev Gaúcha Enferm.* 2013;34(2):54-61.
28. Costa EC, Nakatani AY, Bachion MM. Elder's community capacity to develop Daily Life Activities and Daily Instrumental Life Activities. *Acta Paul Enferm.* 2006;19(1):43-8.
29. Silva MCP, Salomé GM, Miguel P, Bernardino C, Eufrásio C, Ferreira LM. Evaluation of feelings helplessness and body image in patients with burns. *Rev Enferm UFPE On Line.* 2016;10(6):2134-40.
30. Fhon JRS, Diniz MA, Leonardo KC, Kusumota L, Haas VJ, Rodrigues RAP. Frailty syndrome related to disability in the elderly. *Acta Paul Enferm.* 2012;25(4):589-94.

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