
ASSESSMENT OF PAIN DURING LEG ULCERS' DRESSING CHANGE¹

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ABSTRACT: The aim in this study was to assess the pain resulting from leg ulcers during dressing change and to identify the most painful procedures in the opinion of SUS patients. Cross-sectional study with the participation of 76 patients with leg ulcers, 69.8% being male with an average age of 57.8 (sd=13.2) who were admitted at Primary Health Care Units and at the Outpatient Care Centre of *Goiania Hospital das Clínicas*, in the state of Goias, Brazil. For the assessment of pain, a Numerical Rating Scale (1-10) and the McGill Pain Questionnaire were used. The occurrence of pain during dressing change was 76.3%, with a moderate intensity (Mean=5, Q1=3, Q3=8, Min=1, Max=10). The degree of pain was described as tiring (63.2%) and throbbing (55.3%). The most painful procedures in the opinion of the participants included cleaning the wound and removing the previous dressing. The pain during dressing change for leg ulcers was frequent and increased during wound cleaning and removal of previous dressing.

DESCRIPTORS: Pain assessment. Leg ulcer. Dressings. Pain. Nursing.

AVALIAÇÃO DA DOR DURANTE A TROCA DE CURATIVO DE ÚLCERAS DE PERNA

RESUMO: O estudo visou avaliar a dor em úlceras de perna, durante a troca de curativo e identificar os procedimentos mais dolorosos na opinião de usuários do SUS. Estudo transversal, conduzido com 76 usuários com úlceras de perna, sendo 69,8% homens, com média de idade de 57,8 anos (dp=13,2), atendidos em Unidades Básicas de Saúde e Ambulatório do Hospital das Clínicas de Goiânia, Goiás. Para avaliação da dor utilizou-se a Escala Numérica (0-10) e o Questionário de Dor de McGill. A ocorrência de dor durante o curativo foi de 76,3%, de intensidade moderada (Med=5, Q1=3, Q3=8, Min=1; Máx=10). Qualitativamente, a dor foi descrita como cansativa (63,2%) e latejante (55,3%). Os procedimentos mais dolorosos na opinião dos usuários incluíram a limpeza da ferida e a retirada do curativo anterior. A dor durante a troca de curativo de úlceras de perna foi frequente e exacerbada no momento da limpeza e retirada do curativo anterior.

DESCRIPTORIOS: Medição da dor. Úlcera da perna. Bandagens. Dor. Enfermagem.

EVALUACIÓN DEL DOLOR DURANTE LA CURACIÓN EN LAS ÚLCERAS DE LA PIERNA

RESUMEN: El objetivo de este estudio fue evaluar el dolor en las úlceras de pierna durante la curación. Estudio transversal con 76 participantes, 69,8% hombres, edad media de 57,8 años (DE=13,2), asistido por la demanda espontánea de septiembre 2007 hasta febrero 2008, en la Unidad Básica de Salud y Ambulatoria de un *Hospital de Clínicas de Goiânia*. La intensidad y calidad del dolor se midió utilizando una escala numérica (0-10) y el McGill Pain Questionnaire. La ocurrencia del dolor durante el cambio de apósito fue del 76,3%, de intensidad moderada (Md=5, Q1=3, Q3=8, Min=1 Max=10) exacerbada durante la limpieza de la herida. La calidad del dolor fue expresada por fatigoso (63,2%), y pulsátil (55,3%). El dolor en las úlceras de la pierna fue constante, exacerbada durante cambio de apósito.

DESCRIPTORIOS: Dimensión del dolor. Úlcera de la pierna. Vendajes. Dolor. Enfermería.

INTRODUCTION

Ulcers affecting lower limbs are wounds which can occur naturally or result from an accident and are related to systemic pathological processes or to the affected limb and that do not heal in a specific period of time.¹

Being considered as a public health care problem due to its high incidence and socio-economic importance, leg ulcers are predominant among chronic wounds that affect the general population (0.6 to 3.6/1000 people), cause pain and reduce the capacity to walk around, therefore resulting in dependency, economic loss and social isolation due to its appearance and unpleasant smell.¹⁻³

Pain occurs in 28% to 65% of the people with leg ulcers and is sometimes described as intense.^{4,5} This experience results in concern for patients and health care professionals⁶ because it interferes with the wound treatment⁷ and the quality of life of these patients and the people they live with.^{5,8}

Wound pain can result from surgeries like debridement, removal, desiccation and surface slide, cleaning, wound etiology, movement, friction, ischemia and tissue hypoxia, as well as from environmental and psycho-social factors.^{6,9} Furthermore, people with chronic wounds feel additional pain during the dressing change and this can cause anticipated suffering and unnecessary damages.^{8,10}

During dressing change, the cleaning, debridement and removal of the previous dressing are procedures that must be carefully performed, as errors and inadequacies can cause trauma to the layer and borders of the wound, as well as to the skin surrounding the lesion,^{6,10-11} specially when humidity is insufficient and there is friction and removal of feasible tissue, which intensify the pain level and hinder the healing process.^{4,8,12}

In Brazil, pain related to leg ulcers is little explored. One study¹³, with the participation of 90 patients (81.1% with venous ulcers) in Sao Paulo-SP and Curitiba-PR, showed correlation between the intensity of the worst self-referred pain and loss of sleep, mood and capacity to walk and move. Specifically about venous ulcers, the pain affected people's quality of life and interfered directly with the capacity to maintain work activities.¹⁴

The intensity of pain varies among people, but many people report a very strong pain (scores 7 or 8 on a 10-cm visual analogue scale), like in the case of 28 falcemic patients with an average age of

30 and an average ulcer size of 8cm² in the lower limbs.¹⁵ Amongst 40 people with venous ulcers, the pain intensity, which was measured through an 11-point Numerical Rating Scale, was very strong for the majority.⁵ In relation to this sample, the level of pain was described by way of words from the sensorial and evaluative group of the McGill Pain Questionnaire (Short Form) and affected the quality of life.

This study was developed based on the above and on the importance of knowing the extension of the problem related to pain resulting from leg ulcers, and aimed at: assessing the pain related to leg ulcers and identifying the most painful procedures during dressing change, according to patients in the Unified Health System (SUS) in Goiania, state of Goias, Brazil.

MATERIAL AND METHODS

This is a cross-sectional study undertaken in the city of Goiania, in the state of Goias, Brazil, after approval from the Human and Animal Research Ethics Committee of Goiania General Hospital - Registration number 220/06.

The study was undertaken in 13 Primary Health Care Units which were open 24 hours a day and in the Outpatient Care Centre at *Hospital das Clinicas* at Universidade Federal de Goias. Dressing protocols or other professionals' prescriptions were not found. The dressing changes were done every 24 hours, generally by nursing technicians. The products used daily in the cleaning, debridement and dressing were basically the same in all the health care units studied, including physiological serum, fatty acid and collagenase based cream.

Patients with oncologic wounds and also those who needed assistance to respond the questionnaire were excluded.

Data collection was done in the period from September 2007 to February 2008 by five students from the scientific initiation program and by a professor from the Nursing School at the *Universidade Federal de Goias*, who were trained for the task. An instrument that was standardized, evaluated and refined by nursing professionals experienced in wound treatment was used and contained items related to the occurrence of pain before and after the dressing and also features of painful experience (intensity - measured by way of an 11-point Numerical Rating Scale, with 0 (zero) meaning "no pain" and 10 (ten) "the worst pain ever"). Scores 1, 2, 3 and 4 meant low pain; 5 and

6 meant moderate pain; 7, 8 and 9 meant strong pain. The Numerical Rating Scale is simple, easy to understand even amongst those who only have basic education and presented good reliability.¹⁶ Qualitatively, pain was assessed based on the McGill Pain Questionnaire (MPQ-LF), which was translated into Portuguese¹⁷ and presented 78 pain descriptors, divided into 4 large groups (sensorial, affective, evaluative and mixed) and 299 subgroups; and the pain location was evaluated through body diagrams. The MPQ-LF has been largely used in pain evaluation within the medical field and its validity, reliability and applicability were reinforced. The socio-economic variables included: gender, relating to male (M) or female (F); age (grouped according to age: under 40 years of age; 40-49 years of age; 50-59 years of age, above 60 years of age); level of education (classified into: none/incomplete primary school, completed primary school/incomplete secondary school, completed secondary school, incomplete high school, completed high school, incomplete tertiary education, completed tertiary education and post-graduation); economic level (classified into classes: A, B, C, D and in accordance with the Brazilian Marketers Association/Brazilian Institute of Market Research (ABA/ABIPEME)¹⁸; work status (classified into active, unemployed, on leave, retired); and marital status ("with a partner" and "without a partner"). Concerning the characteristics of the wound, the etiology was investigated (grouped in arterial, venous, diabetic and others); depth of the wound (according to destruction of epidermis, dermis, subcutaneous tissue, muscular fascia, muscular tissue, tendon and bone); time period with the ulcer (classified into: less than a year, one to five years, five to 10 years, over 10 years); and wound location (on the "foot" and on the "leg").

The patients were approached in the waiting rooms of the Primary Health Care Units and the Outpatient Care Centre of UFG Hospital das Clinicas whilst waiting for treatment. During this time and after signing the Informed Consent Term, the collection of socio-economic and demographic information started. The information related to the wound and the pain before and during the treatment was collected in the treatment room by the same people who rotated the daily visits to the health care units, including weekends. In regards to chronic wounds and wounds of patients who used the health care service for long periods, it was possible to meet them on various days and times.

Nurses and nursing technicians who worked in the treatment rooms assisted with the identification of patients who had not been included in the research yet.

Concerning the data analysis, a database was developed, using SPSS version 16.0, and the exploratory analysis was undertaken. The numerical variables were explored by descriptive centrality measures (medium, average and ordinary), descriptive dispersion measures (minimum, maximum, standard deviation) and categorical variables, using simple and relative frequency. The results of the analysis were organized in tables. The association between categorical variables was explored through the chi-square test. In case of association among numerical variables, Spearman's correlation coefficient and the Mann Whitney's test were applied. The alpha value for all tests was set at 5%.

RESULTS AND DISCUSSION

Seventy-six patients suffering from leg ulcers participated in the study, all of them being over 18 years of age and 69.7% being male. The age varied from 20 to 77, and the average was 57.8 (sd=13.2). Fifty percent of them were 60 years old or over, 72.4% belonged to the socio-economic levels D and E, and 61.8% were retired. The level of education was low, being that 39.5% was illiterate or had not completed primary school. In relation to marital status, 56.6% had a partner (Table 1).

The predominance of male patients in the present study was contrary to the findings of two other studies^{13,19} undertaken in Brazil, respectively in the cities of Sao Paulo-SP, Curitiba-PR and Juiz de Fora-MG, which showed the predominance of women. In Goiania, state of Goias, however, a recent study²⁰ with a convenience sample appointed that leg ulcers were more frequent among male patients. The same situation happened in a study with patients suffering from leg ulcers of different etiologies in Maringa-PR, in which men represented 53.0% of the population.¹⁴

The higher incidence of male patients in the present study may be related to the age of the participants (50.0% were under 60), which confirms the assumption that the occurrence of this type of ulcers is underestimated in younger men, who in other situations could assume the care of their own wounds and not seek health care treatment.^{19,21}

The occurrence of these leg ulcers among people over 60 years of age was of 50.0% and the

predominant diseases included Diabetes (40.8%), Systemic Arterial Hypertension (34.2%) and vascular problems (61.8%). Higher incidence of leg ulcers in older patients can be explained by the increase of comorbidities and aggravating circumstances relating to chronic-degenerative diseases, as shown in this study.^{2,19,21}

Table 1 - Distribution of patients suffering from leg and lower limb ulcers admitted into public health care units in Goiânia, according to demographic and socio-economic variables. Goiânia-GO, 2008

Variable	Number	%
Age group		
Under 40	7	9.2
40 to 49	11	14.5
50 to 59	20	26.3
60 and over	38	50.0
Gender		
Male	53	69.7
Female	23	30.3
Level of education		
None/incomplete primary school	30	39.5
Completed primary school/incomplete secondary school	29	38.1
Completed secondary school/incomplete high school	7	9.2
Completed high school/tertiary education incomplete	10	13.2
Completed tertiary education	-	-
Post-graduation	-	-
Socio-economic class		
Class A	2	2.6
Class B	3	3.9
Class C	16	21.1
Class D	32	42.1
Class E	23	30.3
Marital status		
With a partner	43	56.6
Without a partner	33	43.4
Work status		
Active	5	6.6
Unemployed	12	15.8
On leave	12	15.8
Retired	47	61.8

The majority of the patients in this study belonged to the socio-economic classes D and E and was considered low-income (Table 1). Other studies also showed predominance of people in the low socio-economic level.¹⁹⁻²⁰ In the current study,

this finding can be related to the fact that the participants were public health care service patients. These people depend on specialized care service; however, the public health care service is not always adequately prepared to offer the full range of health care service to wounded people. The lack of material and human resources for wound treatment, assessment and nutritional support, as well as the difficult access to the service, were situations often experienced in the development of this study. In that sense, health care professionals' lack of skills for the adequate treatment of leg ulcers is harmful and costly, considering the long time wound treatment demands from the nursing team and the chronicity and reappearance of the wounds, which cause recurring infections and burden the patients, their family members and the health care service itself directly and indirectly.²²

Nurses are qualified professionals to manage the material resources and costs of health care services. It is their function to make decisions in relation to the type of dressing and other necessary material for the efficient treatment of wounds, and this task has to be based on scientific evidences, which support their argument about the need for new products, considering the cost/benefit relation, which is often only noted in the medium to long term.²³

The data in this study showed that venous ulcers corresponded to 51.3% of the cases, followed by diabetic ulcers with 30.3% and by arterial with 10.5%. Other authors found 79.0% of venous ulcers, 15.3% of hypertensive ulcers, 4.8% of mixed ulcers, and 0.9% of other ulcers, including tumors and Hansen's disease.¹⁹ Venous ulcers were also the most frequent (36.0% and 81.1%, respectively) in two other studies,^{13,24} and these findings confirm the higher incidence of these ulcers among people with chronic wounds affecting the lower limbs.¹⁻³

As for the time period with the ulcer, 40.8% of the patients reported that wound began less than a year earlier, 35.5% from one to five years, 9.2% from five to ten years, and 14.5% as more than ten years (Table 2). The number of ulcers that appeared less than a year before was higher than in another study¹³ undertaken in Brazil, which shows occurrence levels of 27.3% and 19.4% respectively. In relation to the depth of the ulcers, 55.3% of them affected the epidermis, the dermis and the subcutaneous tissue, 15.8% the muscular tissue and 14.5% the muscular fascia. Such findings can be related to the higher incidence of venous ulcers.

Table 2 - Classification of leg ulcers among public health care services' patients in Goiania, according to their location, type, time, depth and presence of phlogistic signs. Goiania-GO, 2008

Variable	n	%
Location		
Leg	51	67.1
Foot	25	32.9
Type		
Diabetic	23	30.3
Venous	39	51.3
Arterial	08	10.5
Others	02	2.6
Without diagnosis	04	5.3
Time of existence		
Less than 1 year	31	40.8
1 to 5 years	27	35.5
5 to 10 years	07	9.2
Over 10 years	11	14.5
Depth of ulcer		
Epidermis/dermis/subcutaneous tissue	42	55.3
Muscular fascia	11	14.5
Muscular tissue	12	15.8
Tendon	08	10.5
Bone	03	3.9

The frequency of pain in the wounds during the period previous to the dressing change was of 75.0%. Most patients considered this pain of moderate intensity, as noted by the descriptive pain intensity measures through the Numerical Rating Scale (0-10) shown in table 3. Studies showed that between 28.0% and 93.0% of the people with leg ulcers refer to some type of pain,^{4,13-14,25} which matches the findings of this study. This is a concerning situation, as pain related to chronic wounds leads to long suffering and, as a stressor, it can cause damages to mental health, sleep quality and ability to execute work-related, physical and social activities.

Concerning pain and the type of wound, 52.0% of the patients with diabetic ulcers reported not feeling pain during dressing change, while 34.8% reported light pain; 28.2% of those with venous ulcers reported light or moderate pain while 17.9% reported strong pain; and 37.5% of those with arterial ulcers reported moderate pain while 50.0% strong and the worst pain ever felt. There was a statistically significant statistic association ($p=0.002$) between pain intensity during dressing

change and the type of ulcer. This is an important finding because the professionals in charge of putting on the dressing do not always assess such experience during the procedure, and the lack of information about others' feelings can result in underestimating the pain intensity and in a non-personalized, late and unsatisfactory treatment.

The focus of the studies is not always on characterizing pain intensity in lower limb ulcers, which makes it difficult to compare the findings of different studies. A systematic review of the literature,³ however, showed that the majority of these wounds cause substantial pain, are related to the wound etiology and that 50.0% of the people cannot sleep uninterrupted for periods longer than two hours due to the painful experience, reported as more intense when caused by ischemic and hypertensive ulcers. Studies show that people feeling pain as a result of their wounds report a difficulty to work¹⁴ and a decrease in their quality of life.^{4-5,14}

In table 3, 76.3% of patients reported feeling pain while changing the wound dressing and its intensity was higher than that felt beforehand or, in other words, in the 24 hours following the previous dressing.

There was a positive, moderate and significant correlation ($r=0.57$; $p=0.001$) between the pain scores (before and after changing the wound dressing), extracted through a Numerical Rating Scale (0-10), which indicates that the pain intensity during dressing change can be related to the pain intensity felt beforehand, and the professionals should consider this fact when starting the procedures. It can be emphasized that 11.8% of the patients reported pain of maximum intensity during dressing change (scores 10 in a scale of 0-10).

A study¹³ that investigated the pain intensity resulting from leg ulcers (81.1% of venous etiology) showed general pain average of 3.10; $sd=3.15$ (on a scale of 0-10) and of 7.56; $sd=2.96$ for the worst pain felt in the last week. In another study of people with venous ulcers,²⁴ the pain was moderate ($M=6.2$; $sd=3.5$) when measured by a numerical rating scale ranging from 0-10; and for the majority of patients with sickle cell disease who have ulcers on the lower limbs, the pain intensity was very high.¹⁵ These findings show that the etiology of the wounds is a factor that affects subjective pain intensity.

Table 3 - Descriptive pain scores reported by public health care service patients in Goiania, before and during the dressing change. Goiania-GO, 2008 (n=76)

Pain intensity	n (%)	Min	Quartile 1	Med	Quartile 3	Max	A	Sd
Before dressing change	57 (75.0)	1	2	4	7	10	4.77	2.85
During dressing change	58 (76.3)	1	3	5	8	10	5.43	2.97

The comparison of different study results about the pain related to leg ulcers was negatively affected by the use of different measuring systems (lack of standardization concerning the definition of light, moderate and strong pain), type of wound investigated and lack of information about the technic used for putting on and changing the wound dressing.

During dressing change, 52.6% of the patients reported that wound cleaning was the most painful procedure, and 11.8% the removal of the previous dressing. In France, 97.0% of people with chronic wounds reported wound cleaning was reported as the most painful procedure, and 38.0% removal of the original dressing and adherence of the dressing to the wound layer.⁴

In this sense, although any damage to the skin is uncomfortable and all factors that cause and/or worsen the pain cannot always be eliminated, some procedures followed during the wound dressing change are inadequate and should be abandoned by the professionals responsible for treating leg ulcers⁴ (i.e. friction, removal of the previous covering using abrasion, use of dressing that adheres to the wound layer as a result of being too cold or inadequate for the type of wound).^{6,8,11} The wound cleaning has to be done with physiological serum, which should be warmed to body temperature, sprayed and with adequate pressure. In addition, the original dressing should only be removed after appropriate humidification, in order to ensure that there is no risk of pulling out viable tissue and traction on the wound layer.

Furthermore, our point of view meets with the opinion of some authors who defend the importance of assessing pain experiences, performing a brief study about the pain felt in the previous two days and during dressing change, either resulting from the necessary procedures or from the inadequate positioning of the patient. This will help to minimize discomfort and control for the factors associated with the pain cause and worsening.^{4,8,10}

A multicenter study with the participation of 3919 medical and nursing professionals from France, Canada, Finland, United Kingdom, United

States of America, Switzerland, Sweden, Spain, Austria, Denmark and Germany, with the purpose of knowing the health care professionals' opinion about the most painful procedures during wound dressing change, showed that physicians and nurses believe that the removal of the previous dressing and the wound cleaning were the factors that most strongly affected the pain during dressing change on lower limb ulcers.¹² Similarly, researchers in Austria, Germany and Switzerland reinforced that, according to these professionals, wound cleaning was the most significant factor to exacerbate the pain during dressing change.⁶ There was a similarity between the opinion of professionals from other countries and of the patients who participated in the present study, which shows that such procedures should be performed in a way that reduces pain and trauma, according to available guidelines.^{1,11} Another similarity between these studies was the non-significant association between the variables pain intensity and size of the leg ulcers, which confirm that there is not always a direct and proportional relationship between pain and wound size. Smaller wounds can result in high intensity pain, especially those related to ischemia, infectious processes or damages to the nerve structures.

Other factors that can worsen the pain include the exposure of the wound to air, as this contributes to the dryness of the nerve structures, the type of the original dressing used, the conditions of the skin surrounding the lesion and its rough handling, taking into consideration that patients can develop anticipatory reactions associated to the pain felt during dressing change, thus affecting their response to the painful experience and reducing their quality of life.^{6,8,11}

Regarding the type of pain resulting from leg ulcers, which was globally assessed in this study, the following descriptors can be highlighted: tiring (63.2%), throbbing (55.3%), sickening (56.4%), jumping (48.7%), sharp (48.7%) and tugging (46.1%). Taking into consideration the dimensions of the painful experience, the descriptors tiring and sickening belong to the affective-motivational

group, and the descriptors throbbing, jumping, sharp and tugging belong to the sensory-discriminative group in the McGill Pain Questionnaire (LF). The pain resulting from wounds was also assessed and described more frequently as burning, smarting, stabbing, stinging and jumping, which belong to the sensory-discriminative group.²⁵ A similar finding was observed in two other studies and, in one of them, patients with venous ulcers described their pain as throbbing, jumping, itching, sore and sensible, types that belong to the sensory-discriminative group. Tiring and annoying, however, were the most frequent descriptors, from the affective-motivational and cognitive-evaluative group, respectively.^{5,13}

In the present study, the most frequent descriptor was tiring, from the affective-motivational group, and this can be explained by the fact that these were patients who were suffering from the wounds for a long time and their pain was often moderate, continuous, cyclically worsened due to the change of dressing and was capable of causing feelings like hopelessness, anxiety and depression. Also, the choice of the descriptors throbbing, burning, smarting, jumping and sharp can indicate neuropathic pain, a type of pain that can result from chronic wounds, is considered difficult to manage and is often underdiagnosed and undertreated.^{8-9,11}

One limitation of this study was the lack of more specific examinations to accurately diagnose the wound etiology, and this was only based on a previous medical diagnosis, self-referred by the patients, and associated to the clinical characteristics of the wound observed during dressing change. Another limitation was the lack of standardization of procedures and of technic during the dressing change at the various units.

CONCLUSIONS

The results of this study showed that public health service patients with leg ulcers in Goiania feel light to moderate pain as a result of their wounds, and this pain is worsened by the change of dressing, especially during wound cleaning and removal of the previous dressing. These findings are similar to other studies.

Patients with leg ulcers should be evaluated in a broad sense, as the type of wound and the intensity of pain before dressing change can affect the pain felt during dressing change. Also, this evaluation should consider the psychologi-

cal dimension, due to the possibility of emotional alterations resulting from the long period with this experience.

Nurses and their teams perform dressing changes in lower limbs and, therefore, it is their responsibility to evaluate and measure the pain felt before and during dressing change, in order to contribute for the adequate management of this experience. Evaluating and measuring pain in a standardized and systematic way during wound treatment is also essential to change, maintain or associate new coverings and analgesic therapies, which will contribute to the reduction of pain and suffering.

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