

ORIGINAL ARTICLE

PROFILE OF THE PATIENTS TREATED IN A COMPREHENSIVE WOUND CARE UNIT

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ABSTRACT

Objective: to analyze the demographic, clinical and therapeutic profiles of the patients treated in a Comprehensive Wound Care Unit. Method: a quantitative and retrospective study that analyzed management reports and medical records of patients with chronic wounds treated at a Comprehensive Wound Care Unit in Vitória da Conquista-Bahia, Brazil. The data, collected in February 2020, were submitted to descriptive and inferential analysis, and the Chi-square test with $p\text{-value} < 0.05$ was used for the association between variables. Results: the mean age among the 176 patients was 71.4 years old ($SD \pm 16.5$). There was a statistical association between fecal incontinence and stage two Pressure Injury ($p=0.018$); Diabetes Mellitus and stage three Pressure Injury ($p < 0.001$); Alzheimer's disease and medical device-related injury ($p=0.028$); Diabetes Mellitus and Diabetic Ulcer ($p < 0.001$); and between vascular insufficiency and Venous Ulcer ($p < 0.001$). Conclusion: knowledge about the profiles provides the basis for the comprehensive assistance provided by a non-hospital unit specialized in wounds.

DESCRIPTORS: Pressure Injury; Ulcer; In-hospital Care; Outpatient Care; Home Care.

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INTRODUCTION

The skin is the largest organ of the human body and, for this reason, it is more exposed to harms such as the occurrence of wounds. Wounds are defined as any rupture or lesion in the anatomical structure and function, and can be classified as acute (epithelialized in the normal phases of healing, with well-defined signs of healing in four weeks) or chronic (not progressing normally in the healing stages, which does not occur in four weeks)¹.

Pressure Injuries (PIs) are chronic wounds that consist abnormalities in the skin or tissue, which can evolve to ulcers. They are due to various factors, generally associated, such as friction, shearing, pressure on bony prominences, moisture, nutrition, impaired perfusion, and presence of medical devices². The number of patients with PIs has been increasing and has been related to population aging and to the advent of new technologies that favor survival of patients with serious diseases, although making them chronically dependent³. In this sense, a Finnish study showed a significant statistical relationship with the emergence of PIs in older adults subjected to prolonged treatments and hospitalization⁴.

It is estimated that, for 2030, the number of people aged over 65 years old with Diabetes Mellitus (DM) will be around 195.2 million, with the possibility of reaching 276.2 million in 2045. Among the complications caused by DM, retinopathy, kidney diseases, peripheral arterial and venous diseases, peripheral neuropathy (resulting in foot ulceration, which can evolve to infection/osteomyelitis and sometimes result in amputation) stand out⁵.

Venous Ulcers (VenUs) are the chronic injuries most frequently found in the lower limbs and are also associated with population aging, to the increase in the obesity rate, to DM and to arterial hypertension (AH). The National Health Service (NHS) stated that VenUs affect nearly one out of 500 individuals in the United Kingdom, being more prevalent in older adults⁶.

Chronic wounds can result from vascular diseases, DM, AH and physical difficulties or immobility, among other factors⁷. They impose high costs on health institutions because they require different care modalities (home, outpatient or in-hospital) and the use of complex therapies⁸. They harm self-image in various ways and impair performance of daily activities and the patients' quality of life⁹.

Faced with the repercussions of chronic wounds, it is understood that analyzing the patients' profiles assists in the health professionals' organization, planning and therapeutic decision-making processes. From them, a situational diagnosis is carried out, which will enable managers to devise and ground appropriate care models, aiming to improve care quality and patients' life and to reduce the financial burden on health institutions¹⁰. From this perspective, the current study aimed at analyzing the demographic, clinical and therapeutic profiles of the patients treated in a Comprehensive Wound Care Unit (CWCU).

METHOD

A quantitative, exploratory-descriptive and retrospective study, conducted in a CWCU located in Vitória da Conquista-BA, Brazil, which provides multidisciplinary care, in the outpatient (in its own premises), in-hospital (in three partner hospitals: A - Philanthropic, B and C - Private) and home care modalities.

The multidisciplinary health team consists of four nurses (a coordinator; an assistance nurse for outpatient care and in hospital B, and two for care in hospitals A and C); a nursing technician - NT (exclusively for home care under the supervision of the Nursing coordinator);

four physicians (dermatologist, intensivist, orthopedist and psychiatrist) for outpatient care, and a nutritionist (outpatient care).

Interdisciplinary outpatient and in-hospital care takes place from Monday to Friday (8 am-6 pm); the nurses provide complementary in-hospital care during the weekends (7 am-noon); and home care from Monday to Friday (7 am-7 pm) and during weekends (7 am-1 pm). In 2019, the CWCU performed 13,247 procedures, resulting from 5,241 visits, funded by five health plan operators (Operadoras de Planos de Saúde, OPS), private patients and the Unified Health System (Sistema Unico de Saúde, SUS).

Regarding the data collection procedure, the independent variables (gender, age, etiology of the wound and care modality [outpatient, in-hospital or home care]) and the dependent variable (number of procedures performed in the comprehensive care provided by the CWCU) were defined as a first step.

A total of 176 medical records were included, corresponding to patients aged over 18 years old and with PIs, diabetic ulcers (DUs) and/or vasculogenic ulcers (VUs), assisted by the CWCU in 2019. The medical charts corresponding to patients with acute wounds and/or incompletely filled-out were excluded. In February 2020, data was collected from management reports (issued by the CWCU information system, which includes the documentation corresponding to the Systematization of Nursing Care - SAE; medical prescription and evolution and discharge and referral guidelines) and from the medical records.

Data collection was conducted by one of the authors, with the collaboration of seven Nursing interns and one from Medicine, previously trained and duly supervised. Due to the large amount of documents to be analyzed, the diverse information regarding the clinical and therapeutic profiles was limited to the first appointment of the patient in the CWCU unit.

For the demographic profile, the following variables were considered: gender, age, care modality, city of origin and payment method; for the clinical profile, comorbidities, habits (alcoholism, smoking habit), type (PI, DU and/or VU) and wound and dressing sizes (standardized in the CWCU as small [5x5 cm], medium [between 5.1x5.1 cm and 10x10 cm] and large [greater than 10.1x10.1 cm]); and for the therapeutic profile: types of primary and secondary dressings used.

The data obtained were transferred to electronic spreadsheets through independent double typing, and submitted to descriptive and inferential analyses. For the association between variables, the Chi-square test with p -value < 0.05 was used (statistically significant).

After agreement of the CWCU Management, the study was approved by the Research Ethics Committee of the proposing institution under opinion No. 3,781,012.

RESULTS

In 2019, a typical year of CWCU operation, it was verified that the most representative care modalities were in-hospital (93, 52.8%) and outpatient (57, 32.4%). Among the 176 patients treated, 89 (50.6%) were female, with a mean age of 71.4 years old ($SD \pm 16.5$). In the age group from 71 to 90 years old, there was predominance of PIs in 54 patients (30.7%) and of VUs in 14 patients (7.9%); in the age group from 51 to 70 years old, DUs prevailed in 24 patients (13.6%).

Most of the patients, 142 (80.7%), were from Vitória da Conquista, and the payment methods for the assistance provided by the CWCU corresponded to private agreements (142, 80.7%) and funding with own resources (29, 16.4%).

The most representative underlying diseases were AH (118, 67%), DM (102, 58%), heart diseases (24, 13.6%) and vascular insufficiency - VI (18, 10.2%); 96.5% presented some underlying disease, of these, 77 (66.3%) had two or more diseases and 170 (65.9%) had AH and DM. There was a statistically significant association between fecal incontinence and stage two PI ($p=0.018$); DM and stage three PI ($p<0.001$); Alzheimer's disease and medical device-related injury ($p=0.028$); DM and UD ($p<0.001$) and VI with venous ulcer - VenU ($p<0.001$).

According to Table 1, PIs predominated in all three modalities (146, 66.4%); stage two PI (PI_2) had the highest number (58, 39.7%), followed by PI_3 (32, 21.9%); and, among the VUs, VenUs prevailed with 21 (70.0%). PI_2 ($p=0.002$), Diabetic Ulcers - DUs ($p=0.043$), VenUs ($p=0.013$) and Mixed Ulcers - MUs ($p=0.005$) presented statistically significant associations with the care locus.

Table 1 - Distribution of the types of chronic wounds surveyed in the CWCU, by care locus, and from January to December 2019. Vitória da Conquista, BA, Brazil, 2020

Care locus	A		D		H		Total		p value
	n	%	n	%	n	%	n	%	
PI_1	3	13,6	5	22,7	14	63,6	22	15,1	0,113
PI_2	7	12,1	11	19	40	69	58	39,7	0,002
PI_3	7	21,9	5	15,6	20	62,5	32	21,9	0,479
PI_4	2	14,3	2	14,3	10	71,4	14	9,6	0,363
PI_NC	4	23,5	1	5,9	12	70,6	17	11,6	0,393
PI_DT	2	100	0	0	0	0	2	1,4	0,352
PI_DM	0	0	0	0	1	100	1	0,7	0,638
Total PIs	25	17,1	24	16,4	97	66,4	146	66,4	$\leq 0,001$
Total DUs	20	45,5	3	6,8	21	47,7	44	20	0,043
AU	2	66,7	0	0	1	33,3	3	10	0,411
VenU	12	57,1	3	14,3	6	28,6	21	70	0,013
MU	6	100	0	0	0	0	6	20	0,005
Total VUs	20	66,7	3	10	7	23,3	30	13,6	0,082
Total injuries	65	29,5	30	13,6	125	56,8	220	100	$\leq 0,001$

O=Outpatient; H= Home; IH= In-Hospital; PI=Pressure Injury; PI_NC=Non-Classifiable Pressure Injury; PI_DT=Deep Tissue Pressure Injury; DU=Diabetic Ulcer; AU=Arterial Ulcer; VenU=Venous Ulcer; MU= Mixed Ulcer.

Source: The authors (2020).

A total of 220 chronic injuries were documented, varying from one to five, with a mean of 1.25 (SD±0.7) wounds per patient; 29 (16.5%) patients presented more than one wound. PIs were more frequent in the sacral (59, 40.4%) and trochanteric (36, 24.7%) regions, and DUs in the feet (32, 72.7%) and legs (12, 27.3%).

As shown in Table 2, small wounds and dressings prevailed in all three care modalities; 70 corresponded to PIs, 27 to DUs and 10 to VUs; among the 76 (34.5%) medium size lesions (medium size dressings), there was greater representation of PIs (49, 64.5%), followed by

DUs (14, 18.4%) and VUs (13, 17.1%). The lowest number corresponded to the large size wounds and dressings (37, 16.8%), with 27 PIs, seven VUs and three DUs.

Table 2 - Distribution of the types of chronic wounds surveyed in the CWCU, according to dressing size, and from January to December 2019. Vitória da Conquista, BA, Brazil, 2020

Dressing Locus Chronic wound	Small						Medium						Large						Total					
	A		H		D		A		H		D		A		H		D		A		H		D	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
PI_1	3	27,3	12	25	3	27,3	0	0	1	3,1	2	25	0	0	1	5,9	0	0	3	12	14	14,4	5	20,8
PI_2	4	26,7	16	33,3	5	45,5	3	33,3	19	59,4	5	1	0	0	6	35,3	0	0	7	28	41	42,3	10	41,7
PI_3	3	27,3	9	18,8	1	9,1	2	22,2	9	28,1	0	0	2	40	2	11,8	5	100	7	28	20	20,6	6	25
PI_4	0	0	1	2,1	2	18,2	2	22,2	2	6,3	0	0	0	0	7	41,2	0	0	2	8	10	10,3	2	8,3
PI_NC	1	9,1	9	18,8	0	0	0	0	1	3,1	1	12,5	3	60	1	5,9	0	0	4	16	11	11,3	1	4,2
PI_DT	0	0	0	0	0	0	2	22,2	0	0	0	0	0	0	0	0	0	0	2	8	0	0	0	0
PI_DM	0	0	1	2,1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Total PIs	11	34,4	48	77,4	11	84,6	9	39,1	32	74,4	8	80	5	50	17	85	5	71,4	25	17	97	66	24	16
Total DUs	15	46,9	11	17,7	1	7,7	5	21,7	7	16,3	2	20	0	0	3	15	0	0	20	45	21	48	3	7
AU	2	33,3	0	0	0	0	0	0	1	25	0	0	0	0	0	0	0	0	2	10	1	14,3	0	0
VenU	3	50	3	100	1	100	5	55,6	3	75	0	0	4	80	0	0	2	100	12	60	6	85,7	3	100
MU	1	16,7	0	0	0	0	4	44,4	0	0	0	0	1	20	0	0	0	0	6	30	0	0	0	0
Total VUs	6	18,8	3	4,8	1	7,7	9	39,1	4	9,3	0	0	5	50	0	0	2	28,6	20	66,7	7	23,3	3	10
Total wounds	32	29,9	62	57,9	13	12,1	23	30,3	43	56,6	10	13,2	10	27	20	54,1	7	18,9						

O=Outpatient; IH= In-Hospital; H=Home; PI=Pressure Injury; PI_NC=Non-Classifiable Pressure Injury; PI_DT=Deep Tissue Pressure Injury; DU=Diabetic Ulcer; AU=Arterial Ulcer; VenU=Venous Ulcer; MU= Mixed Ulcer.

Source: The authors (2020)

Among the 220 (100.0%) chronic wounds, 146 (66.4%) corresponded to PIs (25 in the outpatient service, 97 in the hospitals and 24 in the homes); 44 (20.0%) to DUs (20 in the outpatient service, 21 in the hospitals and three in the homes); and 30 (13.6%) to VUs (20 in the outpatient service, seven in the hospitals and three in the homes). There was a statistical association between all dressing sizes and PI_3 ($p=0.020$).

As for the therapeutic profile, a wide variety of dressings was used, with emphasis on foams (76 units, 34.5%), with 39 units of polyhexamethylene biguanide (PHMB) foam, 14 units of polyurethane foam, 12 units of foam with a silicone edge and nine units of silver foam, among other components. Subsequently, there was predominance of calcium alginate (63 units, 28.6%), antimicrobials (49 units, 22.3%), 27 units of PHMB-impregnated gauze, 10 units of calcium alginate Ag and eight of hydroalginate with silver, among others.

Foam was the most used product in the treatment of PI_1 (113 units, 59.1%), PI_4 (six, 42.9%), non-classifiable PI (six, 35.3%) and DU (34.1%); and calcium alginate for PI_2 (23, 39.7%) and for PI_3 (12, 37.5%). In the VUs there was a variation regarding the products: for arterial ulcers, calcium alginate (three, 100%) was used; for VenUs, antimicrobials (11, 52.4%); and for mixed ulcers, hydrogel (three, 50%) and antimicrobials (three, 50%). Except VUs, there was a statistically significant relationship between the products applied and the rest of the chronic wounds.

DISCUSSION

It was verified that the profile related to female gender (50.6%) and mean age (71.4 years old; $SD\pm 16.5$) corroborates findings from recent studies. A documentary analysis of 67 medical records of people with chronic wounds treated by the Health Care Program of an OPS in Bahia presented similar results, indicating predominance of the female gender and of the age group between 60 and 79 years old¹¹. Some studies verified that chronic wounds were more frequent in women^{5,10-12}, although others showed their prevalence in male patients^{5,13}. It is noteworthy that there is still no statistically significant evidence regarding the association between gender and the occurrence of chronic wounds, indicating that there are no differences between the genders and strengthening the hypothesis that chronic wounds can indiscriminately affect men and women¹⁴.

The occurrence of chronic wounds in aged people can be justified by the complications resulting from aging, characterized by physiological frailty, associated with chronic non-communicable diseases (CNCDs), providing conditions of greater vulnerability^{7-8,11}.

In this research, 66.3% of the patients presented AH and DM, with the former being the dominant comorbidity (67.0%), followed by latter (58%). In a study carried out in the healing outpatient service a special-sized hospital from the inland of São Paulo, it was found that 25.1% of the patients presented similar prevalence values and association of underlying diseases¹³.

In the current study, a number of relationships between the emergence of chronic wounds and CNCDs were shown, as well as between presence of PIs and fecal incontinence. A study carried out with 5,342 adult patients in Intensive Care Units (ICU) from 36 states of the United States of America found the same PI prevalence ratio in 17.1% of the patients with incontinence¹⁵. Occurrence of PIs was related to increased moisture on the skin surface and to the fact that digestive enzymes such as lipases and proteases, responsible for the degradation of skin lipids and proteins, were found in the feces¹⁶.

The association between DM and DUs was presented in the research. The annual and worldwide incidence of DUs is between 9.1 and 26.1 million and, with the increase in the annual cases of newly diagnosed DM patients, there is a trend towards an increase in DU incidence. Although DUs occur at any age, they are more prevalent in patients over 45

years old and are among the complications most related to individuals who do not control their disease well¹⁷.

In this study, it was shown that PIs were the most prevalent types of wounds, with PI_2 standing out. A study conducted in a hospital institution from Manaus-AM, analyzed the profile of 24 patients with PIs, with greater predominance of PI_3 (53.1%) and PI_4 (20.4%). Regarding the care modality, 53.1% of the patients were treated in hospitals and 46.9% at their homes¹⁸, corroborating the findings of this research.

For DUs and VUs, the most significant care modalities were Outpatient and In-Hospital. A study that analyzed 60 medical records of patients with chronic wounds, treated at a specialized and private outpatient service in Distrito Federal, emphasized the predominance of DUs (42%), followed by VenUs (34%)¹⁴. A research study carried out in a reference hospital belonging to the University of Gondar, Ethiopia, which treats patients in the in-hospital and outpatient modalities, presented 18.5% DU prevalence¹⁹.

In this research, the most significant PI locations were the sacral, trochanteric and calcaneal regions. In a survey carried out in an accredited institution with 21 ICU beds, occurrence of PIs in the sacral region (46.4%) was more expressive, followed by the calcaneal region (29.7%) and the trochanters (9.5%)²⁰. Similar data were presented in a study carried out at a Home Care Service from Porto Alegre-RS, which verified, among 38 patients, that 52.9% had PIs in the sacral region, 10.3% in the gluteal region and 9.2% in the calcaneal region²¹. PI locations can result from the support on bony prominences, with constant evaluation of the skin and tissues being indispensable to relieve the pressure in these places²².

Regarding the DU locations, it was verified that the regions of the feet were the most affected (72.7%), corroborating a study conducted with 56 patients treated in a specialized outpatient service from the inland of Paraíba, in which location of the DUs also prevailed in the feet (89.7%)²³. Emergence of these injuries is potentiated by neurological abnormalities and complications caused by peripheral arterial and venous diseases, reducing blood flow and inflow²⁴.

When analyzing the patients with VUs treated in the CWCU, 83.3% presented these wound in the legs. A study indicates that the most common location for VUs is the lower limbs, affecting from 1% to 3% of the population in the United States of America (USA)²⁵. In addition to other risk factors (for example, age over 55 years old, family history of chronic venous insufficiency, and high Body Mass Index), venous hypertension is responsible for the emergence of VUs²⁶.

Regarding the specific products used for the dressings, the materials most frequently found in this research were foams, followed by calcium alginate and antimicrobials, unlike a study carried out in a reference wound outpatient service from the inland of São Paulo, in which, for 347 patients, hydrogels (21.3%) associated with PHMB and accompanied by calcium alginate were used; followed by papain (19.2%) and 1% silver sulfadiazine in association with 0.4% cerium nitrate (14%)¹³.

It is noteworthy that the health professional's knowledge is indispensable for the care of patients with chronic wounds, in order to subsidize treatment of the infection, perform debridement, adequate compression in VenU cases, restoration of arterial inflow in arterial ulcers, evaluation and preventive and therapeutic activities for PIs, reduction of the overload and rigorous assessment of the feet in DUs, and management of other factors or underlying systemic diseases²⁷. In this sense, the guidelines published by the Wound Healing Society support the use of advanced therapies for the treatment of chronic wounds, such as skin replacement, use of negative pressure and high-tech topical products²⁸.

The relevance of the health services analyzing the profiles of the population assisted with chronic wounds is reiterated, evidencing individual and collective needs and, based on them, planning the courses of action to be recommended encompassing health promotion,

prevention and restoration.

Considering the scope of the current study, the need to restrict the analysis of the patients' records to the first day of care provided by the CWCU is indicated as a limitation, due to the high number of visits in 2019 (5,241), which resulted in a large volume of documents.

CONCLUSION

The analysis of the demographic, clinical and therapeutic profiles of patients with chronic wounds will support a continuous improvement of the quality of the comprehensive care provided by the CWCU, in different modalities.

As contributions of the study, it is highlighted that the methodology described can be reproduced in other specialized out-of-hospital units, aiming to evidence the profiles of the patients treated. The results obtained verticalize knowledge about the topical therapies used according to the type of chronic wounds and, by giving visibility to the specific context of a multidisciplinary care unit, it can be a reference to support the decision-making process of nurses, physicians and managers regarding the necessary inputs.

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Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - Ruiz PB de O, Poletti NAA, Lima AFC; Drafting the work or revising it critically for important intellectual content - Ruiz PB de O, Poletti NAA, Lima AFC; Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - Ruiz PB de O, Poletti NAA, Lima AFC. All authors approved the final version of the text.

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