

# Depression risk among patients with chronic wounds

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**Abstract. – OBJECTIVE:** A wound is defined as chronic when it requires more than 6 weeks to heal. The link between chronic wounds and depression was first pointed out by House and Hughes in 1996 and later evaluated by other numerous studies. Several studies demonstrate that among chronic skin wounds causing chronic physical disease, the leg ulcers are the most frequently associated with depression. The aim of our study is to evaluate the prevalence of depression in patients with different types of chronic wounds.

**PATIENTS AND METHODS:** We enrolled a total of 33 patients with chronic wounds and 33 healthy controls matched by sex and age. Both patients and controls underwent a BDI II survey. We evaluated 33 patients, with a mean age of 71 years (range 25-87), and 33 controls, with a mean age of 73 years (range 31-88).

**RESULTS:** The average score at the BDI II questionnaire was 14.5 and 8, respectively.

**CONCLUSIONS:** The depression among patients with chronic wounds has a multifactorial origin that should be treated with a multidisciplinary approach. Since the improvement of the psycho-emotional state means better compliance of the patient, we can also expect a better result in terms of efficacy in chronic wound treatment.

*Key Words:*

Chronic wound, Depression, Wound healing.

defined as "leg ulcers" and affect approximately 0.45 to 3.33% of world population<sup>3</sup>. Venous insufficiency is considered the main cause of chronic leg ulcers (CLU)<sup>4</sup>. Other causes include arterial insufficiency, diabetes mellitus, rheumatoid arthritis, trauma, chronic osteomyelitis, hematologic diseases, vasculitis, and tumors<sup>5</sup>. With appropriate treatment, most leg ulcers heal within 6 to 8 months<sup>6</sup>, however, in some cases they can last over years or even decades<sup>7</sup>. Edwards et al<sup>8</sup> studied symptom clusters of CLU, considering symptoms such as pain, itching, odorous swelling, sleep disturbance, anxiety, and depression. In particular, the relationship between depression and physical disease was first described by House and Hughes in 1996<sup>9</sup>. Since then, many theories have been elaborated in order to explain this relationship. According to the pathophysiologic theory, for example, depression is a direct consequence of the same pathological mechanisms that cause chronic wounds, whereas the cognitive theory states that the main factor causing depression is the disability due to chronic ulcers<sup>2</sup>. Although the influences of depression on wound healing are evident, the mechanisms of depression in patients with chronic wounds remain understudied and more factors that may be associated with the development of depression should be explored as well. Several studies<sup>10</sup> demonstrate that among chronic skin wounds causing chronic physical disease, the leg ulcers are the most frequently associated with depression. The aim of our study is to evaluate the prevalence of depression in patients with different types of chronic wounds, compared to healthy controls. We submitted both to patients and controls a Beck Depression Inventory (BDI II) questionnaire<sup>11</sup>, in order to establish the difference of the depression prevalence between patients with chronic wounds and the general population.

## Introduction

A wound is defined as chronic when it requires more than 6 weeks to heal<sup>1</sup>. Chronic physical diseases are quite common in the general population, and its frequency increases with age. Every year more and more elderly patients are suffering from chronic ulcers<sup>2</sup>. Chronic wounds can affect everybody district. In particular, the skin defects appearing below the knee level are

## Patients and Methods

We enrolled a total of 33 patients with chronic wounds and 33 healthy controls, matched by sex and age. Patients' inclusion criteria were > 18 years-old, and the presence of at least one chronic wound in treatment in our Complex Wound Care Unit, for a minimum of 6 weeks to a maximum of 18 months (mean 9 months) of treatment. The exclusion criteria were the presence of depressive episodes or other psychiatric symptoms in the patient's acute state or anamnesis.

Healthy controls were matched by gender and age ( $\pm$  6 months range) and the inclusion criteria were no past or present history of psychiatric symptoms. The informed consent was signed by each patient and control before joining the study. Both patients and controls underwent a BDI II survey, which is composed of 21 questions that analyze the absence or presence of the depression symptoms over the past 2 weeks. The answers were scored from 0 to 3 points. A score between 0 and 13 indicates no depression, between 14 and 19 mild depression, between 20 and 28 moderate depression, and more than 29 indicates severe depression. Of the 33 patients, 28 presented with one or more CLUs, 1 with an anterior trunk skin wound, 2 with a posterior trunk skin wound, and 2 with a head skin wound (Table I). The majority of chronic wounds was represented by venous ulcers (16), followed by diabetic ulcers with or without association to vascular impairment (5), ischaemic ulcers (4), arteriovenous ulcers (3), other kinds of ulcers (3), and pressure sores (2) (Table II).

## Results

We evaluated 33 patients, with a mean age of 71 years (range 25-87), and 33 controls, with a mean age of 73 years (range 31-88). The average score at

the BDI II questionnaire was 14.5 and 8, respectively. The statistical analysis showed a z-value of -3.8323, with a *p*-value of 0.00012 (significance *p*<0.05).

## Discussion

The link between chronic wounds and depression was first pointed out by House and Hughes in 1996<sup>9</sup> and later evaluated by other numerous studies. Stojanovic-Tasic et al<sup>12</sup> used the Hamilton Depression Scale (HAMD) in order to study the correlation between depression and systemic somatic diseases such as diabetes, hypertension, and other chronic diseases.

As for chronic wounds, the depression frequency was evaluated mostly among patients with CLUs. Wachholz et al<sup>3</sup> studied the impact of leg ulcers on life quality, using the Dermatology Life Quality Index (DLQI).

DLQI was used also by Kouris et al<sup>5</sup> to investigate the consequences of leg ulcers in patients' daily living. In this study, the Hospital Anxiety and Depression Scale (HADS), the Rosenberg's Self-esteem Scale (RSES), and the UCLA Loneliness Scale (UCLA-Version 3) were also used. HADS, in particular, helped to evaluate the depression prevalence among these patients.

HADS was also used in Moffatt et al<sup>6</sup> study, to compare the prevalence of the depression and anxiety between patients with CLU and healthy controls.

Recently, Zhou et al<sup>13</sup> investigated the prevalence of the depressive symptoms in patients with any kind of wounds and explored the relationship between depression and patients' demographic and wound history characteristics. Using the Patient Health Questionnaire (PHQ) they found out that some chronic wounds, more than others, may contribute to the development of depression.

All above-mentioned studies demonstrated a significant prevalence of depression among patients suffering from chronic diseases, in particular with leg ulcers.

**Table I.** Chronic wounds locations.

	Tot.	Legs	Anterior trunk	Posterior trunk	Head
Patients	33	28	1	2	2

**Table II.** Types of chronic wounds.

	Tot.	Venous	Ischaemic	Venous + ischaemic	Diabetic $\pm$ vascular	Pressure sores	Others
Patients	33	16	4	3	5	2	3

In our study, we aimed to prove that depression has a higher frequency in patients with chronic skin wounds, regardless of its location. We considered chronic wounds caused by various risk factors, not only due to venous insufficiency. To serve this purpose, we decided to use BDI II, which is the depression's evaluation scale quote in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)<sup>11-15</sup>.

The present case series confirm a higher risk of depression in patients affected by chronic wounds compared to the general population. A systematic review of all factors that can negatively affect the patients' quality of life is necessary. Ulcer patients need almost always continuous medical care, they generally have to travel to healthcare facilities several times a week, and are therefore inclined to feel sick and a burden to their family or to the community. The chronic course of this condition and the long time required to reach a full recovery often lead to patient's resignation and lack of good expectations on the effectiveness of the treatment. In addition in this context, it is important to consider other relevant factors, such as pain, inability to ambulate and lack of self-sufficiency, medical bills, social relationships deterioration, cognitive impairment, etc.

### Conclusions

We can conclude that depression among patients with chronic wounds has a multifactorial origin that should be treated with a multidisciplinary approach. As well as the assessments of clinical parameters in systemic disease, it is fundamental to ensure psychological support for these patients and, most importantly, the conditions should not be underestimated as a bad mood that goes with illness. Since the improvement of the psycho-emotional state means better compliance of the patient, we can also expect a better result in terms of efficacy in chronic wound treatments. Further studies on this last matter are needed.

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### Conflict of Interests

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