Leg ulcers have become increasingly common among patients with chronic diseases. Almost 70% of the ulcers that occur are a result of chronic venous insufficiency. Venous insufficiency is defined as changes in the functioning of the venous system caused by valvular incompetence with or without associated venous outflow obstruction, which may affect the superficial venous system, the deep venous system, or both.

Epidemiological studies of prevalence of leg ulcers in the United Kingdom revealed that 8 per 1000 in the population have leg ulcers, corresponding to approximately 1% of adults. It is estimated that 7 million people in the United States have chronic venous insufficiency. In Brazil, a study conducted in Botucatu, São Paulo, reported a 35.5% prevalence of varicose
veins and 1.5% prevalence of severe chronic venous insufficiency with an ulcer or ulcer scar.4

Quality of life (QoL) is a popular and broad term that has been used in various contexts, and has garnered the attention of professionals from various fields, particularly in healthcare. Quality of life involves concepts that reach beyond symptom control, mortality reduction, and increase in life expectancy.5 Self-esteem is a construct related to QoL in which a person’s feelings of self-worth, self-value, self-image, and self-concept are also considered.6

Venous ulcers often take a long time to heal, which results in physical and psychological discomfort, and negatively affects a patient’s functional status. Functional status relates to the ability of the patient to perform normal daily activities, reflecting the impact of the disease on his or her daily routine.7

Chronic leg ulcers have a negative impact on QoL. Edwards et al8 tested a care model emphasizing socialization and peer support for the management of patients with chronic leg ulcers that significantly improved outcomes in QoL, morale, self-esteem, healing, pain, and functional ability.

In view of the high prevalence rates and major physical and psychological distresses venous ulcers cause, a study was conducted to evaluate the QoL, self-esteem, and functional status of patients with this condition.

Methods

The Research Ethics Committee of the Sapucaí Valley University (Universidade do Vale do Sapucaí, UNIVAS) approved this study. Written informed consent was obtained from all patients prior to their inclusion in the study.

Data were collected from October 2005–July 2006. A total of 160 patients were equally distributed into two groups.

Study group. Eighty participants were selected from consecutive patients with chronic venous leg ulcers who attended either the Outpatient Clinic of the Samuel Libânio General Hospital (Hospital das Clínicas Samuel Libânio, HCSL), Family Health Centers, or Outpatient Clinics of Public Health Centers in Pouso Alegre and Minas Gerais, Brazil. Patients between 40- and 80-years-old with clinical diagnosis of chronic venous leg ulcers were included in the study independent of ulcer duration, number, and ulcer type (primary or recurrent).

Control group. Eighty persons without ulcers were selected from a random sample of people from the community. Patients with cognitive deficits or psychiatric disorders were excluded from the study. All patients agreed to participate in the study (no data were missing).

The Medical Outcomes Study 36-Item Short Form Health Survey questionnaire (SF-36) was used to assess health-related quality of life (HRQoL). The SF-36 is a generic tool containing 36 items of which one is a comparative item assessing changes in health over the past year, and 35 items are grouped into 8 domains as follows: physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role, and mental health. Each SF-36 domain was evaluated independently. Domain scores ranged from 0 to 100 (0 = “worst health status” and 100 = “best health status”).

Self-esteem was assessed by the Brazilian version of the Rosenberg Self-Esteem scale (RSE/UNIFESP-EPM), which consists of 10 items rated on a 4-point scale.4 The total RSE score ranges from 0 to 30 (0 = highest self-esteem level and 30 = lowest self-esteem level).

Functional status was evaluated using the 20-item short version of the Stanford Health Assessment Questionnaire (HAQ-20),9,10 which had been translated into Portuguese, culturally adapted, and validated for use in Brazil.11 The full version of the HAQ contains 37 items grouped into 4 dimensions: 1) disability, 2) discomfort and pain, 3) drug side effects/toxicity, and 4) dollar costs. Only the disability dimension was assessed in the present study. The HAQ-20 consists of 8 categories: dressing and grooming, arising, eating, walking, hygiene, reach, grip, and activities. This instrument measures the difficulty in performing activities of daily living. For each item, there is a 4-level difficulty scale that is scored from 0 to 3. The eight category scores are averaged into an overall score on a scale from 0 (no disability) to 3 (completely disabled).9,11

The same investigator administered the questionnaires by way of interview after the participants provided signed informed consent. Patients were asked to select the statement that best reflected his or her opinion for each questionnaire item. Any questions the participants raised were clarified. There were no missing data.

For the analytical procedures, the homogeneity of the study and control groups was tested using the chi-square test. The Kolmogorov-Smirnov test was performed to assess whether the study data followed a parametric or non-parametric distribution. Statistical comparisons between mean scores were made using the Mann-Whitney test and z-test. All statistical tests were performed at a significance level of 0.05. Data are presented as mean ± standard deviation (SD).
### Table 1. Mean SF-36 scores on each of the eight domains for the study and control groups.

<table>
<thead>
<tr>
<th>SF-36 domains</th>
<th>Study group (n = 80)</th>
<th>Control group (n = 80)</th>
<th>Difference between groups</th>
<th>(P)</th>
<th>(Z)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>48.68</td>
<td>80.06</td>
<td>(31.38)</td>
<td>&lt;0.001*</td>
<td>-6.7</td>
</tr>
<tr>
<td>Physical role</td>
<td>22.50</td>
<td>75.31</td>
<td>(52.81)</td>
<td>&lt;0.001*</td>
<td>-8</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>57.81</td>
<td>72.29</td>
<td>(14.48)</td>
<td>0.002*</td>
<td>-2.9</td>
</tr>
<tr>
<td>General health</td>
<td>66.18</td>
<td>73.13</td>
<td>(6.95)</td>
<td>0.031*</td>
<td>-2.1</td>
</tr>
<tr>
<td>Vitality</td>
<td>59.37</td>
<td>70.75</td>
<td>(11.38)</td>
<td>0.002*</td>
<td>-2.9</td>
</tr>
<tr>
<td>Social functioning</td>
<td>56.25</td>
<td>81.60</td>
<td>(25.35)</td>
<td>&lt;0.001*</td>
<td>-3.7</td>
</tr>
<tr>
<td>Emotional role</td>
<td>41.61</td>
<td>80.34</td>
<td>(38.73)</td>
<td>&lt;0.001*</td>
<td>-4.4</td>
</tr>
<tr>
<td>Mental health</td>
<td>64.90</td>
<td>71.94</td>
<td>(7.04)</td>
<td>0.115</td>
<td>-1.6</td>
</tr>
</tbody>
</table>

*Statistically significant; Mann-Whitney test

### Table 2. Mean total scores on the Brazilian version of the Rosenberg Self-Esteem Scale (RSE/UNIFESP-EPM) for the study and control groups.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Study group (n = 80)</th>
<th>Control group (n = 80)</th>
<th>Difference between groups</th>
<th>(P)</th>
<th>(Z)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total RSE score</td>
<td>7.83</td>
<td>6.82</td>
<td>(1.01)</td>
<td>0.123</td>
<td>-1.6</td>
</tr>
</tbody>
</table>

*Mann-Whitney test

### Table 3. Mean Health Assessment Questionnaire Functional Disability Index (HAQ-DI) scores for the study and control groups.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Study group (n = 80)</th>
<th>Control group (n = 80)</th>
<th>Difference between groups</th>
<th>(P)</th>
<th>(Z)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAQ-20</td>
<td>0.700</td>
<td>0.175</td>
<td>(0.525)</td>
<td>&lt;0.001*</td>
<td>-6.2</td>
</tr>
</tbody>
</table>

*Statistically significant; Mann-Whitney test

### Table 4. Mean Health Assessment Questionnaire (HAQ-20) scores for the study and control groups.

<table>
<thead>
<tr>
<th>HAQ-20 categories</th>
<th>Study group (n = 80)</th>
<th>Control group (n = 80)</th>
<th>Difference between groups</th>
<th>(P)</th>
<th>(Z)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dressing and grooming</td>
<td>0.45</td>
<td>0.16</td>
<td>(0.29)</td>
<td>&lt;0.001*</td>
<td>-3.41</td>
</tr>
<tr>
<td>Arising</td>
<td>0.64</td>
<td>0.20</td>
<td>(0.44)</td>
<td>&lt;0.001*</td>
<td>-3.81</td>
</tr>
<tr>
<td>Eating</td>
<td>0.18</td>
<td>0.06</td>
<td>(0.12)</td>
<td>0.161</td>
<td>-1.40</td>
</tr>
<tr>
<td>Walking</td>
<td>0.86</td>
<td>0.15</td>
<td>(0.71)</td>
<td>&lt;0.001*</td>
<td>-6.42</td>
</tr>
<tr>
<td>Hygiene</td>
<td>0.39</td>
<td>0.11</td>
<td>(0.28)</td>
<td>&lt;0.001*</td>
<td>-3.20</td>
</tr>
<tr>
<td>Reach</td>
<td>0.91</td>
<td>0.30</td>
<td>(0.61)</td>
<td>&lt;0.001*</td>
<td>-4.52</td>
</tr>
<tr>
<td>Grip</td>
<td>0.99</td>
<td>0.23</td>
<td>(0.76)</td>
<td>&lt;0.001*</td>
<td>-4.85</td>
</tr>
<tr>
<td>Activities</td>
<td>1.19</td>
<td>0.34</td>
<td>(0.85)</td>
<td>&lt;0.001*</td>
<td>-5.27</td>
</tr>
</tbody>
</table>

*Statistically significant; Mann-Whitney test
Results

Patients in the study group were predominantly women (71.25%), white (76.25%), age 46–85 years (96.25%), married (51.25%), and with 1–4 years of education (50%). In the control group, patients were also predominantly women (75%), white (80%), aged 46–85 years (95%), married (65%), and with 1–4 years of education (45%). There were significant differences between groups in the mean scores for the SF-36 domains of physical functioning, physical role, emotional role ($P < 0.001$), bodily pain, general health, and vitality ($P < 0.05$). No statistically significant differences were found ($P = 0.115$) in mental health scores between groups (Table 1). No significant differences between groups ($P = 0.123$) were found in the mean RSE scores (Table 2). However, there were significant differences ($P < 0.001$) between groups in the functional status (overall HAQ-20 score) and mean scores for all HAQ-20 categories (Table 3), except for the eating category ($P = 0.161$), as shown in Tables 4.

Discussion

Quality of life is defined as a multidimensional concept, a traditional theme of philosophers and poets that today is used by researchers as a quantitative tool in clinical trials and economic models. The current interest in quantifying QoL has been reinforced by the development of quantitative methods in psychology, economy, and other social sciences.\textsuperscript{12}

The multidisciplinary approach to health care has changed in the last several years. Subjective variables that reflect patients’ perception of their well being and QoL have been used in quality-of-life assessments. Not only are researchers interested in assessing QoL, but also those professionals involved in clinical practice.\textsuperscript{5}

Venous ulceration is a chronic disease, which is characterized by periods of exacerbation and remission, and restrictions imposed by treatment that result in physical limitations and life-style changes.\textsuperscript{11} The prevalence of venous ulcers has increased each year,\textsuperscript{7} affects the activities of daily lives of patients, and is a serious public health problem.

Both groups in the present study were statistically homogeneous regarding sociodemographic variables; significance levels ranged from 0.17–0.88, demonstrating homogeneity; therefore, the control group was considered comparable to the study group.

The mean age of all participants ($n = 160$) was 64.1 ± 9 years (range, 43 to 88 years), and of patients with chronic venous leg ulcers ($n = 80$) was 64.0 ± 10 years. Several studies have reported that chronic venous leg ulcers are a severe health problem common among the elderly, and considered aging as a risk factor, especially in individuals older than 65 years.\textsuperscript{2,14–16}

The percentage of women was 71.3% in the study group and 75% in the control group, which is in agreement with the literature. This may be attributed to the fact that women live longer than men, and are at a higher risk of developing deep venous thrombosis during pregnancy.\textsuperscript{3,5,17–18}

Results also revealed that the percentage of subjects who had 1–4 years of education was 50% in the study group and 45% in the control group, and that 37.5% of the patients in the study group were illiterate versus 33.8% in the control group. A low level of education may affect a patient’s compliance with treatment.\textsuperscript{5,19,20}

The percentage of patients with diabetes was 17.5% in the study group and 15% in the control group, and of patients with arterial hypertension was 48.8% in the study group versus 42.5% in the control group. Studies in the literature report that venous ulcers are associated with diseases such as diabetes, peripheral vascular disease, and chronic venous insufficiency,\textsuperscript{4,5} and have a recurrence rate of 70% after healing.\textsuperscript{5,21,22}

Anand et al\textsuperscript{23} reviewed the concept and tools used to assess QoL in patients suffering from chronic venous leg
ulcers. Another study comparing four generic instruments used for measuring HRQoL in patients with venous leg ulcers recommended the SF-36 alone or in combination with the short-form McGill Pain Questionnaire (SF-MPQ) for long-term follow-ups (12 months) in clinical studies.18 In the present study, the mean duration of ulcer symptoms was 11.2 years, with 95% confidence interval (CI) (range, 8.8 to 13.6 years). The SF-36 was used to assess the HRQoL, and the mean SF-36 domain scores were evaluated. The results showed that there were significant differences in the mean scores on the SF-36 physical functioning domain ($P < 0.001$) between the study group (mean score, 48.7) and control group (mean score, 80.1). Patients with venous leg ulcers had more difficulty performing activities of daily living than control group patients. The difficulty experienced while performing simple tasks intensifies the dependency needs of these patients.2,4,18,25

It was also found that there were significant differences in mean scores on the physical role domain ($P < 0.001$) between the study group (mean score, 22.5) and control group (mean score, 75.3), indicating that physical health affected work-related activities of patients with venous leg ulcers. These limitations were also reported in studies on chronic venous insufficiency and venous ulcers.2,4,18,19,25

The mean scores on the bodily pain domain were significantly lower ($P < 0.05$) in the study group (mean score, 57.8) than in the control group (mean score, 72.3). This indicates that bodily pain had a more negative impact on the HRQoL of patients with venous ulcers than that of controls. Note that scores on the bodily pain dimension range from 0 to 100 (0 = very intense pain and 100 = no pain). A number of studies on pain related to venous ulcers can be found in the literature; they reported that pain may result in social isolation, suffering, depression, anxiety, changes in the family relationship, and reduced wound healing rates.2,4,18,19,25-27 Studies on chronic venous leg ulcers have indicated that some types of dressings may promote pain relief and improvement in QoL, which may lead to faster wound healing.27,28 Healthcare professionals caring for patients with chronic diseases should have knowledge of pain and pain management, and also be aware that control or reduction of pain may affect HRQoL, psychosocial functioning, and wound healing.20,27

The general health domain evaluates the patient’s perception of health status and opinion about the future, independently of having or not having ulcers. There were significant differences in the mean scores on the general health domain ($P < 0.05$) between the study group (mean score, 66.2) and control group (mean score, 73.1). It would be interesting to separately evaluate patients who have had ulceration for a long time, because their responses may reflect an accommodation to the disease over the years or be associated with aging.18

Vitality measures the energy and spirit to perform activities of daily living. There were significant differences in the mean scores on the vitality domain ($P < 0.05$) between the study group (mean score, 59.4) and control group (mean score, 70.8). Vitality is directly related to physical functioning and physical role domains. The presence of venous ulcers has a negative effect in the HRQoL of patients, resulting in feelings of frustration and dissatisfaction due to the inability to perform work-related activities and daily tasks.20,29,30

The social functioning domain measures the extent to which an individual is unable to carry out social activities due to his or her physical and emotional state. There were significant differences in mean scores on the SF-36 social functional domain ($P < 0.001$) between the study group (mean score, 56.5) and control group (mean score, 70.8). This result may be attributed to the fact that chronic ulcers have a high recurrence rate, causing people to feel uncomfortable in social situations or leading to feelings of inadequacy and embarrassment. The recurrence rate of healed leg ulcers is about 50% within the first year and this rate increases to 78% within 2 years.21 Most venous ulcers are visible, have an unpleasant odor, cause pain, edema, and difficulty in walking. All of these factors negatively affect the social life of patients with a venous leg ulcer.4,7,18,20,31-33

There were significant differences in mean scores on the SF-36 emotional role domain ($P < 0.001$) between the study group (mean score, 41.6) and control group (mean score, 80.3). Chronic ulcers cause many discomforts, as mentioned in the analysis of other SF-36 domains. With regard to the emotional role domain, statistical results confirmed patients’ dissatisfaction with their condition, which points to the importance of a multidisciplinary approach to the treatment of venous ulcers.17 Venous ulcers are associated with almost no mortality, but with high morbidity, which causes suffering and impairment, and interferes with many aspects of QoL, such as social life and work, among others.4,34 Changes in emotional functioning have also been observed in patients with venous ulcers.20,31

The items on the mental health domain assess the
extent to which feelings of anxiety, depression, happiness, and peacefulness affects the QoL of an individual. No statistically significant differences in the mental health scores were found between groups (P = 0.115), revealing that both the study group and control group had similar mental health status. One explanation for this might be that the patients with venous ulcers shared similar values, customs, and beliefs, favoring social interaction and reducing isolation.18

Self-image can be objectively measured and evaluated based on the social experiences of the individual.6 Statistically significant differences (P = 0.123) in the mean RSE scores between the study group (mean RSE score, 7.8) and control group (mean RSE score, 6.8) were not found. RSE scores for both groups had a close to normal distribution. In a previous study on the impact of venous ulcers on the QoL and their financial, social, and psychological implications, 68% of the patients reported that the ulcer had a negative emotional impact on their lives, causing depression and negative self-image.31 In a study on the psychosocial aspects of chronic venous ulcers in the elderly, patients in the study group reported low levels of self-esteem and high levels of negative expectancy.55

With regard to functional status, there was a significant difference (P < 0.001) in the mean overall HAQ-20 score between the study (mean overall score, 0.70) and control (mean overall score, 0.17) groups. Patients with venous ulcers reported difficulties in mobility and in performing activities, pain, and concern/interest in health matters.35 Ulcers can affect the patient’s productivity at work resulting in an increased number of persons retiring under the Social Security Disability program, and limiting daily and leisure activities. For many patients, venous disease means pain, loss of physical mobility, and impairment in QoL, which consequently has a significantly negative impact on their overall QoL.29,32,36

**Conclusion**

In the present study, patients with chronic venous leg ulcers reported low scores on all SF-36 domains (physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role, and mental health) reflective of their poor health status. According to the RSE scores, self-esteem was not affected by the presence of venous ulcers. However, based on the HAQ-20 scores, it was observed that chronic venous leg ulcers had a negative impact on the functional status of these patients.

**References**

10. Ferraz MB. Tradução para o português e validação do questionário para avaliar a capacidade funcional...


