JORNAL **VASCULAR** BRASILEIRO
ISSN 1677-7301 (Online)

# General perceptions regarding health and nutrition among women diagnosed with lipedema: a cross-sectional study

## *Percepções gerais sobre saúde e alimentação de mulheres diagnosticadas com lipedema: um estudo transversal*

Camilla Felipe Ferreira[1], Clara Pancini Dornelas[1], Marcio Leandro Ribeiro de Souza[1]

## Abstract

Lipedema is a chronic condition characterized by abnormal accumulation of subcutaneous fat, especially in the legs and arms. Although frequently confused with obesity, cellulitis, or lymphedema, lipedema has its own characteristics and may not respond well to conventional diets or exercise. Therefore, this study aimed to evaluate the general perceptions regarding health and diet of women with lipedema, verifying possible associations with symptoms related to lipedema. This was a cross-sectional study with women diagnosed with lipedema, who answered an online questionnaire about health and diet. They also answered the Lipedema Symptom Assessment Questionnaire (LSAQ) to assess symptoms and severity. Seventy-five women were included, with mean age of 28.6 ± 9.3 years and mean BMI of 30.9 ± 5.6 kg/m$^2$ (50.7% obese). Eighty percent of these women reported being dissatisfied with their bodies since their lipedema diagnosis and 29.3% were very dissatisfied. There were high prevalence rates of pain, swelling, body dissatisfaction, and difficulty losing weight and 94.7% perceived that it was more difficult to reduce the size of affected areas of the body. Before diagnosis, unhealthy food consumption predominated and there was a low rate of nutritional and psychological follow-up after diagnosis, although 89.3% reported a need for greater professional support. As such, the results of this research show that women with lipedema report difficulty with weight loss and emotional impacts and highlight the importance of an individualized multidisciplinary approach as a strategy for reducing symptoms and improving quality of life.

**Keywords:** lipedema; weight loss; diet; quality of life.

## Resumo

O lipedema é uma condição crônica, caracterizada pelo acúmulo anormal de gordura subcutânea, especialmente em pernas e braços. Apesar de ser frequentemente confundido com obesidade, celulite ou linfedema, o lipedema possui características próprias e pode não responder facilmente a dietas ou exercícios convencionais. Sendo assim, este estudo teve como objetivo avaliar as percepções gerais sobre saúde e alimentação de mulheres com lipedema, verificando possíveis associações com sintomas relacionados à essa condição. Trata-se de uma pesquisa transversal com mulheres diagnosticadas com lipedema, que responderam a um questionário on-line sobre características de saúde e alimentação. Também foi aplicado o Questionário de Avaliação Sintomática do Lipedema para avaliação de sintomas e severidade. Foram incluídas 75 mulheres, com idade média de 28,6 ± 9,3 anos e índice de massa corporal médio de 30,9 ± 5,6 kg/m$^2$ (50,7% obesas). Entre as mulheres, 80% se disseram insatisfeitas com o corpo desde o diagnóstico de lipedema, sendo 29,3% muito insatisfeitas. Foi observada uma alta prevalência de dor, inchaço, insatisfação corporal e relato de dificuldade de emagrecimento, e 94,7% percebem que a redução de medidas é mais difícil nas áreas acometidas. Observaram-se predomínio de consumo de alimentos não saudáveis antes do diagnóstico e baixa taxa de acompanhamento nutricional e psicológico após o diagnóstico, embora 89,3% tenham relatado necessidade de maior suporte profissional. Sendo assim, os resultados da presente pesquisa indicam que mulheres com lipedema relatam dificuldades no emagrecimento e impactos emocionais, além de reforçar a importância de abordagens multidisciplinares individualizadas como estratégia para a redução de sintomas e melhora da qualidade de vida.

**Palavras-chave:** lipedema; emagrecimento; dieta; qualidade de vida.

**How to cite:** Ferreira CF, Dornelas CP, Souza MLR. General perceptions regarding health and nutrition among women diagnosed with lipedema: a cross-sectional study. J Vasc Bras. 2026;25: e20260017. https://doi.org/10.1590/1677-5449.202600172

[1] Centro Universitário Faminas Belo Horizonte, Belo Horizonte, MG, Brasil.

**Financial support:** None.
**Conflicts of interest:** No conflicts of interest declared concerning the publication of this article.
**Submitted:** January 29, 2026. **Accepted:** August 12, 2026

The study was conducted at the Centro Universitário Faminas Belo Horizonte, Belo Horizonte, MG, Brazil.
**Ethics committee approval:** The study was approved by the Research Ethics Committee at the Centro Universitário Faminas Belo Horizonte, with CAAE submission certificate 88647725.4.0000.5105 and opinion number 7.678.944, dated June 30, 2025. All participants signed a free and informed consent form.

Copyright© 2026 The authors. This is an Open Access article distributed under the terms of the Creative Commons Attribution license (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

## INTRODUCTION

Lipedema is a complex clinical condition that predominantly affects women, characterized by abnormal build-up of subcutaneous fat, although it should not be restricted to, or exclusively defined as, a disease of the adipose tissue. The disease interacts with several body systems, affecting patients' mental health, physical functioning, and quality of life.[1] It primarily affects the lower limbs, although it can also affect the upper limbs. The accumulation of adipose tissue is disproportional to the rest of the body, causing pain, edema, and sensitivity to touch in the areas involved. While it is often confused with obesity, cellulitis, or lymphedema, lipedema has its own characteristics and may not respond to conventional diets or exercise regimes for fat reduction. In 2025, the Brazilian Consensus on Lipedema was published, sponsored by the Brazilian Society of Angiology and Vascular Surgery, contributing to better understanding and improving the definitions of this clinical condition.[1,2] The Consensus emphasizes the need for further study of its technical classification, pathophysiologic mechanisms, and treatment.[1]

Edgar Van Nuys Allen and Edgar Alphonso Hines Junior described the condition for the first time in the mid twentieth century, at a point in clinical history during which research was being conducted into the vascular system and diseases linked to metabolism.[3] These researchers and physicians noticed that some women had a different pattern of fat build up that did not change significantly in response to dietary changes or regular physical activity. Moreover, the affected areas, primarily the legs and in some cases the arms, were painful, with increased sensitivity and a tendency to bruise easily, differentiating the condition from obesity. This specific pattern of fat deposits was later classified as lipedema.[3] Since the condition was identified, much research has been conducted to attempt to improve understanding of its pathophysiology. Nowadays, it is believed that lipedema is powerfully associated with hormonal changes and dysfunctions of the vascular system and also has a significant genetic influence, although more studies are still needed.[1,2]

The considerable prevalence of lipedema justifies significant clinical and scientific attention. It is estimated that approximately 12.3% of adult women in Brazil are affected by the condition, which underscores the importance of early recognition and diagnosis to avoid exacerbation of the symptoms and psychosocial impacts.[1] Internationally, studies suggest that from 8 to 18% of women may have lipedema, although the disease is frequently underdiagnosed because of its clinical similarities to obesity, lymphedema, and other venous diseases. Absence of standardized diagnostic criteria and some health professionals' lack of knowledge about the disease contribute to undernotification, impairing patient access to effective interventions.[1,4,5]

Diagnosis of lipedema is predominantly clinical, based on a detailed physical examination, patient history, and exclusion of other diseases. The main criteria are symmetrical increase of adipose tissue in the extremities, pain on palpation, presence of spontaneous hematoma, and a negative Godet sign (pitting edema).[1] There are no specific laboratory tests, but imaging methods such as ultrasonography, Doppler ultrasound, and magnetic resonance can be used to rule out concomitant venous and lymphatic diseases. According to the lipedema consensus, the examining professionals' experience is paramount and it is recommended that diagnosis is made by a trained multidisciplinary team.[1,4,5]

Another important aspect of lipedema is its impact on patients' quality of life. In addition to persistent pains and mobility problems at more advanced stages, the condition can also affect self-esteem and emotional wellbeing because of changes to body image. Despite the advances in recognition of lipedema as a distinct disease from obesity, many women still face challenges that compromise correct diagnosis and access to adequate treatments.[6]

Many techniques for therapeutic management of lipedema have been proposed, such as lifestyle changes (diet and physical exercise), physiotherapy, lymphatic drainage, and wearing compression stockings, but there is no definitive cure. Surgical procedures such as liposuction have achieved good results for controlling symptoms and improving patients' quality of life.[1,2]

Diet can constitute an important area for control and treatment of lipedema. Many women diagnosed with the condition become frustrated after trying to slim using calorie-controlled diets and physical exercises. This is because the fat accumulation caused by lipedema does not respond in the same way as normal fat: while calorie restriction and physical activity may reduce total body weight, the lipedema pattern tends to remain unchanged.[7] Research into nutrition in lipedema has increased over recent years, and dietary patterns such as the mediterranean diet, ketogenic diet, and diets with reduced carbohydrate levels have been tested and studied in relation to this clinical condition.[7,8]

Patients with unhealthy dietary habits report more severe pain and lower quality of life. Moreover, chronic low-level inflammation, which is often present in lipedema, can be positively modulated by diet, suggesting that nutrients with anti-inflammatory properties can play an adjuvant role in treatment, which needs to be studied thoroughly.[9]

While a healthy and balanced diet is essential for wellbeing in general and can help to reduce the inflammatory processes associated with lipedema, diet alone is insufficient to eliminate the accumulated fat. Because of this, many women feel trapped in a cycle of frustrated attempts to slim, which can lead to emotional problems, such as anxiety and depression, in addition to feelings of helplessness because of the lack of effective solutions.[1]

More research is needed to improve understanding of the causes of lipedema and to study possible treatments that might be more effective and accessible, including those based on diet. In view of the above, this study was conducted to assess the general perceptions and the dietary characteristics of women with a lipedema diagnosis, in order to ascertain aspects of their diets before and after diagnosis and to study their attempts to obtain treatment for this clinical condition.

## METHODS

### Study design

This is a descriptive, observational, cross-sectional study recruiting adult women with lipedema based on on-line interviews conducted from July to September in 2025.

### Ethical considerations

The research project was approved by the Research Ethics Committee at the Centro Universitário Faminas Belo Horizonte (CAAE submission certificate 88647725.4.0000.5105, opinion number 7.678.944). All participants who agreed to take part signed a free and informed consent form after receiving detailed explanation about the study.

### Sample size calculation

The sample size was estimated on the basis of analysis of proportions in descriptive cross-sectional studies adopting a 95% confidence level ($Z = 1.96$) and an expected proportion of 50%, which is a value adopted to maximize the sample size when there is no previous estimate. The adequacy of the sample size was then assessed considering the precision of the estimates. For a sample of 75 women diagnosed with lipedema, assuming a conservative proportion of 50% and a 95% confidence level, the estimated margin of error is approximately 11%.

### Study population

The study sample was selected by convenience considered all adult women aged from 18 to 60 years, resident in Brazil, and with physician-diagnosed lipedema (self-reported) to be eligible. Confirmed lipedema diagnosis was an obligatory inclusion criterion. Women with suspected lipedema who had not had their diagnosis confirmed were not included in the study. During the analysis phase, 77 women were considered eligible, but two questionnaires were excluded because they were duplicates, resulting in a final sample of 75 women with lipedema.

The questionnaire was sent to each participant individually. The volunteers were recruited personally by the researchers or by invitation via telephone, e-mail, or chat applications such as WhatsApp® (Meta, United States), or social networks. Volunteers were not selected in hospital settings or specialized clinics. Physicians who treat patients with the disease, according to specialties listed in the Brazilian Consensus on Lipedema,[1] were also contacted to nominate volunteers for the study.

### Procedures

Data were collected using an online form constructed using Google Forms (Google, United States), comprising questions on participants' dietary habits before diagnosis, slimming attempts with conventional diets, and interventions that yielded benefit. The objective was to understand the characteristics of their dietary profiles prior to diagnosis and identify treatments that had proven effective for management of lipedema symptoms, according to the perceptions of these women. The volunteers were asked about attempts to slim, the methods most used and their perceptions about the results, and their perceptions of the emotional impacts that the disease can have.

As indicators of nutritional status, the volunteers were asked about their weight and height, which were collected as self-report data. These measurements were used to calculate body mass index (BMI), in accordance with the World Health Organization (WHO) standard method. For this study, the women were categorized as underweight, healthy weight, overweight, or obese, considering different levels of obesity as a single category.[10,11]

The Lipedema Symptom Assessment Questionnaire (LSAQ) was used to assess the intensity of symptoms related to lipedema. This is an international questionnaire that has been translated into Portuguese and validated. It assesses 15 criteria (symptoms) self-reported on a scale ranging from 0 to 10 rating the intensity of each symptom. The ratings are summed to produce a final score from 0 to 150, where 0 indicates no symptomatic complaints and 150 is the greatest impact of symptoms on quality of life. For the majority of questions on the questionnaire, the prevalence of higher ratings indicates greater severity and the extent to which these symptoms burden the women with lipedema. The questionnaire can be administered repeatedly to monitor improvement of symptoms.[12,13]

### Statistical analysis

A database was constructed using Microsoft Excel (Office 2013®, Microsoft, United States) and analyzed using the Statistical Package for the Social Sciences (SPSS®), version 19.0 for Windows (SPSS Inc., United States). The Kolmogorov-Smirnov test was used to test data for normality and indicate which statistical tests should be used. Qualitative (categorical) variables were expressed as absolute and relative frequencies (percentages). Quantitative variables with normal distribution were expressed as mean and standard deviation. Quantitative variables that did were not normally distributed were expressed as median and range (min-max). Correlation tests were conducted to test for associations between study variables. Associations were considered statistically significant when results indicated a significance level of 95% (P value $\leq 0.05$).

## RESULTS

The study analyzed data from 75 women diagnosed with lipedema. In relation to time since lipedema diagnosis: 22 (29.3%) stated they had been diagnosed less than 6 months previously, 22 (29.3%) between 6 months and 1 year, 19 (25.3%) from 1 to 2 years, and 12 (16.1%) had been diagnosed more than 2 years before. When the participants were asked how they rated their general health, 4 (5.3%) said their health was poor or very bad, 48 (64.0%) rated their health as regular, and 23 (30.7%) said their health was excellent. Table 1 lists the participants' general characteristics.

One difficulty related to lipedema is the slimming process. Table 2 lists the women's perceptions with relation to the slimming process.

**Table 1.** General characteristics of the women with lipedema in the study. Brazil, 2025.

| Characteristics | TOTAL (n = 75) |
|---|---|
| **Sex – n (%)** | |
| Male | - |
| Female | 75 (100.0%) |
| **Age (years)** | |
| Mean±SD (95%CI) | 28.6±9.3 (26.5–30.7) |
| **Educational level – n (%)** | |
| No education | 0 |
| Primary education | 0 |
| Secondary education | 33 (44.0%) |
| Higher education | 29 (38.7%) |
| Postgraduate, Masters, or PhD | 13 (17.3%) |
| **Marital status – n (%)** | |
| Single | 40 (53.3%) |
| Married or in a stable relationship | 31 (41.4%) |
| Widowed | 0 |
| Divorced | 4 (5.3%) |
| **Skin color – n (%)** | |
| White | 53 (70.7%) |
| Black | 3 (4.0%) |
| Brown | 19 (25.3%) |
| Asian | 0 |
| **Height (m)** | |
| Mean±SD (95%CI) | 1.62±0.06 (1.61–1.64) |
| **Weight (kg)** | |
| Mean±SD (95%CI) | 81.7±15.8 (78.1–85.3) |
| **BMI (kg/m²)** | |
| Mean±SD (95%CI) | 30.9±5.6 (29.6–32.2) |
| **BMI Categories – n (%)** | |
| Underweight (BMI < 18.5 kg/m²) | 0 |
| Healthy weight (18.5 ≤ BMI < 25.0 kg/m²) | 10 (13.3%) |
| Overweight (25.0 ≤ BMI < 30 kg/m²) | 27 (36.0%) |
| Obese (BMI ≥ 30.0 kg/m²) | 38 (50.7%) |
| **Weekly frequency of physical exercise* – n (%)** | |
| Does not practice physical exercise, is sedentary | 13 (17.3%) |
| Yes, once or twice per week | 12 (16.0%) |
| Yes, three to five times per week | 39 (52.0%) |
| Yes, more than five times per week | 11 (14.7%) |

SD = standard deviation; 95%CI = 95% confidence interval; BMI = body mass index; kg = kilograms; m = meters. *: regular practice of physical exercise was defined as at least 30 minutes a day on days practiced.

When asked if they had sought or were receiving psychological care for the emotional impact of lipedema, just 11 (14.7%) replied yes, while 64 (85.3%) stated they had not sought psychological care.

Twenty-four participants (32.0%) stated they had not sought psychological care but did consider doing so. Figure 1 illustrates these women's body satisfaction after their lipedema diagnoses. When asked if lipedema impacted their self-esteem, 100% replied yes (66.7% stated the impact was significant and 33.3% rated the impact as moderate).

With relation to participants' perceptions of professional support and guidance since their lipedema diagnosis, 18 women (24.0%) stated they felt well-informed about lipedema and their treatment options, 40 (53.3%) stated they felt partially informed, having received some useful guidance, and 17 (22.7%) stated they did not feel well-informed, because they had not received adequate guidance. When asked if they had received adequate guidance from health professionals about how to slim with lipedema, just 15 (20.0%) stated that yes they had received clear and useful guidance; 39 (52.0%) stated they were partially informed, having received some useful guidance, and 21 (28.0%) stated they did not feel well-informed, because they had not received adequate guidance and when asked if they would like to have had more support or care from health professionals in relation to how to slim with lipedema, 67 (89.3%) stated that they definitely would and 8 (10.7%) stated they would, but only in regard to certain areas. None of the women said they did not need more support because they were currently satisfied with their care.

Table 3 lists the female lipedema patients' perceptions in relation to nutrition and dietary habits. It will be observed that a majority of the women with lipedema (> 50%) had an unhealthy dietary profile before being diagnosed with lipedema and attempting to slim, characterized by consumption of processed food and fast food.

**Table 2.** Female lipedema patients' experiences with slimming. Brazil, 2025.

| Characteristics of slimming | TOTAL (n = 75) |
|---|---|
| **Have you tried to slim since the lipedema diagnosis? – n (%)** | |
| Yes | 75 (100.0%) |
| No | 0 |
| **What slimming methods have you tried?* – n (%)** | |
| Physical exercises | 69 (92.0%) |
| Restrictive diets | 53 (70.7%) |
| Use of medications or supplements | 35 (46.7%) |
| Bariatric surgery | 3 (4.0%) |
| Esthetic surgery (liposuction etc.) | 3 (4.0%) |
| Alternative therapies (acupuncture, drainage, cryolipolysis etc.) | 3 (4.0%) |
| Intragastric balloon | 1 (1.3%) |
| None of the methods above | 2 (2.7%) |
| **What was the main challenge you faced when trying to slim? – n (%)** | |
| Difficulty following an adequate diet | 16 (21.3%) |
| Lack of visible results | 18 (24.0%) |
| Emotional and psychological impacts | 16 (21.3%) |
| Symptoms of lipedema (pain, swelling etc.) | 15 (20.0%) |
| Difficulty exercising because of pain or tiredness | 9 (12.1%) |
| Lack of support from health professionals | 0 |
| One participant did not feel she needed to slim | 1 (1.3%) |
| **Did you notice any difference in weight loss in areas affected by lipedema? – n (%)** | |
| Yes, weight loss is more difficult in the affected areas | 71 (94.7%) |
| I didn't notice any difference | 4 (5.3%) |
| **What strategy do you think is the most effective way to slim with lipedema? – n (%)** | |
| Balanced and personalized diets | 39 (52.0%) |
| Exercises specifically targeting lipedema (such as water aerobics) | 10 (13.3%) |
| Use of medical treatments or therapies | 8 (10.7%) |
| Surgical interventions (such as liposuction) | 11 (14.7%) |
| Psychological care for emotional support | 7 (9.3%) |

*: the volunteers marked all options they had tried.

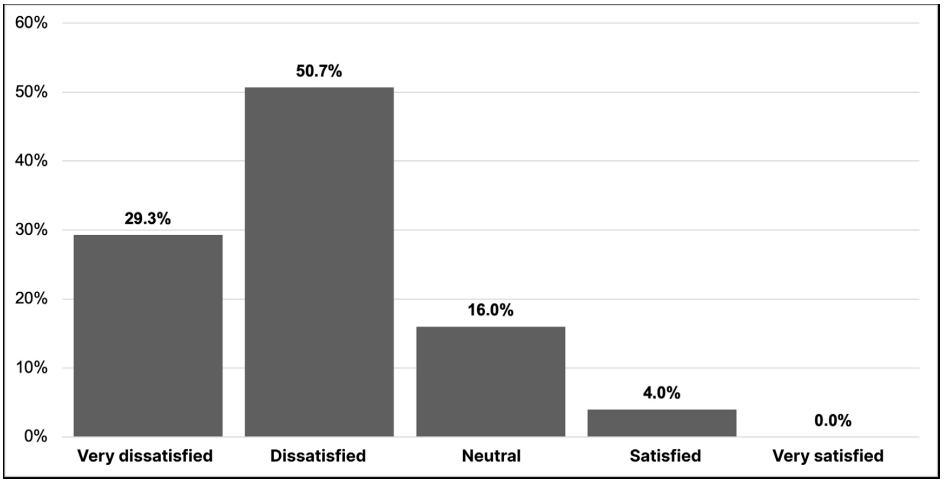


**Figure 1.** Personal satisfaction with the body since diagnosis of lipedema.

**Table 3.** Female lipedema patients' perceptions about nutrition. Brazil, 2025.

| Characteristics of nutrition and dietary habits | TOTAL (n = 75) |
|---|---|
| **Before starting to try to lose weight, what was your daily diet like? – n (%)** | |
| I ate lots of large portions and processed foods | 28 (37.3%) |
| I often ate fast food or ready-made food | 20 (26.7%) |
| I preferred natural foods, but I ate a lot in large portions | 15 (20.0%) |
| I had a balanced diet with controlled portions | 12 (16.0%) |
| **Which foods did you tend to eat most often before trying to slim?* – n (%)** | |
| Sweets and desserts | 62 (82.7%) |
| Bread and pasta | 57 (76.0%) |
| High carbohydrate foods (e.g.: rice, potatoes) | 41 (54.7%) |
| High fat foods (e.g.: fried food, fast food) | 36 (48.0%) |
| Sugary drinks (e.g.: sodas, artificial juice) | 33 (44.0%) |
| Red meat or fatty meats | 26 (34.7%) |
| Fruit and vegetables | 17 (22.7%) |
| Lean proteins (e.g.: fish, chicken) | 17 (22.7%) |
| **After trying to slim, how did the frequency of your consumption of these foods change? – n (%)** | |
| Significantly reduced or completely eliminated | 26 (34.7%) |
| Reduced a little | 44 (58.7%) |
| Maintained the same frequency | 3 (4.0%) |
| Increased consumption | 1 (1.3%) |
| I did not try to change my diet | 1 (1.3%) |
| **Which foods or types of diet did you find most effective for slimming with lipedema?* – n (%)** | |
| Avoiding processed foods and sugars | 46 (61.3%) |
| More natural and balanced diet | 43 (57.3%) |
| Diets rich in lean proteins | 26 (34.7%) |
| Diets with low carbohydrate content (e.g.: ketogenic, low carb) | 24 (32.0%) |
| Nutritional supplementation (e.g.: vitamins, minerals) | 15 (20.0%) |
| Intermittent fasting diet | 10 (13.3%) |
| Vegetable based diets (e.g.: plant-based, vegetarian diets) | 3 (4.0%) |
| **How do you rate the effects on your body and slimming of these diets that you tried? – n (%)** | |
| Very effective, I saw visible results | 24 (32.0%) |
| Moderately effective, but there were no major changes | 43 (57.3%) |
| Not effective, I didn't see any difference | 5 (6.7%) |
| I have not tried to change my diet yet | 3 (4.0%) |
| **Did you notice any difference in water retention, pain, or other symptoms of lipedema after changing your diet? – n (%)** | |
| Yes, there was a significant improvement in the symptoms | 25 (33.3%) |
| There was a slight improvement | 35 (46.7%) |
| I didn't notice any difference | 12 (16.0%) |
| I haven't changed my diet enough to assess change | 3 (4.0%) |
| **Before starting the diet, how many meals (main meals and snacks) did you eat per day? – n (%)** | |
| One meal per day | 2 (2.7%) |
| Two meals per day | 2 (2.7%) |
| Three meals per day | 20 (26.7%) |
| Four meals per day | 30 (40.0%) |
| Five meals per day | 14 (18.7%) |
| More than five meals per day | 7 (9.2%) |
| **After starting the diet, how many meals (main meals and snacks) did you eat per day? – n (%)** | |
| One meal per day | 2 (2.7%) |
| Two meals per day | 5 (6.7%) |
| Three meals per day | 15 (20.0%) |
| Four meals per day | 28 (37.3%) |
| Five meals per day | 21 (28.0%) |
| More than five meals per day | 4 (5.3%) |
| **Did you find it difficult to maintain a healthy diet because of the symptoms of lipedema? – n (%)** | |
| Yes, the pain and discomfort make it difficult to maintain a healthy diet | 19 (25.3%) |
| Sometimes, but I can control it | 21 (28.0%) |
| I don't feel that lipedema affects my diet | 35 (46.7%) |

*: the volunteers marked all possible options for these items.

Assessment of lipedema symptoms using the LSAQ validated questionnaire revealed a mean score of 87.1±36.9 points (95%CI 78.8–95.5), varying from 5 to 144, with higher values indicating greater severity or discomfort. Table 4 lists the prevalence rates for the answers to each item on the questionnaire.

The correlation analysis showed that the total LSAQ questionnaire scores were not associated with age ($r = 0.110$; $P = 0.349$), weight ($r = 0.065$; $P = 0.581$), or BMI ($r = 0.070$; $P = 0.550$). Age was also not associated with weight ($r = 0.108$; $P = 0.357$) or BMI ($r = 0.103$; $P = 0.382$). Only weight and BMI were positively associated ($r = 0.931$; $P < 0.001$), as is to be expected.

**Table 4.** Prevalence of female lipedema patients' ratings for the LSAQ questionnaire items. Brazil, 2025.

| Symptoms | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Are the affected areas painful? (0 no/10 very painful) | 6.7% | 10.7% | 4.0% | 10.7% | 2.7% | 10.7% | 8.0% | 6.7% | 10.7% | 9.3% | 20.0% |
| Are the affected areas sensitive to touch or pressure? (0 no/10 very sensitive) | 5.3% | 5.3% | 4.0% | 10.7% | 2.7% | 10.7% | 5.3% | 5.3% | 9.3% | 6.7% | 34.7% |
| Do you tend to get purple marks on your legs easily and frequently? (bruising) (0 no/10 very frequently) | 1.3% | 6.7% | 2.7% | 13.3% | 0 | 5.3% | 2.7% | 8.0% | 8.0% | 10.7% | 41.3% |
| Do you feel "pressure" or "tension" in your legs? (0 no/10 very much) | 6.7% | 1.3% | 6.7% | 10.7% | 5.3% | 1.3% | 4.0% | 5.3% | 14.7% | 10.7% | 33.3% |
| Do your legs feel "hot" or a "burning sensation"? (0 no/10 very much) | 17.3% | 8.0% | 4.0% | 13.3% | 6.7% | 8.0% | 6.7% | 9.3% | 8.0% | 5.3% | 13.3% |
| Do your legs feel cold? (0 no/10 very much) | 29.3% | 10.7% | 4.0% | 12.0% | 2.7% | 9.3% | 5.3% | 2.7% | 6.7% | 5.3% | 12.0% |
| Do you get muscle cramps? (0 no/10 very often) | 16.0% | 10.7% | 6.7% | 9.3% | 6.7% | 8.0% | 8.0% | 1.3% | 14.7% | 6.7% | 12.0% |
| Do your legs feel heavy? (0 no/10 very much) | 5.3% | 0 | 2.7% | 13.3% | 1.3% | 4.0% | 2.7% | 1.3% | 13.3% | 9.3% | 46.7% |
| Do your legs feel tired? (0 no/10 very much) | 4.0% | 0 | 5.3% | 13.3% | 0 | 2.7% | 1.3% | 0 | 14.7% | 9.3% | 49.3% |
| Do your legs feel swollen? (0 no/10 very much) | 4.0% | 0 | 6.7% | 12.0% | 0 | 5.3% | 2.7% | 2.7% | 10.7% | 6.7% | 49.3% |
| Does your skin feel "irritated"? (0 no/10 very much) | 20.0% | 14.7% | 8.0% | 8.0% | 5.3% | 5.3% | 5.3% | 10.7% | 8.0% | 2.7% | 12.0% |
| Do you feel itching? (0 no/10 very much) | 26.7% | 13.3% | 5.3% | 6.7% | 2.7% | 4.0% | 5.3% | 6.7% | 5.3% | 4.0% | 20.0% |
| Do you have difficulty walking? Any limitations to movement? (0 no/10 severe) | 25.3% | 12.0% | 8.0% | 8.0% | 4.0% | 5.3% | 2.7% | 8.0% | 6.7% | 4.0% | 16.0% |
| How does the condition affect your quality of life? (0 not at all/10 severely) | 4.0% | 5.3% | 10.7% | 10.7% | 9.3% | 1.3% | 12.0% | 12.0% | 14.7% | 6.7% | 13.3% |
| Are you satisfied with the appearance of your legs? (Attention: 0 very satisfied /10 dissatisfied) | 14.7% | 2.7% | 5.3% | 16.0% | 1.3% | 0 | 0 | 5.3% | 6.7% | 5.3% | 42.7% |

LSAQ: Lipedema Symptom Assessment Questionnaire.

## DISCUSSION

With regard to the results presented, it is clear that these participants were diagnosed with lipedema recently, suggesting that the disease was recognized recently and possibly reflecting difficulty with access to clear information on its management. The prevalence of excess weight among the study participants is also a relevant observation, as is the frequency of reports of symptoms such as pain, swelling, and discomfort, which have direct impacts on participants' daily routines and wellbeing. Additionally, many women reported dissatisfaction with their appearance and reduced self-esteem, demonstrating the importance of psychological support. The absence of adequate nutritional and multidisciplinary care also stands out, indicating a need for greater attention to individualized dietary and therapeutic strategies. Future studies could investigate how integrating the practice of different health professionals and improving knowledge about lipedema could improve these women's quality of life, as suggested in the Brazilian Consensus on Lipedema.[1]

The study sample had mean age of 28.6 years, mean weight of 81.7 kg, and mean BMI of 30.9 kg/m$^2$, indicating a predominance of obesity among the participants. When compared with data from a study by Amato et al.,[12] which reported mean age of 38.7 years, weight of 79.46 kg, and BMI of 30.10 kg/m$^2$, it is notable that the participants in the present sample had a similar anthropometric profile, but were younger. This anthropometric similarity, but difference in age, were also observed in relation to Amato et al. (2022).[2] Analyzing the proximity of the mean weight and BMI in these studies, it is important to highlight that BMI alone may not adequately reflect body composition in women with lipedema, since the increased weight is

primarily caused by abnormal fat deposits in the limbs, rather than to generalized obesity.[1,12,14,15] However, while overweight and obesity are not criteria for lipedema, the accumulation of fat may be greater in these cases and, consequently, these patients may exhibit more signs and symptoms, leading to them seeking diagnosis and treatment more often. As such, these findings emphasize the need for more specific and multidimensional diagnostic approaches that consider fat distribution and clinical symptomology, avoiding erroneous interpretations of these patients' nutritional status.[14,15]

The present study demonstrated prevalent difficulties with slimming, usually considered one of the main barriers faced by women with lipedema, and possibly also associated with emotional factors and a lack of adequate professional support, which should be assessed in future studies. Approximately 80% of the participants reported body dissatisfaction since diagnosis and the majority expressed a wish for greater professional support, including nutritional guidance and psychological care. These findings are consistent with a study by Jeziorek et al. (2022),[16] who investigated the effects of diets with low carbohydrate and high fat content vs. diets with moderate carbohydrates in women with lipedema. The results indicate that while diets can help to reduce total body fat, reducing fat accumulated in areas affected by lipedema is extremely difficult, since 95% of the patients did not manage to lose fat in these specific areas. Slimming can be a challenge for women with lipedema, not only because of behavioral factors, but also because of physiological barriers inherent to the condition. The elevated body dissatisfaction and lack of psychological care observed in the study sample underscore the need for multidisciplinary strategies that integrate personalized nutritional guidance, psychological support and, when indicated, supplementary treatments for management of lipedema. This combined approach can potentially improve not only the results of slimming, but also these patients' self-esteem and quality of life.

The findings of the present study also demonstrate that a majority of the women with lipedema had unhealthy dietary patterns before being diagnosed and attempting to slim, characterized by frequent consumption of ultra-processed foods, fast food, excess simple carbohydrates, sweet foods, and sugary drinks. These habits can contribute to weight gain and aggravate the symptoms of lipedema, in addition to negatively impacting metabolic health and quality of life. In comparison, a study by Di Renzo et al.[17] demonstrated that adherence to a modified mediterranean diet, rich in fruit, vegetables, lean proteins, and healthy fats, produced improvements in body composition and reductions in body measurements among women with lipedema. While the present study found evidence of unhealthy dietary habits before diagnosis, the study by Di Renzo et al.[17] showed that structured nutritional interventions can modify dietary habits and improve clinical results and quality of life. This evidence highlights the importance of multidisciplinary interventions that include personalized nutritional guidance and dietary education, considering not just weight loss, but also improvements in the quality of the diet and in the patients' physical and emotional wellbeing.[9,14,18-21]

Amato et al.[2] estimated a 12.3% prevalence of lipedema among women in the Brazilian population in a study with 253 women, in which the authors also administered an online questionnaire. To arrive at this prevalence, they used a cutoff point of 12 points on the questionnaire, which would give a 77.8% (95%CI 64.2–87.3%) probability of a lipedema diagnosis. While self-report data may constitute a limitation in studies, questionnaires on symptoms related to lipedema are often administered online, as in the present study.

This study is not free from limitations and they should be taken into consideration. One of these limitations is the convenience sample, comprising all women who agreed to take part, with no control group. The sample is relatively small, which could reduce the potential for generalization of the results to the entire population with lipedema. This is also a descriptive study, which demands caution with extrapolation of the results and interpretation. Additionally, the majority of the data collected were self-report, including diagnosis of the disease, which could introduce biases caused by memory and personal perceptions, limiting the precision of the information on dietary habits and symptoms. There was also no longitudinal assessment, ruling out analysis of how nutritional interventions or psychological care could impact the clinical and emotional results. However, even with these limitations, the study is important for care practice because it yields essential information on the emotional and nutritional experience of women with lipedema, enabling health professionals to better understand the complexity of the condition and plan multidisciplinary interventions that consider both the physical and the emotional wellbeing of this population.[14,18]

## CONCLUSIONS

This study was able to describe important aspects of the experience of women with lipedema, highlighting the frequency of symptoms such as pain, edema, and discomfort and the elevated rates of body dissatisfaction and perceptions of the impact of the disease on self-esteem. It was observed that, in addition to physical issues, the emotional aspects also burdened these women.

The results also revealed unhealthy dietary habits before diagnosis, in addition to significant difficulty with slimming. These findings corroborate the existing literature and indicate that individualized strategies and continuous support may improve not only the clinical results, but also the emotional wellbeing and self-esteem of women with lipedema.

## DATA AVAILABILITY

The data supporting this study are available from the corresponding author, MLRS, upon request, with the exception of personal information that would allow for the identification of study participants.

## REFERENCES


1. Amato ACM, Peclat APRM, Kikuchi R, et al. Consenso Brasileiro de Lipedema pela metodologia Delphi. J Vasc Bras. 2025;24:e20230183. https://doi.org/10.1590/1677-5449.202301831. PMid:39949954.
2. Amato ACM, Amato FCM, Amato JLS, Benitti DA. Prevalência e fatores de risco para lipedema no Brasil. J Vasc Bras. 2022;21:e20210198. PMid:35677743.
3. Allen EV, Hines EA Jr, Hines EA. Lipedema of the legs: a syndrome characterized by fat legs and orthostatic edema. Mayo Clin Proc. 1940;15(12):184-7. https://doi.org/10.1016/S0025-6196(25)37697-4.
4. Herbst KL. Rare adipose disorders (RADs) masquerading as obesity. Acta Pharmacol Sin. 2012;33(2):155-72. https://doi.org/10.1038/aps.2011.153. PMid:22301856.
5. Herbst KL, Kahn LA, Iker E, et al. Standard of care for lipedema in the United States. Phlebology. 2021;36(10):779-96. https://doi.org/10.1177/02683555211015887. PMid:34049453.
6. Falck J, Rolander B, Nygardh A, Jonasson LL, Martensson J. Women with lipoedema: a national survey on their health, health-related quality of life, and sense of coherence. BMC Womens Health. 2022;22(1):457. https://doi.org/10.1186/s12905-022-02022-3. PMid:36401222.
7. Lundanes J, Sandnes F, Gjeilo KH, et al. Effect a low-carbohydrate diet on pain and quality of life in female patients with lipedema: a randomized controlled trial. Obesity (Silver Spring). 2024;32(6):1071-82. https://doi.org/10.1002/oby.24026. PMid:38627016.
8. Amato ACM, Amato JLS, Benitti DA. The efficacy of ketigenic diets (low carbohydrate; high fat) as a potential nutritional intervention for lipedema: a systematic review and meta-analysis. Nutrients. 2024;16(19):3276. https://doi.org/10.3390/nu16193276. PMid:39408242.
9. Oliveira J, Paula ACP, Guimaraes VHD. Clinical or cultural? Dietary interventions for lipedema: a systematic review. Maturitas. 2025;202:108716. https://doi.org/10.1016/j.maturitas.2025.108716. PMid:40939491.
10. World Health Organization. Obesity – preventing and managing the global epidemic. Report of a WHO consultation on obesity. Genebra: WHO; 2000. 253 p. (Technical Report Series, No. 894).
11. World Health Organization. Physical status: the use and interpretation of anthropometry. Genebra: WHO; 1995. 452 p. (Technical Report Series, No. 854).
12. Amato ACM, Amato FCM, Benitti DA, Santos RV. Tradução, adaptação cultural e validação do questionário de avaliação sintomática do lipedema (QuASiL). J Vasc Bras. 2020;19:e20200049. https://doi.org/10.1590/1677-5449.200049. PMid:34178078.
13. Amato ACM, Benitti DA. Lipedema can be treated non-surgically: a report of 5 cases. Am J Case Rep. 2021;22:e934406. https://doi.org/10.12659/AJCR.934406. PMid:34871293.
14. Kamamoto F, Baiocchi JMT, Batista BN, Ribeiro RDA, Modena DAO, Gornati VC. Lipedema: exploring pathophysiology and treatment strategies – state of the art. J Vasc Bras. 2024;23:e20240025. https://doi.org/10.1590/1677-5449.202400252. PMid:39866170.
15. Jeziorek M, Wuczynski M, Sowicz M, Adaszynska A, Szuba A, Chachaj A. Metabolic alterations in women with lipedema compared to women with lifestyle-induced overweight/obesity. Biomedicines. 2025;13(4):867. https://doi.org/10.3390/biomedicines13040867. PMid:40299449.
16. Jeziorek M, Szuba A, Kujawa K, Regulska-Ilow B. The effect of a low-carbohydrate, high-fat diet versus moderate-carbohydrate and fat diet on body composition in patients with lipedema. Diabetes Metab Syndr Obes. 2022;15:2545-61. https://doi.org/10.2147/DMSO.S377720. PMid:36035515.
17. Di Renzo L, Cinelli G, Romano L, et al. Potential effects of a modified mediterranean diet on body composition in lipoedema. Nutrients. 2021;13(2):358. https://doi.org/10.3390/nu13020358. PMid:33504026.
18. Kruppa P, Georgiou I, Biermann N, Prantl L, Klein-Weigel P, Ghods M. Lipedema – pathogenesis, diagnosis, and treatment options. Dtsch Arztebl Int. 2020;117(22-23):396-403. PMid:32762835.
19. Sanlier N, Baltaci S. Therapeutic applications of ketogenic diets in lipedema: a narrative review of current evidence. Curr Obes Rep. 2025;14(1):49. https://doi.org/10.1007/s13679-025-00642-y. PMid:40419722.
20. Tomada I. Lipedema: from women's hormonal changes to nutritional intervention. Endocrines. 2025;6(2):24. https://doi.org/10.3390/endocrines6020024.
21. Di Renzo L, Gualtieri P, Zomparelli S, et al. Modified mediterranean-ketogenic diet and carboxytherapy as personalized therapeutic strategies in lipedema: a pilot study. Nutrients. 2023;15(16):3654. https://doi.org/10.3390/nu15163654. PMid:37630844.



Correspondence
Marcio Leandro Ribeiro de Souza
Centro Universitário Faminas Belo Horizonte
Avenida Cristiano Machado, 12001 - Bairro Vila Cióris
CEP: 31744-007 – Belo Horizonte (MG), Brasil
Tel.: +55 (31) 99907-7008
E-mail: marcionutricionista@yahoo.com.br

Author information
MLRS – PhD in Health Sciences, Medical Faculty, Universidade Federal de Minas Gerais (UFMG) and Full Professor of Nutrition, Centro Universitário Faminas Belo Horizonte.
CFF and CPD – BSc in Nutrition, Centro Universitário Faminas Belo Horizonte.



Author contributions
Study conception and design: CFF, CPD, MLRS
Data analysis and interpretation: CFF, CPD, MLRS
Data collection: CFF, CPD, MLRS
Article writing: CFF, CPD, MLRS
Critical review of the text: CFF, CPD, MLRS
Final approval of the article*: CFF, CPD, MLRS
Statistical analysis: CFF, CPD, MLRS
Overall responsibility: CFF, CPD, MLRS

*All authors have read and approved of the final version of the article submitted to J Vasc Bras.

Editor-in-chief responsible
Winston Bonetti Yoshida