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Quality of life in patients with lymphedema after treatment for breast cancer

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ABSTRACT. The quality of life in patients with breast cancer has improved over the past decade. This study aimed to assess the quality of life in women with lymphedema following treatment for breast cancer. A total of 31 women with posttreatment breast cancer lymphedema, with a mean age of 61.2 years, were evaluated at Clínica Godoy in Brazil. The clinical diagnosis of lymphedema was confirmed using volumetry, perimetry, and InBody S10 bioimpedance. Lymphedema was defined by a volume increase greater than 10% compared to the contralateral limb. All participants were informed about the study and, upon consent, completed the 36-Item Short Form Survey (SF-36) quality-of-life questionnaire with appropriate guidance. Data were recorded in Excel and analyzed using Start Direct. Scores varied widely, ranging from 15 to 100. The lowest score was in the pain domain (15), while the highest median score was in social functioning (87.5); the lowest median score was in physical functioning (50). Based on Fisher's exact test and median values, no domain showed statistically significant superiority over the others. Women with lymphedema after breast cancer treatment often experience impairment in at least one aspect of quality of life. Identifying these affected domains is essential for effective patient management.

Keywords: lymphedema; breast cancer; quality of life.

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Introduction

Breast cancer is one of the most prevalent cancers among women, and approximately 33% of survivors develop lymphedema. When left untreated, lymphedema can threaten limb integrity or cause significant functional limitations (Naughtonet al., 2020; Pereira de Godoy et al., 2022). A study evaluating the effectiveness of manual lymphatic drainage (MLD) combined with multilayer compression bandaging and an exercise program on arm volume, subjective symptoms, upper limb function, and health-related quality of life in patients with breast cancer-related lymphedema (BCRL) found no additional benefit of MLD regarding percentage reduction in arm volume during the intensive treatment phase of BCRL (Sen et al., 2020).

Quality of life among breast cancer patients has improved over the past decade. However, symptoms such as pain and lymphedema still raise concerns, particularly regarding body image, age, social support, sexual function, psychological well-being — especially in younger patients — and future outlook. These issues warrant further attention (Eaton et al., 2020; Mokhatri-Hesari& Montazeri, 2020; Pereira de Godoy et al., 2020; de Godoy et al., 2021). Studies have shown that perceived attention and memory function decline from the pre-surgical period to 1 month after surgery, accompanied by changes in arm function and a decrease in depressive symptoms (Jung et al., 2020). Moreover, the type of surgery—whether breast-conserving or not—has a direct impact on patients' quality of life (Maria de Fatima et al., 2013).

Patients with kinesiophobia had significantly higher mean scores on the Tampa Scale of Kinesiophobia (TSK), Quick Disabilities of the Arm, Shoulder, and Hand questionnaire (Q-DASH), and the Hospital Anxiety and Depression Scale (HADS) for both anxiety (HADS-A) and depression (HADS-D), along with lower mean scores in the physical domains of the 36-Item Short Form Survey (SF-36) (Jung et al., 2020). Phantom pain is also a common and distressing experience for these patients (Maria de Fatima et al., 2013).

The choice of treatment and the results achieved can play an important role in helping these patients overcome their challenges (Gencay et al., 2018). The aim of the present study is to assess the quality of life in women with lymphedema following treatment for breast cancer.

Method

Participants and setting

A total of 31 women with lymphedema following breast cancer treatment, with a mean age of 61.2 years, were evaluated at Clínica Godoy in the city of São José do Rio Preto, state of São Paulo, Brazil.

Study design

This was a cross-sectional study assessing the quality of life in women with upper limb lymphedema by using the SF-36.

Sampling and eligibility criteria

Participants were selected consecutively in the order of arrival at the clinic. Women diagnosed with lymphedema secondary to breast cancer treatment were included. Patients with lymphedema from other clinically identified causes or with associated chronic diseases were excluded.

Ethical consideration

The study was approved by the Human Research Ethics Committee at the Instituto de Biociências, Letras e Ciências Exatas (IBILCE), Universidade Estadual Paulista 'Júlio de Mesquita Filho' (Unesp), São José do Rio Preto (approval number: 149.503). All participants gave informed consent.

Statistical consideration

Descriptive statistics were used for data summarization. Fisher's exact test was applied, with a significance level set at 5% ($\alpha = 0.05$).

Data collection and procedures

The clinical diagnosis of lymphedema was confirmed through volumetry, perimetry, and InBody S10 bioimpedance analysis. Lymphedema was defined by a volume increase greater than 10% in the affected limb compared to the contralateral side, as determined by volumetry. After being informed about the study and providing consent, patients completed the SF-36 quality-of-life questionnaire with proper guidance. Data were entered into an Excel spreadsheet.

Results

Table 1 presents the individual variation in scores across all assessed domains, with a mean patient age of 61.2 years. A wide range of scores was observed, from 15 to 100. Table 2 provides descriptive statistics for age and each domain of SF-36, including functional capacity, physical role functioning, pain, general health status, vitality, social functioning, and mental health.

Table 1. Age and scores for quality-of-life domains: functional capacity, physical role functioning, pain, general health status, vitality, social functioning, emotional role functioning, and mental health.

Age	Functional capacity	Physical role functioning	Pain	General health status	Vitality	Social functioning	Emotional role functioning	Mental health
65	65	75	33.5	55	95	37.5	66.6	56
47	50	25	15	57	50	100	33.3	48
41	45	25	54	30	65	37.5	33.3	36
71	40	100	100	97	85	100	100	84
69	85	100	74	70	75	87.5	100	64
68	40	100	100	97	95	87.5	100	96
68	35	25	52	37	60	100	66.6	84
58	35	25	41	72	55	25	100	56
60	35	25	31	30	25	50	33.3	28
68	55	25	41	52	75	75	33.3	80
58	85	50	51	82	65	62.5	66.6	72
53	55	50	52	72	60	37.5	33.3	60
62	75	100	62	38	70	100	33.3	68
73	70	100	74	52	65	87.5	100	80
62	90	75	68	57	70	100	100	60

52	75	50	100	100	85	87.5	100	92
58	40	25	41	72	30	25	33.3	20
48	40	50	41	72	50	100	33.3	76
76	80	100	62	82	70	87.5	100	84
58	45	50	72	80	65	75	100	84
62	80	50	41	62	65	62.5	33.3	52
74	60	75	100	61	80	100	100	80
73	60	25	41	35	60	50	66.6	72
59	85	75	51	72	70	100	100	72
57	55	50	51	62	50	100	66.6	28
59	80	50	62	82	75	100	66.6	88.8
51	45	100	41	40	45	25	33.3	40
75	30	50	100	70	30	37.5	66.6	52
61	35	50	51	82	65	50	33.3	88.8
54	95	100	100	100	90	100	66.6	100
60	50	50	72	82	90	100	66.6	88.8

Table 2. Descriptive statistics for age and quality-of-life domains: mean, median, standard deviation, minimum, and maximum values.

Variable	Age	Functional capacity	Physical role functioning	Pain	General health status	Vitality	Social functioning	Emotional role functioning	Mental health
Valid data (n)	31	31	31	31	31	31	31	31	31
Mean	61.2	58.5	59.6	60.4	66.1	65.4	73.7	66.6	67.4
Standard deviation (SD)	8.8	19.7	28.6	23.7	20.4	18.0	28.0	28.5	21.5
Maximum	76	95	100	100	100	95	100	100	100
Median	60	55	50	52	70	65	87.5	66.6	72
Minimum	41	30	25	15	30	25	25	33.3	20

The lowest score recorded was in the pain domain, with one patient scoring 15 points. The highest median score was observed in the social functioning domain (87.5), while the lowest median score was in the physical functioning domain (50). According to Fisher's exact test, none of the analyzed domains showed statistically significant superiority over the others when comparing median values. Among the domains assessed, physical functioning had the lowest median score (50); however, most of the 23 participants evaluated scored above this median. Figure 1 illustrates the minimum, maximum, and quartile distributions for each domain. When examining individual scores, 11 patients scored above 50 in all domains. Four patients had one domain below 50, five had two domains below, another five had three domains below, two had four, one had six, and three patients scored below 50 in seven of the assessed domains.

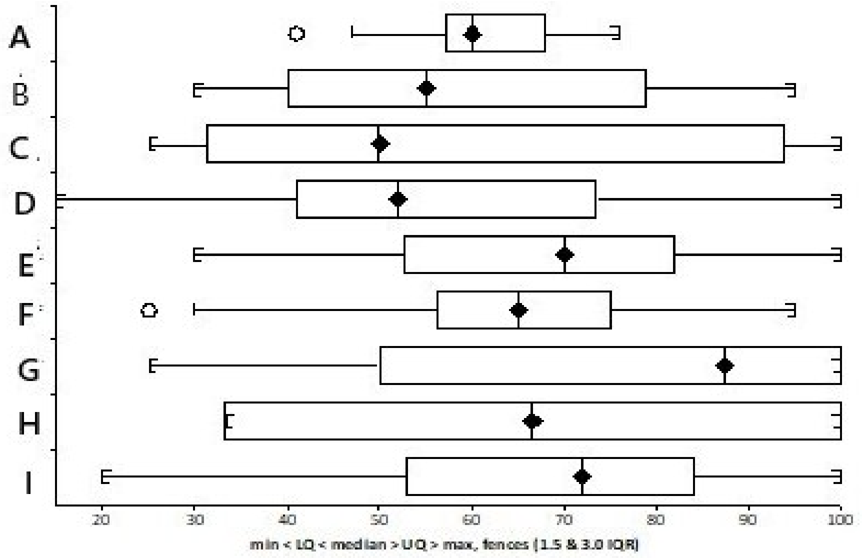

Figure 1. Boxplot showing the minimum, maximum, interquartile ranges, and medians for each assessed variable. A = age; B = functional capacity; C = physical role functioning; D = pain; E = general health status; F = vitality; G = social functioning; H = emotional role functioning; I = mental health.

Discussion

This study demonstrates that patients undergoing treatment for post-breast cancer lymphedema may experience reduced quality of life in one or more assessed domains. The concept of ‘quality of life’ encompasses a range of factors, including physical health, comorbidities such as lymphedema, pain, weight gain, limitations in daily activities (including sexual function), and other treatment-related effects. It also includes psychological well-being and financial burdens resulting from cancer treatment.

Managing expectations, reducing stress, and relieving self-imposed pressure are all key to recovery during this time. In our analysis, the lowest recorded score was observed in the pain domain, where one patient scored just 15 points. Pain remains one of the most impactful symptoms in this population, with only 19.3% of patients reporting no pain. This highlights the importance of systematically assessing pain as part of routine clinical evaluations for this group.

Previous studies have consistently shown that individuals with lymphedema after breast cancer treatment experience significant changes in quality of life (Eaton et al., 2020; Naughtonet al., 2020; Mokhatri-Hesari& Montazeri,2020; Sen et al., 2020; Pereira de Godoy et al., 2022). Improving quality of life should be a central goal of treatment; therefore, regular assessment is strongly recommended as part of comprehensive care.

Another notable finding is the domain scores, where the lowest median values were observed in physical functioning and pain, while the highest was in social functioning. The low score in the physical domain highlights the negative physical impact that mastectomy can have on women, even among those who underwent breast reconstruction. Previous studies have emphasized similar results, showing persistently low scores in this domain even 1 year after surgery as well as negative effects in the period immediately following treatment (Godoy& Godoy,2013; Godoyet al., 2013;). In our sample, limitations in range of motion, reduced muscle strength, and the presence of lymphedema may have contributed to the decline in physical functioning scores. These factors deserve special attention from healthcare professionals, as they significantly affect patients’ quality of life.

With regard to the pain domain, which also showed a decrease in scores, the literature indicates that chronic pain affects 25% to 60% of patients undergoing breast cancer treatment, making it a significant clinical concern influenced by both intraoperative and postoperative factors (Elder et al., 2005). Most individuals with chronic pain experience varying degrees of emotional distress. Commonly reported symptoms include anxiety, depression, anger, frustration, and resentment. These negative emotions can be viewed as stress-related symptoms that in turn negatively impact quality of life.

A study assessing pain and post-treatment coping strategies in breast cancer survivors reported that 67% of patients experienced pain with varying intensities. They adopted diverse coping mechanisms (e.g., physical, psychological, religious, and environmental) to manage their pain. These strategies contributed to alleviating their suffering (King et al., 2000; Andersen& Kehlet, 2011; Maria de Fatima et al., 2014).

One innovative therapeutic approach developed by Godoy & Godoy involves the use of occupational engagement as part of treatment. In this model, daily activities combined with a containment mechanism help reduce edema. This approach not only contributes to symptom control but also encourages patients to discover new skills, offering a renewed perspective for managing these comorbidities (Godoy et al., 2016).

Studies on the concept of quality of life — which is often confused with lifestyle, living conditions, or life circumstances — also address the most appropriate instruments for its assessment. Despite extensive discussions, there is still no universally accepted definition of quality of life. To better understand the concept, it is important to distinguish quality of life from health status. Quality of life encompasses three main dimensions: mental health, physical function, and social function. While physical function is the most relevant factor for assessing health status, mental health and both psychological and social well-being are also essential components of quality of life. Therefore, multiple instruments are needed to properly assess both quality of life and health status. Quality of life has increasingly been used as an indicator of treatment effectiveness and impact as well as a tool for comparing health interventions and evaluating the physical and psychosocial effects of diseases.

Conclusion

Patients with lymphedema following breast cancer treatment often experience impairments in at least one domain of quality of life. Identifying the specific areas affected is essential for guiding appropriate clinical management and improving patient outcomes.

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