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INVESTIGATION OF THE EFFECT OF LYMPHEDEMA SELF-CARE PATIENT SCHOOL ON FUNCTIONALITY, QUALITY OF LIFE, LYMPHEDEMA VOLUME, AND BODY VALUE IN PATIENTS WITH LOWER EXTREMITY LYMPHEDEMA: A QUASI-EXPERIMENTAL STUDY

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ABSTRACT

This study examined the effect of lymphedema self-care patient school education on patient functionality, quality of life, body value, and lymphedema volume in patients with lower extremity lymphedema. The study utilized a single-group quasi-experimental design. The study sample included 21 patients with primary and secondary lower extremity lymphedema. A multidisciplinary team created a face-to-face lymphedema self-care patient education program that lasted three weeks with four hours each week to enhance lymphedema self-care management. Data collected from participants prior to the program and then at third and sixth months via Lower Extremity Functional Scale (LEFS), Lymphedema Functionality, Disability and Quality of Life Scale in Lower Extremity Lymphedema (LYMPH-ICF-LL), Body Value Scale, and extremity volumes. The average age of the patients was 54.85±11.99 years and two-thirds had secondary lymphedema. A statistically significant difference was found in the mean scores of LEFS (p<0.001), LYMPH-ICF-LL total (p= 0.006) in the 3rd and 6th months after the completion of the program, and in the lymphedema volume change (p= 0.031) in the 6th month. It was found that the lymphedema self-care patient school improved functionality and quality of life in patients with lower extremity lymphedema and decreased lymphedema volume. This lymphedema self-care patient education program is a safe and effective educational method for self-care management in individuals with lower extremity lymphedema.

Keywords: lower extremity lymphedema, lymphedema self-care, lymphedema education, quality of life

INTRODUCTION

Lymphedema is the accumulation of protein-rich fluid in the extracellular space resulting from damage to the lymphatic system. The cause of damage may be congenital (primary) or may occur due to infection, cancer treatment, obesity, or various injuries (secondary) (1). The most common cause of lower extremity lymphedema worldwide is lymphatic filariasis, which develops due to vector-borne infection in endemic areas (1). In non-endemic countries, cancer and genetics are the most common causes (1,2). Although the prevalence of primary lymphedema is unknown, it is estimated to be 1: 100,000 (3). The incidence of gynecological cancer-related lymphedema varies between 7% and 69% following treatment (4-6).

Whatever the cause, once protein-rich fluid builds up in the extracellular space, a persistent inflammatory state with fibrous tissue formation and adipogenesis occurs. Edema, skin changes, hair loss, discomfort, a heavy sensation, restrictions on movement, recurring infections, deep vein thrombosis, a decline in body image, and withdrawal from work and social activities are just a few of the issues that patients experience (3). In addition, patients' quality of life is negatively impacted by lymphedema, which causes them to experience several physiological, psychological, social, and financial issues (7,8). Patients need to take responsibility for self-care to prevent the development and progression of lymphedema, to continue the volume reduction achieved by lymphedema treatment, and to reduce the symptom burden of lymphedema. It has been stated that the patient's education about lymphedema management needs to be improved and that many did not receive information about lymphedema before it developed nor had any idea about its management (8). Lymphedema self-care activities include skin care, exercise, weight control, monitoring lymphedema symptoms, infection management, compression garments, and pneumatic compression devices (1). A study examining self-care in patients with lower extremity lymphedema found that 68.9% of the patients did some self-care activities at home including 48.1% using compression garments, 40.1% undertaking skincare, 32.6% participating in exercise, 26.4% using compression bandaging, and 20.7% performing self-manual lymphatic drainage with approximately half of the patients devoted more than 30 minutes a day to self-care (2).

Individuals with lymphedema can get education through written, oral, or media-based methods. Owing to the growing patient population and shortage of medical personnel, patients typically receive instruction in written form, which they sometimes find challenging to comprehend and interpret (9). A patient educational school is one of the instructional strategies designed to eradicate this shortcoming. Patient school is an educational program that focuses on teaching participants about diseases, how to treat them, and how to manage their health. This efficient approach has been utilized in several patient groups (10). Our lymphedema self-care patient school educational approach is the first documented in the literature, as far as we have found. This study aims to examine the effect of our specific lymphedema education on functionality, quality of life, lymphedema volume, body mass index, and positive body image in individuals with lower extremity lymphedema.

MATERIALS AND METHODS

Study Design

The study was conducted as a single-group quasi-experimental research model to evaluate the effectiveness of lymphedema self-care patient school (LSEPS) on functionality, lymphedema volume, and body value in individuals with lower extremity lymphedema.

Ethical Approval

This study was conducted in accordance with the declaration of Helsinki. Institutional permissions were obtained from the non-invasive research ethics committee of the university Ege University and Hospital, Izmir, Turkey (Decision number: 19-3T/2, Decision date: 07.03.2019). Written and verbal consent was obtained from the patients included in the project.

Setting and Participants

The study was conducted in the lymphedema unit of a university hospital between September 2021 and June 2022. In the lymphedema unit, individuals with lymphedema and those who may develop lymphedema are diagnosed, treated, and monitored. A physical therapist and two nurses are on duty in the unit. The study population consisted of 360 patients with lower extremity lymphedema registered in this unit. Criteria for inclusion included: having lower extremity lymphedema, completed cancer treatment at least six months ago, 18 years or older, Turkish literate, and willing to participate in the study. Exclusion criteria included: participants with a dementia-like disease that would cause learning difficulties. Power analysis performed using the G Power 3.1.9.4 program at 80% power, with a p-value of 0.05 and an effect size of 0.5, indicated that the number of samples required to conduct the study was 27. Patients were called by phone and invited to the training with plans made for 28 patients who volunteered to participate in the training. Usingr results of the Freidman analysis of the lower extremity functionality scale, a posthoc power analysis was performed on the difference from constant (one simple case) from the t-test family in the G Power 3.1.9.4 program and the power was found to be 0.95.

Lymphedema Self-Care Patient School

The educational intervention was termed “Lymphedema self-care patient school”. The purpose of LSEPS is for participants to gain knowledge and awareness about lymphedema self-management and adaptation to living with lymphedema through behavioral and lifestyle changes. The educational content and process of the LSEPS were created by examining the studies in the literature that provide education to the patient school (11-16).

During the education in LSEPS, participants received four hours per week of face-to-face instruction covering a range of subjects, including definition, significance, symptoms, diagnosis, exercises, self-drainage, nutrition and weight control, skin care, coping with life's changes, psychological support, and alternatives to pressure garments (*Fig. 1*). Furthermore, there was a time for questions and answers at the end of every education day. Experts in the field of lymphedema, including a psychologist, a dietician, an academician nurse, two nurses, and a physical therapist, served as educators in the program.

Experts were asked to evaluate the content's readability, clarity, and visual appeal. They were asked to use the Lawshe technique to rate each section of the booklet as "necessary," "necessary but should be corrected," or "unnecessary," and to provide feedback on the parts they thought were lacking. The content validity value needs to be greater than 0.50 (17). The LSEPS booklet's content validity index varies from 0.75 to 1. Necessary additions were made according to expert opinions.

The training was given in the university conference hall where the study was conducted. To enhance the training participants' motivation, gift bags were prepared with the booklet and included a tape measure, surgical mask, disinfectant, notepad, and pen.

Data Collection

On the first day of the LSEPS, patients' extremity volume measurements and baseline data were taken (T0). At the 3rd (T1) and sixth (T2) months after the end of LSEPS, they were called for control, and extremity volume measurements and data collection forms were filled out.

Data were collected by patient identification form, “Lower Extremity Functional Scale,” “Lymphedema Functionality, Disability, and Quality of Life Scale in Lower Extremity Lymphedema (LYMPH-ICF-LL),” “Body Value Scale,” and extremity volume results.

The patient identification form was prepared by the researchers and intended to examine sociodemographic and clinical characteristics. Sociodemographic characteristics: age, education level, profession, activity level, marital status, and body mass index. Clinical features include lymphedema type, lymphedema diagnosis, additional chronic disease, treatment modalities for cancer, type of surgery, number of lymph nodes taken, body region with lymphedema, and use of pressure garments.

Lower Extremity Functional Scale (LEFS): This scale was developed to assess functional capacity in individuals with lower extremity-related musculoskeletal problems (18). The five-point Likert-type scale includes statements about daily activities and is scored

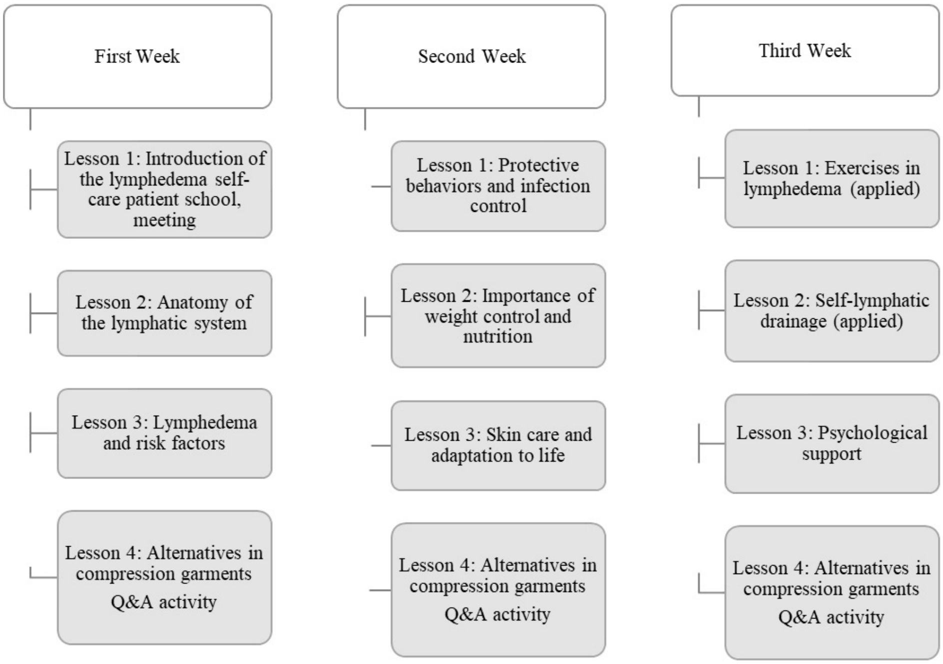

***Fig. 1.** Lower extremity lymphedema self-care patient school education curriculum provided for participants over the three-week time period.*

between “0-extreme difficulty or inability” and “4-no difficulty”. A score between 0-80 can be obtained from the scale. Low scores indicate that its functionality is impaired. The internal consistency coefficient of the original scale is 0.96. It has been emphasized that the Turkish adaptation is a valid and reliable scale (19). The internal consistency coefficient in this study is 0.97.

Lymphedema Functioning, Disability, and Quality of Life Scale in Lower Limb Lymphedema (LYMPH-ICF-LL): It is a scale based on the International Classification, Disability and Health (ICF) that can be used to evaluate functional problems associated with lower extremity lymphedema. It is used to evaluate dysfunction, activity limitations, and restrictions in participation in activities in patients with primary or secondary lower extremity lymphedema and to measure the disease-specific quality of life. The scale consists of 28 questions and five sub-dimensions: physical function (1), mental function (2), general tasks/housework (3), mobility (4), and living spaces/social life (5). Scale items are answered on an 11-item scale from 0 (not at all) to 10 (very much). Cronbach's alpha coefficient of the original scale varies between 0.82 and 0.97 for the scale and its sub-dimensions (20). In the adaptation study of the scale to Turkish, Cronbach's alpha coefficient was found to vary between 0.79-0.84, and it was emphasized that it is a valid and reliable measurement tool (21). The internal consistency coefficient of the scale in this study is 0.80.

Body Value Scale-2 (BVS): A five-point Likert-type scale consisting of 10 questions with a single factor developed by Tylka and Wood-Barcalow (2015) to evaluate body value. Scale items are answered as 1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always. The maximum score on the scale is 50, and the lowest score is 10. Low scores indicate that the individual has a negative body value. The internal consistency coefficient is 0.93 (22).

The internal consistency coefficient of adapting the scale to Turkish is 0.89, and it is qualified as a valid and reliable measurement tool (23). The internal consistency coefficient of the scale in this study is 0.86.

Extremity circumference measurement method: The arm circumference measurement method is a cost-effective, reliable, and practical in diagnosing and staging lymphedema. For the lower right and left extremities, it was measured at 10-centimeter intervals from the distal end of the metatarsals, at the level of the medial malleus protrusion, and then to the trochanter femur. Limb circumference measurements were made by the same person using non-expandable, flexible millimeter measuring tapes. The obtained values were calculated with the Frustum formula, the volume of the extremities was determined, and the difference between both extremities was determined (24).

Frostrum formula:
$V= [h \times (R1^2+R1.R2+R2^2] / (12 \times \pi)$
$V_{toplam}= V1+V2+.....+Vn$
V: Volume of conical segment
h: Range used in circumference measurement
R1: Base circumference measurement of conical segment
R2: Ceiling circumference measurement of the conical segment
Vtotal: leg volume
n: number of conical segments

Data Analysis

The study's data were analyzed with the Statistical Package for the Social Sciences 24.0 program. In the study, LEFS (Shapiro-Wilk test: 0.931 p:0.143), LYMPH-ICF-LL (Shapiro-Wilk test: 0.959 p:0.517), BVS (Shapiro-Wilk test: 0.945 p:0.272), BMI (Shapiro-Wilk test: 0.947 p:0.302) and extremity volume values (Shapiro-Wilk test: 0.943, p: 0.103) and mean score showed normal distribution, parametric tests were used. Descriptive characteristics of the patients were evaluated using numbers and percentages. The changes in the scale scores and leg volume averages obtained from the patient's extremity circumference measurements were examined by single-factor analysis of variance in repeated measurements. Eta square ($\eta 2$) correlation coefficient was calculated for the effect size of the results, and 0.01 was interpreted as a small effect, 0.06 as a medium, and 0.14 as a large effect (25). Bonferroni post hoc analysis determined the source of differences in the significant results from one-factor variance analysis for repeated measures. The significance value was $p<0.05$.

RESULTS

A total of 21 patients completed the training and follow-up. Of the original 28, 7 patients did not complete follow-up data due to health problems (n=3) or relocation (n=4) resulting in an overall loss rate of 25%. The mean age of the patients was 54.85±11.99, and most were women (n=20). Forty-seven point 6 percent of the participants were primary school graduates, 52.4% were housewives, 71.4% were married, and 42.9% exercised regularly (*Table 1*). The mean body mass index was found to be 28.99±4.97 kg/m2 and 38.1% of the patients were diagnosed with primary lymphedema. Among those diagnosed with secondary lymphedema, 4 participants had a history of cancers in the intra-abdominal region with 9 participants having a hoistory of gynecological cancers, including vulva, cervix, endometrial, and ovary. Lymph node dissection was performed in almost all secondary lymphedema patients, and the average number of lymph nodes removed was 31.77±25.92. Six patients had right, 5 left, and 10 bilateral lower extremity lymphedema. 66.7% of the participants were using pressure garments (*Table 1*).

The study participants' overall LEFS score showed a statistically significant change over time ($F= 33.184$, $p< 0.001$). The effect size of this significance is large ($\eta 2= 0.34$). Statistical significance was found to be between T0 and T2 ($p= 0.011$) and T0 and T2 ($p=0.038$), and there was no difference between T1 and T2 ($p= 0.490$). A statistically significant difference between the participants' LYMPH-ICF-LL total score averages ($F = 6.913$, $p = 0.006$)

TABLE 1
Sociodemographic and Clinical Characteristics of Study Participants

Variables	n %
Age* (year)	54.85±11.99 (23-71)
Gender	
Female	20 (95.2)
Male	1 (4.8)
Education	
Literate	2 (9.5)
Primary school and secondary school	10 (47.6)
High school	6 (28.6)
University or a higher level of education	3 (14.3)
Occupation	
Housewife	11 (52.4)
Civil servant	1 (4.8)
Worker	3 (14.39
Retired	6 (28.6)
Marital status	
Married	15 (71.4)
Single	6 (28.6)
Activity level	
Sedentary	3 (14.3)
Exercise irregularly	9 (42.9)
Exercise regularly	9 (42.9)
Body Mass Index* (kg/m^2)	28.99±4.97 (22.23- 41.42)
Chronic disease	
Yes	14 (66.7)
No	7 (33.3)
Lymphedema type	
Primary lymphedema	8 (38.1)
Secondary lymphedema	13 (61.9)
Diagnosis	
Primary lymphedema	8 (38.1)
Intraabdominal cancers	4 (19.1)
Gynecologic cancers (vulva, cervix, endometrial, ovary)	9 (42.8)
Lymph nodes dissection (n=13)	
Yes	12 (92.3)

No	1 (7.7)
Number of dissected lymph nodes*	31.77±25.92
Chemotherapy (n=13)	
Yes	6 (46.2)
No	7 (53.8)
Radiotherapy (n=13)	
Yes	6 (46.2)
No	7 (53.8)
Time from the diagnosis of lymphedema (months)*	75.19±77.27 (6-288)
Lymphedema affected side	
Right lower extremity	6 (28.6)
Left lower extremity	5 (23.8)
Bilateral lower extremity	10 (47.6)
Compression garment	
Use	14 (66.7)
Do not use	7 (33.3)

*Mean±SD (minimum-maximum)

was found and this difference had a large effect ($\eta 2 = 0.43$). In further analysis, it was found that the difference resulted from T0 and T1 ($p= 0.006$), T0 and T2 ($p= 0.001$) and that there was no difference between T1 and T2 ($p= 0.472$). There was no statistical difference in the group over time in the LYMPH-ICF-LL scale physical function, mental function, general tasks/housework, and living spaces/social life sub-dimensions ($p< 0.05$), and there was statistical significance only in the mobility sub-dimension ($F=5.459$, $p= 0.013$) detected. The significance of the mobility sub-dimension is significant ($\eta 2=0.37$). The source of this difference was found to be between T0 and T1 ($p= 0.024$) and T0 and T2 ($p= 0.003$) measurements, and there was no difference between T1 and T2 ($p= 0.189$) measurements. There was no significant change in the mean scores of the BVS within the group ($F= 1.672$, $p= 0.214$) (Table 2). The presence of change in the participants' BMI was examined, and no statistically significant difference was found ($F = 2.795$, $p = 0.086$) (Table 2).

A total of 31 extremities of 21 patients included in the study were compared in terms of volume. The variation of the volume averages over time is given in *Table 2* and a statistically significant difference was found in terms of volume change ($F= 3.930$, $p= 0.031$). The effect of this significance is large ($\eta 2= 0.21$), and its source is the measurement between T0 and T2 ($p=0.008$).

DISCUSSION

This study evaluated effectiveness of the patient education provided through the patient school approach on participants with lower extremity lymphedema by measuring patient's functionality, quality of life, lymphedema volume, and body value parameters. The education was found to be effective in increasing patients' functionality, improving their quality of life, and reducing lymphedema volume. As far we can tell, these results should make a significant contribution to the literature as it is the first study examining education content and impact of the LSEPS for patients with lower extremity lymphedema over time and it could potentially have impact for patients with lymphedema in other body areas.

TABLE 2
Intra-Group Comparison of Dependent Variables Included in the Study

Time Variables	T0 X±SD	T1 X±SD	T2 X±SD	F	p	Eta square	Bonferroni
LEFS	48.31±23.06 (6-78)	57.04±17.35 (24-79)	56.38±18.01 (26-79)	4.773	**0.021**	0.34	T0>T1, T0>T2
LYMPH-ICF-LL	4.09±2.20 (0.31-7.51)	3.16±1.43 (0.67-5.579	3.32±1.77 (0.59-5.87)	6.913	**0.006**	0.43	T0>T1, T0>T2
Physical function	3.93±2.71 (0.17-8)	3.10±1.63 (0.33-6.33)	3.25±1.92 (0.33-6.50)	2.007	0.163	0.18	
Mental function	3.92±2.72 (0-8.83)	3.33±1.96 (0.50-8.17)	3.46±2.42 (0.8-7.50)	1.009	0.383	0.10	
General tasks/ housework	2.60±2.95 (0-9.33)	1.50±1.62 (0-5.67)	1.96±1.92 (0-5.67)	3.243	0.061	0.25	
Mobility	5.16±2.52 (0-8.40)	4.18±2.09 (0.50-8.20)	3.73±2.20 (0.50-7.80)	5.459	**0.013**	0.37	T0>T2
Living spaces/ social life	4.75±2.78 (0-8.30)	3.79±2.61 (0-8.50)	4.27±2.46 (0-8.30)	2.854	0.082	0.23	
BVS	36.90±8.20 (19-46)	39.38±8.73 (22-50)	38.52±8.32 (22-50)	1.672	0.214	0.15	
BMI (kg/m^2)	28.99±4.97 (22.23-41.42)	29.07±4.53 (22.23-37.35)	28.68±4.33 (21.73-38.35)	2.795	0.086	0.28	
Extremity volume (ml) (n=31)	10.833±3.275 (7.085-19.096)	10.475±3.012 (6.920-19.527)	10.245±2.527 (6.924-16.747)	3.930	**0.031**	0.21	T0>T2

T0: pre-test; T1: 3 months after the end of education; T2: 6 months after the end of education; LEFS: Lower Extremity Functional Scale; LYMPH-ICF-LL: Lymphedema Functionality, Disability, and Quality of Life Scale in Lower Extremity Lymphedema; BVS: Body Value Scale

It was determined that the LSEPS education increased the functionality scores of the participants. In a study examining the incidence of lymphedema and its effect on physical function after endometrial cancer surgery, it was found that patients experienced a 27% decrease in their physical functions even in the early lymphedema period (26). In the study conducted by Tuğral and Bakar (2017) with women with gynecological cancer, the average lower extremity functionality scale score of the patients who developed lower extremity lymphedema was found to be 40, while the average score of the patients who did not develop was 63 (27). In a prospective study in which gynecological cancer patients were followed, serious differences were found between the groups with and without lymphedema in terms of physical function, and a significant decrease in the functionality score was observed as the score obtained from the gynecological lymphedema scale increased (28). Similar to our study result, in a case series review examining the effectiveness of an eight-week intense exercise program in patients with lower extremity lymphedema, the average LEFS score increased by 11 points at the end of the intervention (p= 0.001) (29). Functionality is one of the important parameters that affect patient's quality of life, workability, and adaptation to life and disease self-management (30). Therefore, minimal improvements at this point will lead to a significant increase in the quality of life of patients. In our study, it is seen that the score obtained from the mobility sub-dimension of the quality of life scale also improved. The underlying reason for this is the decrease in the lymphedema volumes. Volume reduction may have allowed increased mobility and functionality. It is also an indication that patients comply with the training given in the self-care program given within the LSEPS for increasing daily physical activity and exercising. We believe that the discipline of being included in a certain treatment program is also effective in patients.

Health-related quality of life is the perceived physical, mental, psychological, and social well-being of a person or group. Quality of life in patients with lower extremity lymphedema concerns physical function and can be affected by many factors such as pain and fatigue, inability to perform daily life activities, decrease in self-confidence, fear of cancer recurrence, deterioration in body image, anxiety, depression, deterioration in sexual function, and financial problems. The most important influencing factors are functionality and symptom burden for lymphedema (7). In our study, itwas found that the mobility sub-dimension of LYMPH-ICF of the participants improved. This may be a parallel finding with improving functionality. The improvement of this parameter, one of the important indicators of quality of life, increased the score obtained from LYMPH-ICF. In the study of Tuğral and Bakar, it was shown that functionality in lymphedema has a positive relationship with quality of life (27). Although there is an improvement in the other sub-dimensions of the quality of life scale in the participants, this improvement is not statistically significant, but it can be argued that it is clinically significant in terms of affecting the total score.

The underlying factor of the problems reported by patients with lymphedema stems from the inflammatory processes that begin following fluid accumulation in the extracellular space. Fluid accumulation brings about edema, that is, volume increase. Volume increase can bring about a feeling of fullness, a feeling of heaviness, difficulty in movement, and loss of function. Therefore, volume reduction is the main goal in treatment, and the second phase of complex decongestive therapy aims to preserve the reduced volume. In this context, studies show that volume reduction continues when patients' self-care management, skin care, self-lymphatic drainage, exercises, and regular use of compression garments (31,32). Şahinoğlu et al (2022) applied complex decongestive treatment to patients with lower extremity lymphedema, and it was determined that the extremity volume reduction of the patients had a highly positive effect on physical function, quality of life, anxiety, and depression levels ($p<0.001$) (33). In the study of Toro et al. examining the effectiveness of an eight-week intensive exercise program in patients with lower extremity lymphedema, it was emphasized that the lower extremity lymphedema volumes of the patients decreased after the exercise program ($p<0.05$) (29). Since our study covered a period of 6 months, it showed its effect, especially in the last measurement, and it was seen that the participants reduced volume ($p=0.031$). It can be emphasized that this situation improves the patient's mobility, quality of life, and functionality, similar to the study of Şahinoğlu et al (33).

Although a decrease was observed in the mean BMI in the study, this effect was not statistically significant. It is thought that the minimal decrease in BMI is caused by volume reduction, and the LSEPS does not have sufficient effect on reducing BMI. Unlike our study, in a study in which an eight-week intensive exercise program was applied as an intervention, a statistically significant decrease was observed in the body mass index of patients with lower extremity lymphedema ($p>0.05$) (29). While a guide in this study accompanied intense exercise, different results may have been obtained in our study because they were asked to do the exercises at a light pace, at least twice a day.

It is stated in the literature that patients with lower extremity lymphedema do not feel attractive and generally have a negative body image due to the visible edema, the detection of compression bandages and clothes, people asking questions about it, and not being able to wear the clothes and shoes they want (28,33, 34). Body value represents a positive body image rather than a negative reflection of body image (23). Interventional studies on body image in lower extremity lymphedema were not available. For this reason, it has been discussed over the healthy population. In the first measurement of our study, the mean body value scale scores of the participants were lower than the healthy young population (BVS score mean: 41.72) (35), and similar to the elderly population (BVS score mean: 35.59) (36). From this point of view, it can be said that lower extremity lymphedema does not cause too many negative changes in positive body image in the sample studied. Although there is a minimal increase in the mean score after LSEPS, this is not statistically significant. It is expected that the LSEPS intervention does not affect the body value that is already intact.

Our study has many strengths. It was important to establish a multidisciplinary team for participants with lower extremity lymphedema and develop a comprehensive LSEPS education for the first time. It will be very beneficial from a clinical perspective if this education provides positive developments in patient data. Patients were followed utilizing multiple measures. There are very few studies on patients with lower extremity lymphedema and intervention studies are limited. In particular, having a 6-month follow-up increases the power of the study. Our study also has some limitations. The first of these is that there was a coronavirus pandemic. After the start of the project, patients stayed away from health institutions for a long time, and participation in the study was low due to fear of the coronavirus pandemic. A control group could not be studied because participation was low. Another limitation of the study is that there is no self-care scale in lower extremity lymphedema that can directly measure the effect of self-care training given within the scope of LSEPS education on self-care. A final limitation is the relatively small sample size.

CONCLUSION

In this original study examining the effectiveness of a LSEPS education for participants with lower extremity lymphedema, it was observed that the education increased the functionality level of the patients, improved quality of life, decreased lymphedema volume and these effect continued for six months. Since lymphedema management requires a multidisciplinary approach, the LSEPS educational approach is a time and cost-effective method that can be used in patient education particularly since it allows interaction with a multidisciplinary team to provide necessary information and allow discussions for questions participants have developed. Our results suggest that education such as the LSEPS is valuable for instructing self-care behaviors for patients with lower extremity lymphedema.

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CONFLICT OF INTEREST

All authors declare no competing financial interests exist.

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