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Promoting Self-Management of Breast Cancer-Related Lymphedema Through the Remotivation Process

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Promoting Self-Management of Breast Cancer-Related Lymphedema Through the Remotivation Process

Abstract

Background. Lymphedema affects a significant number of women with breast cancer. Self-Management Programs (SMP) are important in the long-term management of chronic conditions such as lymphedema. Motivation is crucial in the daily performance of the SMP. The study explored the effect of the Remotivation Process on the motivation of women with breast cancer-related lymphedema to incorporate an SMP into their daily routine.

Methodology. The study was a within-subjects quasi-experimental design that used the Volitional Questionnaire, frequency count of the SMP, and circumferential measurement as outcome measures. Eleven participants (n = 11) with breast cancer-related lymphedema completed the study that used the Remotivation Process as the intervention for 4 weeks with a follow-up session during the 8th week.

Results. The participants progressed to a higher state of motivation on the Volitional Questionnaire at the end of the study. There was an increase in the performance of the exercise component of the SMP in 7 days, and a significant decrease in the circumferential measurement of the affected arm. There was also a positive correlation between VQ and circumferential measurements.

Conclusion. The study suggests the usefulness of the Remotivation Process in an occupational therapy intervention to promote self-management. It can possibly facilitate motivation, improvement in the manifestation of lymphedema, and the daily performance of the self-management program for lymphedema.

Keywords

self-management, chronic condition, lymphedema, cancer, model of human occupation, motivation, adherence, home program

Cover Page Footnote

The authors declare that they have no competing financial, professional, or personal interest that might have influenced the performance or presentation of the work described in this manuscript.

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More than 3.8 million women with a history of breast cancer were identified as of January 2021 (breastcancer.org, 2021). Breast cancer-related lymphedema (BCRL) is a side effect of cancer surgery and treatment and manifests as a chronic swelling of the upper extremity. Lymphedema is the abnormal accumulation of fluid in the interstitial spaces (Otsby et al., 2018; Temur & Kapucu, 2019). The risk of developing this chronic condition ranges from 2% to 66%. Current treatment methods do not cure lymphedema; instead, treatment is directed toward symptom management and reducing complications through a self-management program or SMP (breastcancer.org, 2021; Cal & Bahar, 2016). The executive committee of the International Society of Lymphology advocates complete decongestive therapy as the treatment of choice for lymphedema (De Brucker et al., 2016), which includes a SMP. A SMP for lymphedema consists of self-administered manual lymphatic drainage (MLD), exercise, wearing of compression garments, and nighttime compression either through self-bandaging or custom garments. The American Occupational Therapy Association (AOTA) defines self-management as the development, management, and maintenance of routines for health and wellness promotion (AOTA, 2014).

A randomized controlled trial found that an individualized SMP is critical to reduce exacerbations of swelling, prevent infections, and manage symptoms (Temur & Kapucu, 2019). Women who adhered to all components of the SMP maintained 90% of their upper limb girth upon discharge, reported a positive effect on the quality of life (QoL), and reduced symptoms of BCRL (Loh & Musa, 2015). However, most women do not adhere to the daily performance of a SMP. A physical activity and lymphedema trial involving 128 women with BCRL stated that 13% reported a mean of less than 25% adherence, 28% reported a mean of 25%–49% adherence, 31% reported a mean of 50%–74% adherence, and 28% reported a mean of 75%–100% adherence (Brown et al., 2015). Another study of 166 women with BCRL found that only 19.5% adhered to all components of the SMP (Alcorso et al., 2016). Several studies have reported that a woman's motivation may have an impact on the woman's ability to make the necessary lifestyle changes to manage BCRL, continue to participate in valued occupations, and adapt to the chronic nature of lymphedema (Muraca et al., 2011; Teo et al., 2015; Trinh et al., 2014).

The Model of Human Occupation (MOHO) states that a change in the component of volition, habituation, performance capacity, or environment will result in a change in occupation (Taylor, 2017). The volitional process is one way a person engages in a change to regain her occupational identity and achieve occupational adaptation, and chronic conditions may alter volition (de las Heras et al., 2003).

The Remotivation Process

The Remotivation Process (de las Heras et al., 2003) is a continuum of intervention based on the MOHO concept of volition. It states that low volition is reflected in decreased motivation (de las Heras et al., 2003). Studies on volition found that the Remotivation Process enabled occupational therapists to gain a deeper understanding of volition and how it manifests in practice (Parmenter et al., 2013; Pepin et al., 2008; Raber et al., 2016). The Remotivation Process involves an ongoing assessment, which gives the occupational therapists a chance to adjust the treatment approach according to the client's motivational state. It has three stages: exploration, competence, and achievement.

Gaps in Literature and Purpose

Motivation is important to make the necessary lifestyle changes when faced with a chronic condition like BCRL. However, the application of the Remotivation Process to women with breast cancer-related lymphedema has not been studied. This study attempted to address this research focus and explore the Remotivation Process (de las Heras et al., 2003) as an occupational therapy program to promote a person's motivation to adhere to the SMP and facilitate improvement in lymphedema. The research

questions were (a) How does the Remotivation Process change the daily performance of lymphedema management techniques? and (b) How does the Remotivation Process affect the client's manifestation of BCRL?

Method

Design

The study was a within-subjects quasi-experimental design with a repeated measure of volition and weekly performance of the SMP as the dependent variable. The study was completed through the collaboration between the primary investigator's (PI) university and a second researcher from a comprehensive cancer care center that provides in-patient and outpatient physical therapy, occupational therapy, and specialized services, including lymphedema therapy. Institutional Review Board (IRB) approval was obtained from the university, followed by a concept review by the Breast Cancer Disease Team of the cancer care center.

Table 1

Participant Characteristics

Participant ID	Age	Affected Arm	Occupation	Components of Daily Self-Management Program
1	55	L	Housewife to husband and two children	• Compression sleeve or bandaging • Self-administered MLD • Exercise: Elliptical bike, stretching, light weights
2	42	L	Unemployed, lives with partner	• Compression sleeve • Self-administered MLD • Exercise: stretching, exercise bands
3	80	R	Retired, lives with spouse	• Compression sleeve or bandaging • Self-administered MLD • Exercise: stretching
4	54	R	Unemployed, lives alone	• Compression sleeve • Pneumatic compression pump • Exercise: stretching
5	49	L	Lives with two daughters, unemployed	• Compression sleeve or bandaging • Self-administered MLD • Exercise: stretching
6	70	R	Lives with husband and children, currently looking for work	• Compression sleeve or bandaging • Pneumatic compression pump • Solaris Tribute alternative compression sleeve • Exercise: deep breathing exercise, shoulder stretches
7	75	L	Retired, lives with sister	• Compression sleeve • Pneumatic compression pump • Circaid Juxtafit alternative compression sleeve • Exercise: stretching, light weights
10	43	R	Retired, lives with husband and daughter, owns a farm	• Compression sleeve • Self-administered MLD • Exercise: stretching
12	65	L	Retired, helps daughter take care of grandson	• Compression sleeve • Self-administered MLD • Exercise: stretching, light weights
15	58	R	Lives with husband	• Compression sleeve • Circaid Juxtafit alternative compression sleeve • Self-administered MLD • Exercise: stationary bike
16	43	R	Employed, lives with fiancé and 2 children	• Compression sleeve or bandaging • Self-administered MLD • Exercise: weights

Participants

Females 18 years of age and older with BCRL who were referred to the cancer care center for occupational therapy were recruited for the study. Inclusion criteria were females with unilateral upper extremity lymphedema following breast cancer treatment, able to communicate in English, and able to participate in a discussion session with the PI once a week for 8 weeks. Convenience sampling was used to recruit patients with BCRL referred to the collaborating facility for occupational therapy between May 2019 and March 2021. A brochure was used to provide information about the study. The PI and second researcher also created a script to provide consistent information during recruitment. Sixteen patients met the criteria at the end of the recruitment period and consented to the study. Five of the participants withdrew from the study because of schedule conflicts and multiple medical appointments. Eleven of the participants completed the 4-week intervention, and Table 1 summarizes their characteristics and components of the individualized SMP. The participants ranged from 42 to 80 years of age (M = 57.636, SD = 13.328). Five of the participants developed BCRL in the left arm and six in the right arm. Nine of the participants underwent axillary lymph node dissection, and two underwent sentinel node biopsy.

Procedures

The researchers were three occupational therapists who were trained in MOHO. The first researcher was the PI and a certified lymphedema therapist. The PI implemented the Remotivation Process and documented the participant's weekly performance of the SMP. The second researcher was the manager of the rehabilitation department of the cancer care center. The second researcher recruited participants, obtained informed consent, and collected demographic information and circumferential measurement from the participant's medical records. The third member is a peer examiner knowledgeable in MOHO.

Application of the Stages of Volition in the Study

The Remotivation Process was implemented through one-on-one, weekly discussions with each participant through Zoom for 4 weeks, with a follow-up discussion during the 8th week. The Remotivation Process was administered by the PI through a secure telehealth platform once a week for 4 weeks with a follow-up during the eighth week of the study. The weekly intervention sessions lasted from 15 to 30 min. The PI facilitated the discussions through open-ended guide questions, which reflected each stage of the Remotivation Process (see Table 2). The open-ended guide questions facilitated the participant's reflection on her experience when performing the SMP and her perception of BCRL in the context of her daily activities during the week. The PI used field notes to record the observations and the key points each participant shared during the discussion. The field notes were used to determine the participant's level of motivation during the week. Each participant was allowed to move at different rates through each stage by tailoring each week's discussion according to the description of the participant's Volitional Stage in the Remotivation Process manual.

Table 2

Guide Questions Used During the Weekly Intervention Sessions

Stage of volition	Sample strategies that the researcher used	Sample questions
Exploration	Validate the patient's effort despite not being able to follow through with the plans she had verbalized during the past session.	What do you think can help you perform your home program?
Competency	Discuss a typical day to identify possible methods to implement and incorporate the SMP in her daily routine.	Describe your daily routine. How well does the home program fit in now?
Achievement	Facilitate self-monitoring and self-evaluation.	Do you feel that you are ready to manage lymphedema on your own? Why or why not?

Exploration Stage. The goal of this stage is for the client to discover her capacities, values, and preferences, given the change in her life after the onset of BCRL, to develop personal meaning and pleasure by engaging in her environment once again. The PI aimed to establish trust, make the participant feel accepted, and increase her curiosity about the program during this stage. The goal of the stage was to elicit curiosity about the participant's options for lymphedema treatment. It was hypothesized that patients with BCRL at this stage may show interest in the components of lymphedema therapy. Curiosity in lymphedema treatment may also be present since the participant was already scheduled for an occupational therapy evaluation and attended the session.

Competence Stage. During this stage, the participant builds new routines and continues to make activity choices with the assistance of the treating occupational therapists and PI. The participant engages in spontaneous decision-making, realizes the value of the SMP, initiates SMP-related activities, and indicates her goals without the assistance of the PI as she transitions from exploration to the competency stage. The PI increased expectations for the participant to perform all components of the SMP. Discussions focus on the participant's perception of meeting new challenges. The goals of this stage are the internalization of self-efficacy and the facilitation of skill learning through repeated practice and habit formation. It was hypothesized that the participant at this stage will identify goals that lead to the incorporation of the SMP into her daily routine.

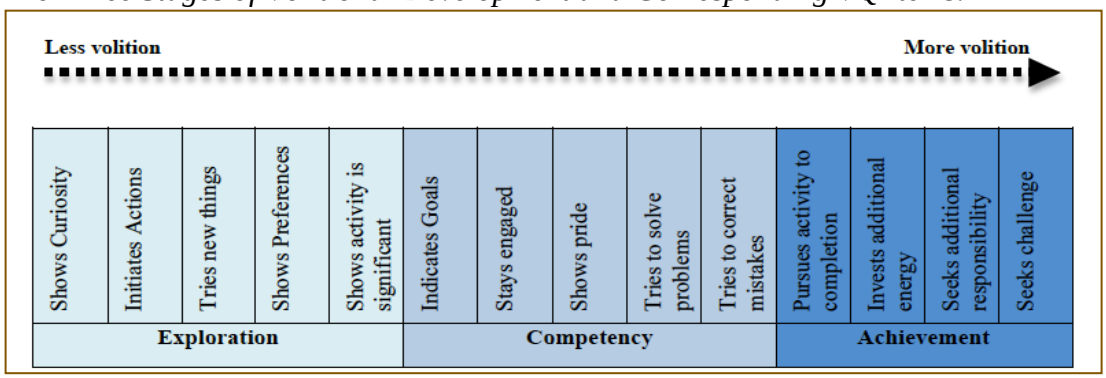
Achievement Stage. The Exploration Stage provided the participant with a positive experience that allowed them to be comfortable with the new normal, form habits, gain self-efficacy, and participate in chosen activities from the Competency Stage. In the Achievement Stage, the PI shifted the focus to discharge plans. The participant is expected to continue with the new daily routines established even after she is discharged from occupational therapy, provided advice, gave feedback, and provided resources and strategies for self-management and self-evaluation. It was hypothesized that a participant during this stage can use her knowledge and experience in occupational therapy to overcome challenges, doubts, or setbacks. The participant should be able to continue with the SMP despite changes in personal life and family, such as becoming a grandparent, traveling, volunteering, and returning to work. She will use both new and modified habits, routines, and skills as well as her awareness of her capabilities as she faces new challenges in the environment outside of the occupational therapy setting.

Outcome Measures

The Volitional Questionnaire (VQ) is a structured method to gather information on the client's volition based on the MOHO practice model (de las Heras et al., 2007). It is used to monitor volitional change over time. The VQ enables documentation of the amount of environmental support, encouragement, and structure needed. The items on the scale are ordered in a sequence from less to more volition; higher volition demonstrates the behavior is more readily utilized and that there is less need for environmental support, encouragement, or structure (see Figure 1). The VQ is implemented as an observational. It can also be used as a self-assessment tool. Observation periods may last from 15-30 min, and the VQ form can be completed in 10 min (de las Heras et al., 2007). Rasch analysis by Li and Kielhofner (2004) reported a participant separation index of above 3.0, which suggests that the VQ can detect a difference between participants. Rater's fit statistics indicated that raters validly used the VQ.

Figure 1

The Three Stages of Volitional Development and Corresponding VQ Items.



Note. Adapted from "*A User's Manual for Remotivation Process: Progressive Intervention for Individuals with Severe Volitional Challenges*," by C.G. de las Heras et al., 2003, p. 23.

The PI used descriptive field notes to record her observations and transcribe the key points each participant shared during the discussions to record each participant's manifestation of the different stages of volition. The PI verified the interpretation of these behaviors with the participant, the second researcher, and the peer examiner.

Frequency was recorded during each discussion session to answer the first research question, How does the Remotivation Process change the daily performance of lymphedema management techniques? The PI asked the number of times the participant performed each component of the self-management program in 7 days. Each participant was provided with an individualized manual lymph drainage (MLD) home program, compression technique, and exercise routine based on the findings of the treating therapist. Frequency was recorded in the weekly field note.

Circumferential measurement was used to answer the second research question, "How does the Remotivation Process affect the client's manifestation of BCRL?" The National Lymphedema Network considers circumferential tape measurement as an acceptable and objective measure of lymphedema (2013). A systematic review by Hidding et al. (2016) found that girth measurement using a circumferential tape measure had high reliability and excellent validity. The studies included in the review reported a pooled ICC intra of 0.99 (95% CI = .99) and ICC inter value of 0.98 (95% CI = .98). Circumferential tape measurement also showed excellent concurrent and convergent validity with perometry and water volumetry, two clinical instruments also used in lymphedema with high reliability and excellent validity. Circumferential measurements were obtained during the first and fourth weeks. A difference in the circumference of two centimeters showed high sensitivity to lymphedema (Hidding et al., 2016).

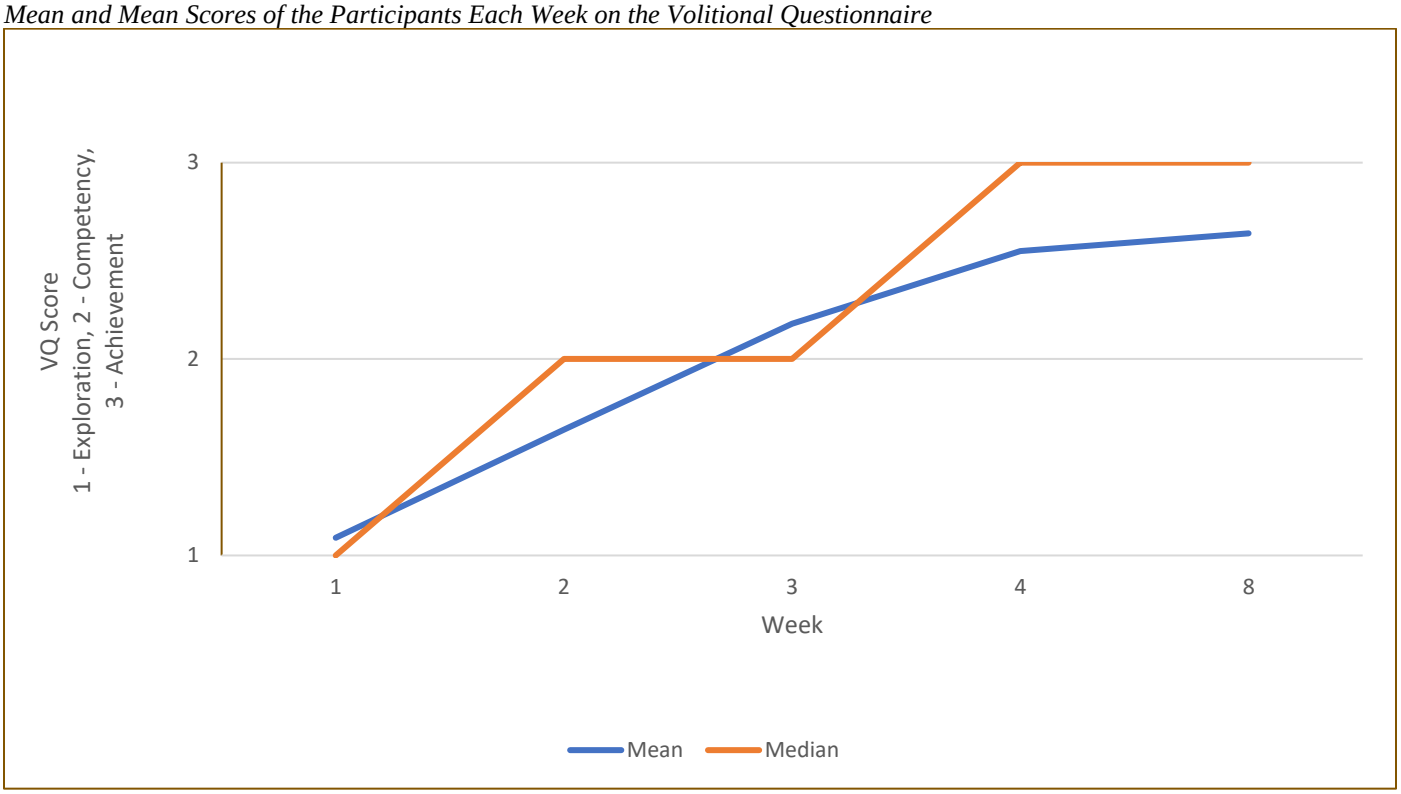
Data Analysis

Data from the VQ, frequency count of SMP performance, and circumferential measurement were analyzed using SPSS Statistics 28 software. Non-parametric tests were used since the data did not meet the assumptions of the parametric test, and the sample size was small (N = 11).

Results

Figure 2

Mean and Mean Scores of the Participants Each Week on the Volitional Questionnaire



Note. The VQ was administered on weeks 1, 2, 3, 4, and 8.

Volition

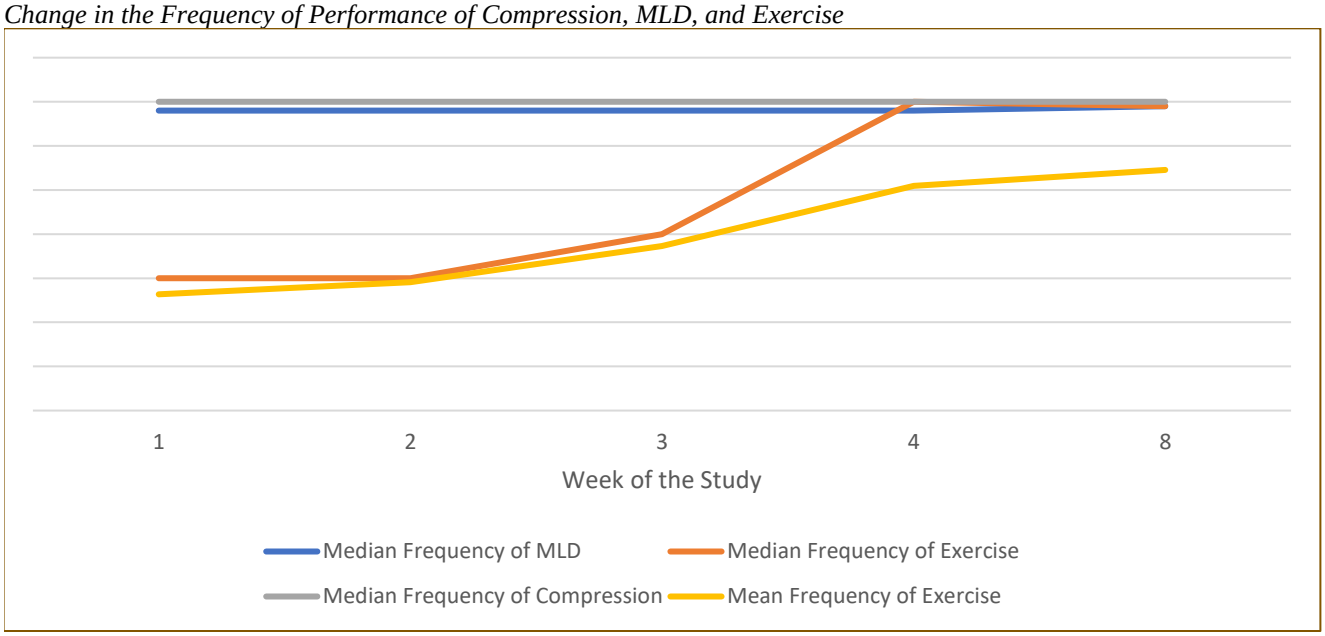
The VQ was used to measure volition, which showed weekly progression from the Exploration Stage (1) to either the Competency Stage (2) or the Achievement Stage (3), as shown in Figure 2. Visual analysis of the mean and median scores showed an increase in volition with a mean of 1.09 (SD = 0.302) on Week 1 to a mean of 2.64 (SD = 0.674) on Week 8. There were no outliers in the VQ scores. The weekly discussion sessions using the Remotivation Process had a statistically significant effect on Volition, $X^2(4) = 33.350$, $p = 0.000$.

Research Question 1

How Does the Remotivation Process change the daily performance of lymphedema management techniques? Figure 3 shows the frequency of performance of each component of the SMP for each week. There were outliers in the reported frequency of performance of compression and MLD. The median frequency of performing compression and MLD did not show any change between the first week and the eighth week. There were no outliers in the reported frequency of performing the individualized exercise program, and both mean and median frequency showed an increase from the first week to the eighth week.

Figure 3

Change in the Frequency of Performance of Compression, MLD, and Exercise



Note. The frequency of performance was measured on Weeks 1, 2, 3, 4, and 8.

However, the participants were already adhering to the daily use of compression more often than MLD and exercise during the first week. Descriptive statistics showed that the participants wore the compression sleeve or applied the compression bandages with a median frequency of 7 times out of 7 days from the first week until the follow-up discussion on the eighth week. Two participants stated that they wore compression 2 hr at a time since it was uncomfortable. This issue was still being addressed by their therapists at the time of the study. Nine participants stated that they used compression "during the day." The exact length of time was not explored during this study. The median frequency of performing self-MLD was also 7 times out of 7 days during the first week until the eighth week. The reported length of time for self-MLD ranged from 5 min to 10 min, with a median of 5 min. The participants performed different exercise programs depending on the recommendations of the treating therapists. The weekly performance of the exercises showed the greatest increase from a mean of 2.636 (SD = 2.693) out of 7 days during the first week, 5.091 (SD = 2.343) out of 7 days during the fourth week, and 5.455 (SD = 2.464) out of 7 days during the eighth week. The exercise program was individualized depending on the recommendations of each participant's treating therapist (see Table 1). The exact time to perform the exercises was not explored during the study.

There was a statistically significant difference only in the frequency of performing the exercise, $X^2(4) = 23.973$, $p = 0.000$. Post hoc analysis with Wilcoxon signed-rank tests was conducted with a Bonferroni correction applied, resulting in a significance level set at $p < 0.0125$. There was a statistically significant increase only in the frequency of performance of exercise between Week 1 and Week 8 ($Z = 2.555$, $p = 0.011$). Spearman's rank-order correlation determined the relationship between the 11 participants' level of volition and weekly performance of applying compression, MLD, or exercise performance. There was a strong, positive correlation only between volition and exercise performance ($r_s(11) = 0.907$, $p = 0.000$), with a large effect size of 0.823, which may indicate that the increase in the frequency of the exercise performance is largely related to the increase in volition.

Research Question 2

How does the Remotivation Process affect the client's manifestation of BCRL? Circumferential measurements were only taken during Week 1 and Week 4. Measurements cannot be taken since participants were already discharged from lymphedema therapy by the time of the follow-up on Week 8. There were no outliers in the circumferential measurements obtained. There was a statistically significant decrease in the circumference of the affected arm between Week 1 and Week 4 in the following measurement points: base of the fingers at the metacarpals ($Z = 1.960$, $p = 0.050$) with a mean difference of 0.482 cm (SD = 0.363), 8 cm from the wrist ($Z = 2.549$, $p = 0.011$) with a mean difference of 1.01cm (SD = 1.256), 12 cm from the wrist ($Z = 2.429$, $p = 0.015$) with a mean difference of 1.373 cm (SD = 1.083), 16 cm from the wrist ($Z = 2.499$, $p = 0.012$) with a mean difference of 1.173 cm (SD = 0.824), and 24 cm from the wrist ($Z = 2.352$, $p = 0.019$)) with a mean difference of 1.027 cm (SD = 1.021).

Thematic Analysis

NVivo 12 software was used to transcribe and examine the results from a qualitative perspective. Thematic analysis revealed key expressions of the participants' motivation to perform the SMP every day. Some of the key expressions noted during the Achievement Stage were:

- I don't allow it to affect me. No. It's there, but I keep doing what I am supposed to do. The arm hurts, but it's not like constant the whole time. No, sometimes there is a stabbing pain, an ache, then it disappears. The aching pain comes and goes. There are gaps, the arm hurts, but then it goes away. We are all busy, we have stuff to do. But you have to find time. I find time to do it. NO excuse. That's me. It is my faith that sees me through and has. You know, it will pass. And I am hopeful everything will be fine. I have great expectations that I will be better. Like they say, this is just a setback, and God is preparing a good comeback for me. So that's what gets me through each and every day. I wake up and I am thankful for the gift of life, another day for me. I deal with what I have to deal with.
- I always put in perspective. If somebody who lost both his legs and go back to [work], that I can overcome lymphedema and have the quality of life. Even though it is not, I am not doing my profession, I am not doing what I love. It is giving me the quality of life that I need to focus on, the things [and] the people that I love, and the life that I now have. And I am trying to make the best.

The primary investigator and a peer examiner identified two main themes pertinent to the research questions: commitment to recovery and observation of improvement.

Theme 1: Commitment to Recovery

Commitment to recovery pertained to the participants' commitment to control BCRL as well as other conditions that they are going through. The participants noticed that the arm decreased in girth when they performed the SMP. Some of the expressions include:

- One participant stated that she did the SMP so that the arm decreased in size, which then allowed her to undergo lymph node transplant. She stated: "I understand it. I don't like it, and I don't have much of a choice right now working on it. I want it. I'm working toward being able to get a lymph node transplant. That's my goal."
- "We are all busy, we have stuff to do. But you have to find time. I find time to do it. No excuse."
- Another participant stated that being able to overcome BCRL gave her the drive to overcome ovarian cancer: "I deal with what I have to deal with. I still have some issues, I have my

> neuropathy, have to have my surgery to think of. My ovaries, you know, my oncologist who I met last week is recommending I do endocrine therapy for one year. But there are still things that I need to keep up with. But I am good. I am fine. I know I think the hardest part. I have been through the hardest part.

Theme 2: Observation of Improvement

The participants expressed that they noticed their arms getting smaller in size when they performed the SMP. The participants observed some improvement, which motivated them to continue with the SMP. Some of the expressions include:

- "Well, I have my good and my bad days. I don't want to say it feels better. I feel more comfortable than I did before."
- "Well, it's easier to use it, and then my arm is done a little lighter. And also, there's not, it doesn't hurt, but sometimes my back from carrying the weight of the arm."
- Well, that seems like today. My hand is getting smaller. I have less swelling [in my] hands, and I can see the veins in my hand. I think it's excellent. I've had very good results. I'm going to [hospital] for my lymphedema. The good news is my arm is smaller, the bad news is I've got wrinkles!"
- "Honestly, the only issue for me is the time because it is something that takes time. You cannot rush through it. [So, you feel you feel better?] I do. I do feel better. It is nice to not have that feeling anymore. To have the, you know, the swelling my fingers. But I see a huge difference. The only difference for me right now is, like I said, in the outer arm armpit area near my chest. That is the part that feels kind of pudgy and soft but my arm itself there is no dimpling. There is no stretching of the skin. That is completely normal."
- "As long as I know why I should be doing it if I feel like it is benefiting me. But if I feel like it is not helping me or doing me any good, I would tell the therapist."

Discussion

The participants showed weekly progression in volition through behaviors consistent with the hypothesized behaviors for each stage of volition. For example, one participant stated during Week 1,

> I tried to wear a compression sleeve, but it made it [lymphedema] worse, and it was uncomfortable. I stopped wearing it. My arm is bandaged only at night. I am in the middle of moving right now, and it [the bandages] gets in the way. I know how to bandage it up. The size went down with the bandages and massage.

This seemed to show that the activity was significant for her, but she also shows her own preferences. Both behaviors are consistent with the Exploration Stage. The participant verbalized her goal to incorporate the SMP into her routine during Week 4. She stated, "I am wrapping my arm at night, [bandaging at night] works because it fits my schedule," and she made it her goal to obtain a compression sleeve so that it will be easier for her to apply compression. The participant tried to solve the problem of finding time to apply compression and identify goals to perform the SMP. Both behaviors are consistent with the Competency Stage. The same participant went back to work shortly before Week 8. She stated during Week 8 that "I can see a visible difference. The lymphedema is still there, but it does not limit work. I know what to do, what works [for me]" when asked if she was still able to perform the SMP even when she returned to work. This shows that she pursues activity to completion, with the activity being the

SMP. She seeks additional responsibilities, which include taking care of her kids, going to work, and performing the SMP to control lymphedema. These behaviors reflect the Achievement Stage by Week 8. Table 3 shows the observed behaviors of the participant indicative of each stage.

Table 3

Behaviors of the Participants that Reflect Each Stage of the VQ

Stage	Observed behavioral manifestation of this level during the study
Exploration	• Showed interest in the compression garments. • Identified components of the SMP that she might try at home or initiates ordering compression garments. • Stated a plan to perform at least one component of the SMP at home. • Identified aspects of her home environment that facilitated or hindered her performance of SMP. • Identified daily routines and activities that may or may not be compatible with the SMP. • Attempted to perform one or more components of the SMP at home.
Competency	• Verbalized that this is "the new normal." • Stated the value of the SMP, initiates SMP-related activities and her goals without the assistance of the PI. • Developed skills necessary to perform SMP and achieve personal goals. • Demonstrated behaviors that indicate spontaneity and continued engagement in the SMP, although inconsistent. • Stated the goal to incorporate the SMP in the routine.
Achievement	• Continued with the new routine even after discharge from therapy. • Verbalized that she used her knowledge and experience in occupational therapy to overcome challenges, doubts, or setbacks. • Continued with SMP despite changes in personal life and family.

Sample Case

The following is a discussion of another participant that progressed from the Exploration Stage to the Achievement Stage, the PI's use of the Remotivation Process, and how the behaviors were recorded on the VQ.

Week 1

The participant showed behaviors that reflect the Exploration Stage. She said, "[The SMP] is not working anymore because my swelling is getting worse." However, she also expressed that she understood the value of the SMP, which shows that the activity is significant for her. She also preferred a shorter version of the MLD to fit her schedule. The PI used the guide questions for the Exploration Stage during the discussion. The PI facilitated self-reflection by asking the participant her thoughts regarding the SMP, reasons that she finds the SMP difficult to perform every day, and factors that may help her do the SMP every day. The discussion focused on the exploration of new ways to manage lymphedema. The participant initiates actions by performing some of the components of the SMP. The PI validated these efforts, even when the participant did not perform all the components of the SMP every day. The participant was willing to try new things as she agreed to try a shorter version of the MLD. These behaviors were recorded on the VQ as "initiates action," "tries new things," "shows preference," and "shows activity is significant," which are under the Exploration Stage.

Week 2

The participant showed behaviors reflecting both the Exploration and Competency Stages during the second week. The PI continued with the guide questions for the Exploration Stage and helped her reflect on her daily activities to identify the possible changes she can make to perform all of the components of her SMP. When asked if she performed the SMP every day during the week, she said, "I keep doing what I have been doing [every day]," which shows that she stays engaged. The participant also said that her arm felt stiff during the week, so she tried to solve the problem of stiffness in the arm by trying the elliptical. This behavior shows that she was willing to try new things and solve problems, which

are characteristic of the Exploration Stage and Competency Stage, respectively. The participant also showed pride and said, "I think what I did, for now, helped, that's why my arm is smaller." On hearing this, the PI challenged the participant to keep doing all the components of the SMP for the next 7 days, which is a strategy under the Competency Stage. The participant's behaviors and expressions were recorded on the VQ as "stays engaged," "shows pride," and "tries to solve problems," which are characteristics of the Competency Stage.

Week 3

The participant showed behaviors that reflect the Achievement Stage during the third week. The participant stated that she was able to perform all the components of the SMP for 7 days, which shows that she pursued the activity to completion. The PI facilitated self-evaluation and asked her how she felt about the SMP during the past week. The participant stated that she feels that she has mastered the routine. The participant's behaviors and expressions were recorded on the VQ as "pursues activity to completion," which is characteristic of the Achievement Stage.

Week 4

The participant showed behaviors that continue to reflect the Achievement Stage during the fourth week. She performed the SMP for 7 days, even through fatigue and when she and her family went on vacation. This behavior shows that she pursues the activity to completion. She felt ready to take on new treatments for ovarian cancer and said,

> After what I have been through, I am able to manage all that. So, I am really looking forward to better days, and it won't be as difficult as I have been through. I deal with what I have to deal with. I still have some issues, I have my neuropathy, have to have my surgery to think of.

These expressions reflect that she can seek challenges. The participant's behaviors and expressions were recorded on the VQ as "pursues activity to completion," "seeks additional responsibility," and "seeks challenges," which is characteristic of the Achievement Stage.

Research Question 1

The first research question asked if the Remotivation Process can change the daily performance of lymphedema management techniques. The participants in the study showed an increase in the daily performance of the components of the SMP. The literature states that the SMP for BCRL consists of compression, MLD, and exercise, and all of the participants were given an SMP with these components. The literature also reported low adherence to all components of the SMP, and this was observed in the participants during the first week. However, the performance of each component showed an increase as the study progressed and as the participants' volition improved. The participants in the study were already wearing compression more often than the application of MLD and exercise performance. This may be the reason for the insignificant increase of wearing compression by the end of the study. These findings may suggest that improved motivation may also improve adherence to the exercise component of the SMP since there was an increase in the frequency of performance between Week 1 and Week 8. The improvement in the VQ scores may indicate improved motivation to engage in daily occupations, including the SMP.

Research Question 2

The second research question examined the effect of the Remotivation Process on the client's manifestation of BCRL. The circumferential measurements showed a decrease in the size of the affected

upper extremity at the end of the study. This is consistent with the literature, which states that women who adhered to all components of the SMP reported a decrease in symptoms of BCRL. The observed decrease in the circumferential measurement in the affected arm played an important factor in keeping them motivated. The decrease in size was the positive response that validated the efforts of the participants to engage in lifestyle changes necessary to incorporate the SMP in their daily routine.

Limitations and Directions for Future Research

The study has several limitations, which will be addressed in future research. There is a need to expand the study over a longer period to determine if the Remotivation Process leads to lasting change in motivation. The recruitment of the participants was also limited to one collaborating institution. The small sample size (N = 11) has limited generalization and can only render case-to-case generalizations. Any inferences from the study can be applied to women with BCRL that have a similar case to those of the study participants. Only one out of the 11 participants is currently employed, which may have affected the time that she had to perform the SMP. The study did not compare the outcome of women who are currently employed with those who are unemployed or retired. This will be addressed as the study recruits more participants who are employed. Future studies will compare the outcomes among participants who were not familiar with the SMP. It will also have a treatment and control group to compare the effect of the Remotivation Process with a customary occupational therapy program for BCRL. The correlation between exercise and volition cannot be generalized despite the findings of a strong, positive correlation with a large effect size. The participants in the study were provided with exercise programs with varied duration, repetition, and frequency. These programs were individualized for each participant depending on the clinical judgment of the treating therapists. A future study will use an SMP with an exercise program that is consistent among all participants. A follow-up study of the participants will explore if they were able to maintain their level of motivation at different time points, such as a year or two years after the study. Future studies will also compare the effect of the Remotivation Process with the other approaches designed to improve motivation, such as motivational interviewing.

Conclusion

Self-management programs are critical to controlling the debilitating effects of chronic conditions such as BCRL. Motivation is critical to engage in a change in routine to perform the SMP every day. The MOHO concept of volition and the Remotivation Process allows occupational therapists to examine and facilitate a person's motivation. The initial findings of the study found that there is a potentially significant positive relationship between VQ and circumferential measurements. The initial findings also suggest that the Remotivation Process may be useful in addressing motivation when combined with an occupational therapy program for BCRL and may be a valuable intervention that can be added to an occupational therapy program for BCRL. MOHO states that a person will be motivated to engage in occupations if one engages in occupations that lead to a positive experience, which facilitates a sense of control and self-efficacy. The Remotivation Process allowed the identification of appropriate strategies to address motivation. It seemed to help the participants focus on a positive experience during the intervention. The guide questions and strategies seemed to facilitate a positive interpretation of the participants' efforts to perform the SMP. The intervention seems to help create positive anticipation of future challenges, such as being discharged from occupational therapy, creating personal goals, and engaging in valued roles and interests. However, these are preliminary findings, and they cannot establish the relationship between the Remotivation Process, the performance of the SMP, and a decrease in the circumferential measurement of the affected extremity.

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