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Post-Breast Cancer Related Lymphedema Interventions and Their Relationship to Social Involvement and Quality of Life for Middle-Aged Women

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Abby Bauman, Jenna Holm & Sarah Zuelzke, 2021

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Focus Question

What is the current evidence pertaining to lymphedema's associated symptoms and the influence of undergoing various lymphedema interventions and its relationship with social involvement for middle-aged women diagnosed with post-breast cancer-related lymphedema and the effects the diagnosis has on their quality of life?

Case Scenario

In the United States, statistics have shown that there is a one in eight percent chance that a woman will develop breast cancer sometime throughout their life, and it is estimated that there will be 281,550 new cases of invasive breast cancer diagnosed in women in the year 2021 (American Cancer Society, 2021). One in five of the women who survive breast cancer will develop lymphedema within the initial three years following their breast cancer treatment (American College of Surgeons, 2013; DiSipio et al., 2013). Lymphedema is a chronic and progressive condition that is defined by the abnormal swelling caused by the overaccumulation of lymphatic fluid that can develop in various areas of the body including upper and lower extremities, the mammary glands, and even the torso regions (Sleigh & Manna, 2021). Lymphatic fluid, which is also commonly known as lymph, is a thin, clear fluid that circulates throughout the body to remove wastes, bacteria, and other substances from tissues (Cleveland Clinic, 2020).

Lymphedema can either be diagnosed as primary or secondary. Lymphedema due to a congenital and or an inherited condition that causes a malformation of the lymphatics system is categorized as primary lymphedema. Primary lymphedema is estimated to affect 1 in 6,000 individuals and is not as common as secondary lymphedema. Primary lymphedema presents abnormalities such as hyperplasia, hypoplasia, or aplasia, which can cause irregular draining of lymph fluid (LymphCare, 2020; Shikino & Ikusaka, 2018). Secondary lymphedema can occur at any age and is a result of insult, injury, or obstruction to the lymphatic system as a side effect of various circumstances including breast cancer, trauma, infection, and even radiation therapy. In developed countries, the most common type of secondary lymphedema is breast-cancer-related lymphedema (Sleigh & Manna, 2021).

Individuals suffering from post-breast cancer-related lymphedema often experience a decrease in occupational participation and engagement in areas including social participation (Ridner, 2009). The American Occupational Therapy Association (2020) defines social participation as “activities that involve social interaction with others, including family, friends, peers, and community members that support social interdependence” (p. 34). Occupational therapists (OT) can play a vital role in treating and preventing breast cancer-related lymphedema. Occupational therapy is a client-centered discipline that focuses on a more holistic view of the individual. Reducing lymphedema symptoms such as swelling, heaviness, discomfort, and limited range of motion or mobility are in an OT's scope of practice. When working with an individual suffering from breast-cancer related lymphedema, OTs can assess Quality of life (QoL) to determine the area of occupation where the individual is most dissatisfied. Occupational therapists can then take that information and tailor interventions to find the perfect fit for every individual. Using their vast knowledge base, OTs can help educate clients and their family's on lymphedema to help with the prevention and maintenance of symptoms. Increasing



occupational performance is the goal of OT, and many individuals suffering from breast-cancer related lymphedema would benefit from their services.

Theory

The theoretical model used to guide this critically appraised topic (CAT) was the Ecology of Human Performance (EHP) model (Dunn et al., 1994). According to the EHP framework, the context includes temporal (age, developmental stage, life cycle, and health), physical (natural and contrived), cultural, and social (family and friends). Dunn (1994) emphasizes the significance of how various contexts/settings can either support or inhibit an individual's ability to complete tasks. An individual's performance range includes various tasks that an individual can successfully complete and engage in. As occupational therapists, we can employ a variety of intervention techniques such as making adaptations to the environment or establishing/restoring an individual's skills to ultimately increase their performance range (Dunn, 2017). Dunn, Brown, and McGuigan (1994) emphasize how an individual's confidence can have a significant impact on their engagement in various occupations, including social participation. They mention the concept of environmental competence as the "knowledge, skill and confidence to use the environment to carry out one's own goals and to enrich one's experience" (Dunn, Brown, & McGuigan, p. 596).

Overarching Purpose Statement

The purpose of this CAT is to emphasize the importance and the need for further conducted research to help healthcare-related disciplines, including occupational therapy, gain a better understanding of an individual's lived experience of post-breast cancer-related lymphedema, its symptoms, and the impact it has on an individual's quality of life. Gaining a better understanding of this condition and the impact of its symptoms on an individuals' life will allow occupational therapists to provide effective evidence-based interventions to increase occupational performance and engagement in middle-aged women suffering from post-breast cancer-related lymphedema.

Methodology

We initially began our search with the broad topic of lymphedema and progressively let the literature guide which direction we wanted to go. Before narrowing down our topic, we quickly realized how there was little evidence regarding occupational therapy and lymphedema. This meant that we were going to have to look at the literature of other disciplines. Due to the overabundance of literature regarding breast-cancer-related lymphedema in older adult females, we agreed that this would be a good population to conduct our project on. When looking at breast-cancer lymphedema there was a common correlation to a decrease in an individual's quality of life. Even though there was little to no evidence related to occupational therapy, occupational therapists can still have a stake in this topic because they specialize in increasing engagement in valued occupations which is directly linking to an individual's quality of life.

The initial literature search involved a variety of databases to find a wide range of literature. Using some combination of Google Scholar, OT Search, PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and the American Journal of Occupational Therapy (AJOT), a total of thirty articles were initially found and reviewed. Out of the thirty articles originally reviewed, there were only four articles that were relevant to our



focus question. The rigor of each study, the population that was included, the relevance to occupational therapy, and the intervention methods were some of the main reasoning behind this decision. When reviewing the literature we included specific inclusion criteria to determine which articles were the most relevant to our focus question. Our inclusion criteria included; lymphedema as a result of breast cancer, middle-aged women, the inclusion of quality of life scale, as well as a qualitative study. Out of the thirty articles initially reviewed, only four fit these criteria. Most of the studies included male participants, were not actual studies and did not include any feasible results, or were not current and contained outdated information.

Synthesized Summary of Key Findings

Initially, a total number of thirty articles was reviewed before narrowing it down to four. Three out of the four articles were randomized control trials (RCT) regarding alternative lymphedema interventions (Pasyar et al., 2019; Tidhar & Katz-Leurer, 2010; Torres-Lacomba et al., 2020). The remaining article, also an RCT, focused on the conventional intervention of manual lymphatic drainage (MLD) paired with complete decongestive therapy (CDT) (Tambour et al., 2018). All four of these articles highlighted the importance of conventional and alternative lymphedema interventions due to their effectiveness to improve quality of life while reducing pain and discomfort for women suffering from post-breast cancer-related lymphedema. All articles employed a non-probability sampling to recruit participants where female participants meeting the inclusion and exclusionary criteria set forth by the study either volunteered or were referred by their primary physician. All studies had IRB approval and consent from each of the participants. The age of the female participants was consistent within each study and included women 20 years old to the age of 81 years. However, the number of participants within each study was slightly varied. One study included a large sample size of 150 women (Torres-Lacomba et al., 2020), and the remaining three studies' sample sizes were consistent and ranged between 40-77 participants (Pasyar et al., 2019; Tambour et al., 2018; Tidhar & Katz-Leurer, 2010).

Limb and edema volume was measured within all of the studies through the use of water displacement. Water displacement is known as the gold standard for measuring the number of arms swelling within patients suffering from lymphedema (Pasyar et al., 2019). This allowed the authors to measure the effectiveness of the intervention. Three out of the four studies administered a Quality of Life (QoL) questionnaire during their treatment procedures (Pasyar et al., 2019; Tambour et al., 2018; Tidhar & Katz-Leurer, 2010). Unlike the previous articles, one article assessed comfort level in place of the quality of life questionnaire (Torres-Lacomba, 2019). Treatment procedures and protocols varied significantly between these four studies as they all revolve around different alternative interventions for treating breast-cancer-related lymphedema in women.

Intervention Styles

Aquatic Therapy

The first RCT by Tidhar & Katz-Leurer (2010) that was reviewed focused on aqua lymphatic therapy (ALT) in women who suffer from breast cancer treatment-related lymphedema. This study focused on whether ALT is a safe method and whether there are differences in adherence, limb volume, and the quality of life between women who perform only



self-management treatment and women who participate as well in ALT. Results indicated that there were no differences in mean subscores between groups at the beginning of the study. During the follow-up, the researchers found significant differences in the psychological and social dimensions between groups. There were a total of 25 points possible for the social dimension; the lower scores indicated a higher QoL. At baseline, the study group scored 8.7 on the 25-point scale, and the control group scored 8.2. The follow-up results of the study group was 7.3 and the control was 9.9. For the change in scores, the study group's score decreased by 1.4 which indicated their quality of life is higher than the control group as their change score increased by 1.7 which indicated a lower QoL. Improvement in quality of life and reduction of symptoms was seen within the study group subjects and a decline within the control group.

Yoga

In this pilot study conducted by Pasyar et al. (2019), post-breast cancer-related lymphedema (BCRL) clients underwent an 8-week intervention program to evaluate the effectiveness of yoga on their quality of life and limb volume. The target population consisted of all women with confirmed breast cancer-related lymphedema. Participants were randomly placed into either an intervention or control group. The intervention program implemented two instructor-led sessions and one at-home session. The outcomes of this study were assessed at baseline, at the 4-week mark, and again at the end of the entire 8-week program through the use of a quality of life questionnaire and limb volume measurements. After four weeks of the program, there was a significant difference in scores between the intervention and control groups on the role functioning subscale. At the end of the 8-week program, a significant difference was shown between groups concerning cognitive, physical, and emotional functioning in women with BCRL. The participants who underwent yoga intervention seemed to have experienced less financial difficulties during the study. Symptoms including insomnia, pain, and fatigue were also reduced as a result of yoga intervention. There was found to be no significant difference between groups regarding limb volume after the 8-week program, but other studies noted a significant decrease after a 12-week program. In conclusion, yoga exercises can influence most of the functional and symptom-related aspects of quality of life in women with breast cancer-related lymphedema

Manual Lymphatic Drainage

This study was a randomized control trial conducted by Tambour et al., (2018), which looked at both management strategies based on the principles of Complete Decongestive Therapy (CDT). The treatment was administered two times a week for 30 or 60 minutes for about four weeks, which then led to a 6-month follow-up period. Patients were randomly placed into either a treatment or control group. The treatment group received both CDT and Manual Lymphatic Drainage (MLD), while the control group received CDT without MLD. The study findings showed that the volume of lymphedema decreased significantly, with no difference between the treatment and control groups.

KT Tape & Bandaging

Torres-Lacomba et al. (2020) examined the effect of four different types of bandages and Kinesio-tape to determine which one is most effective at reducing breast cancer-related lymphedema while increasing quality of life. This study was a randomized, single-blind, clinical



trial of middle-aged women diagnosed with breast cancer-related lymphedema. The researchers split participants into five groups, where all women received the same treatment, consisting of intense complex decongestive physiotherapy which included manual lymphatic drainage, pneumatic compression therapy, therapeutic education, active therapeutic exercise, and bandaging. The significant and only difference in the women's treatments was the specific bandaging type used. The five different bandages/tapes applied were multi-layer, simplified multi-layer, cohesive, adhesive, and Kinesio-tape. Changes in limb volume and comfort level were both assessed. This randomized control trial showed results indicating that the multi-layer bandage was most effective yet least comfortable, while Kinesio-tape was determined to be least effective yet most comfortable.

Review of Evidence

These four studies provided information on treatment options for individuals suffering from breast-cancer-related lymphedema. The evidence that was reviewed demonstrated that each treatment, alternative or conventional, was successful in reducing the symptoms of breast-cancer-related lymphedema while also increasing quality of life. Health care practitioners must stay up-to-date on current best practices and understand the differences between intervention styles to ultimately provide the best care for their clients. Even though occupational therapy can play a vital role in the treatment of breast-cancer-related lymphedema, we noticed a gap in the current literature. It would be beneficial for further research to be conducted on interdisciplinary collaboration when treating lymphedema to better provide evidence-based and client-centered practice.

Strengths & Limitations

Within these four RCT studies, several limitations may exist and should be noted as they may affect the outcome. Despite the methodological similarities between these studies, the delivery of treatment differed greatly leaving room for bias. In all of the studies that were examined, internal and external validity was limited due to the lack of randomized selection of participants. Since purposive and convenience sampling methods were utilized it should be noted that selection bias and error are possible. Another limitation of these studies is the degree to which the results can be generalized to other populations. Non-probability sampling and smaller sample sizes within a specific type of setting may not be realistic in a natural environment, making these studies harder to replicate and generalize. Each study only consisted of women, which can result in a gender bias that affects the validity of each study and makes it harder to generalize. The strengths of the studies include rigorous study designs with statistically significant results showing the effectiveness of conventional and alternative interventions. Overall, the results from these four studies helped to illustrate the effectiveness of alternative and conventional lymphedema interventions to increase an individual's quality of life and social participation within their daily occupations.

Clinical Bottom Line

The overall purpose of this critically appraised topic (CAT) is to identify the gaps in the literature regarding the types of interventions that relieve lymphedema symptoms as well as the impact it has on social involvement for middle-aged women diagnosed with post-breast cancer lymphedema and how it can have an effect on their quality of life.



Relevance to Occupational Therapy

Occupational therapists can play a significant role in the treatment of post-breast cancer-related lymphedema. The goal of occupational therapy is to increase an individual's performance range within their valued occupations, which ultimately has been shown to increase an individual's well-being and quality of life. Occupational therapists can help plan and implement occupation-based health approaches/interventions that target quality of life and participation (Reitz et al., 2020). Some interventions that occupational therapists can implement include various exercise regimes, kinesiology tape (KT), complete decongestive therapy (CDT), aquatic therapy, and even yoga. Evidence has shown that individuals suffering from post-breast-cancer related lymphedema may suffer from symptoms such as observable swelling, pain, limb weakness, decreased limb mobility, depression, lowered self-esteem, shame, and an altered perception of their body image (Fu, 2014; Herberger et al., 2017; Martin & Hanson, 2000). Not only do these factors constrain an individual's performance range within their social and occupational roles, but they also impact an individual's social, economic, and psychological state (Herberger et al., 2017). A decrease in an individual's performance range within their valued occupations has negatively impacted their quality of life. This correlation can also affect multiple tasks within an individual's daily life as well as negatively impacting their social relationships (Reitz et al., 2020).

Need for Lymphedema Treatment

As stated above, the purpose of the critically appraised topic paper is to review the current literature regarding conventional and alternative interventions for breast-cancer-related lymphedema and their effectiveness at increasing quality of life in middle-aged women. Each intervention that was reviewed was shown to be effective at reducing symptoms and increasing QoL. When determining which route to take, there is a wide variety of interventions that clients can choose from. As healthcare practitioners, it is imperative to stay up to date on both conventional and alternative treatments. Staying up-to-date allows you to educate your clients and their families which will ultimately guide their decisions. It is also imperative to factor in a client's QoL when determining which treatment is the best option. The evidence gathered and reviewed within this CAT shows that further research needs to be conducted on this topic. To add to the current literature, a potential topic area may include the benefits of reducing lymphedema symptoms and its correlations with a client's comfort level. It would also be beneficial to look through the lens of the client's perspective when determining their personal goals and treatment options. At the end of the day, is it more effective to reduce symptoms or maximize an individual's quality of life?

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