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## **Effectiveness of Complete Decongestive Therapy (CDT) as a Lifestyle Management Intervention for Adults with Secondary Lymphedema.**

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## Focused Question

What is the evidence for the effectiveness of lifestyle management interventions within the scope of occupational therapy on health maintenance for adults with secondary lymphedema?

## Clinical Scenario

The National Cancer Institute (2019) explains that lymphedema is a condition where there is a buildup of fluid in soft tissues as a result of the lymphatic system being damaged or blocked. Lymphedema is estimated to impact 2 to 3 million people in the United States, with secondary lymphedema being the most common form (Rockson & Rivera, 2008). Prevalence rates for lymphedema are likely underestimated, as not all patients have received treatment for their condition (Rockson & Rivera, 2008). Secondary lymphedema occurs when the lymph system is damaged or blocked from cancer, infection, injury, removal of lymph nodes, radiation, or surgery (NCI, 2019). The risk of obtaining secondary lymphedema increases when surgery or radiation therapy becomes more aggressive and/or anatomically disruptive (Vojáčková, Fialová, & Hercogová, 2012). “Many factors have been studied with regard to lymphedema risk: obesity, weight gain, venous insufficiency, and recurrent soft tissue infections” (Vojáčková et al., 2012, p. 353). Unfortunately, the growth of obesity is expected to increase the prevalence of individuals with secondary lymphedema (Vojáčková et al., 2012).

Lymphedema is a chronic, debilitating, and progressive disease; therefore, continued treatment of the condition through lifestyle management is vital (Borman, 2018). According to the National Cancer Institute (2019), it was explained that lymphedema can cause swelling in extremities, pain and discomfort in the limbs, recurring infections, fibrosis of the skin, itching or burning sensations, trouble sleeping, psychological symptoms, and decreased range of motion.



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Due to the extensive nature of lymphedema symptoms, participation in meaningful occupations can be difficult. Activities of daily living (ADLs) such as dressing, personal hygiene/grooming, work, and functional mobility can be affected by the decreased range of motion and pain associated with lymphedema (NCI, 2019). Individuals may struggle with social participation and enjoying leisure activities due to associated psychological symptoms like decreased motivation. Instrumental activities of daily living (IADL's) such as caring for others, meal preparation, and health management and maintenance can also be affected by the side effects of lymphedema.

The *Occupational Therapy Practice Framework* (2014) defines health maintenance as developing and managing routines to increase health and wellness, such as exercise, a healthy diet, reducing health risk behavior, and complying with medication routines. Lifestyle management includes treatments that ultimately decrease swelling, restore the functionality of the limb, and prevent further complications (Vojáčková, et al., 2012). Management treatment is known as *complete decongestive therapy* (CDT). CDT treatment strategies include manual lymph drainage (lymphatic massage), pneumatic pump drainage, compression bandaging, exercise, and proper skincare (Silver & Gilchrist, 2011).

For individuals with lymphedema, health management and maintenance is an especially important IADL for preserving their *quality of life* (QOL). QOL is a subjective measure that allows individuals to determine their personal experience and how their symptoms influence daily activities and interpersonal relationships (Vojáčková et al., 2012). The QOL of people with secondary lymphedema can be positively influenced by increasing health maintenance occupations. The purpose of this paper is to assist occupational therapists in



understanding the effectiveness of lifestyle management interventions on increasing health maintenance occupations in adults with secondary lymphedema.

### Key Findings

Two level I and two level III quantitative research articles examined the effects of *complete decongestive therapy* (CDT) as the leading lifestyle management intervention (Kim, Sim, Jeong, & Kim, 2010; Melam, Buragadda, Alhusaini, & Arora, 2016; Oshnari, Hosseini, Haghghat, & Zadeh, 2016; Sezgin Ozcanet et al., 2018). One qualitative article discussed the positive benefits of incorporating rehabilitative services for the aftercare of those managing secondary lymphedema (Silver & Gilchrist, 2011). All five of these articles highlight the importance of CDT as the most effective lifestyle management intervention to improve the quality of life and reduce pain for individuals with secondary lymphedema.

Both level I articles incorporated a component of exercise. Melam et al. (2016) employed a mixed factorial design that included 60 participants and examined the effects of CDT compared to *conventional therapy* (CT) on *quality of life* (QOL). Both of the groups received treatment five days a week for six weeks and measurements were taken at baseline, four weeks, and six weeks. The CDT group included the addition of remedial exercises and a one-hour home program and found that there was a greater improvement of QOL and pain reduction compared to the CT group. The second level I study, by Kim et al. (2010), was a randomized control trial with 40 participants that found CDT intervention with the addition of active resistive exercise significantly reduced the volume of the proximal part of the arm when compared to the control group that received CDT only. After CDT treatment, active resistive exercise was completed for 15 minutes a day, five times a week, for eight weeks (Kim et al., 2010).



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The two level III articles were quasi-experimental non-randomized control trials with pre and post-test treatment designs that focused on the improvement of mobility by decreasing both lymphatic fluid and severity of pain through the use of CDT (Oshnari et al., 2016; Sezgin Ozcan et al., 2018). Additionally, Sezgin Ozcan et al. (2018) studied how these symptoms of secondary lymphedema impacted an individual's QOL. The studies by Oshnari et al. (2016) and Sezgin Ozcan et al. (2018) also included two phases; an intensive phase followed by a maintenance phase. In the study by Sezgin Ozcan et al. (2018), that studied 37 women, phase one consisted of mild lymphatic drainage (MLD) five times a week for three weeks, and phase two included patient and family education of bandaging and self-massage techniques. The Disabilities of the Arm, Shoulder, and Hand (DASH) and Short Form-36 (SF-36) questionnaires were used at baseline and one week after phase one to assess upper extremity function, the severity of pain, and QOL (Sezgin Ozcan et al., 2018). The study by Oshnari et al. (2016) included 36 women who received CDT treatment six days a week for four weeks. Lymphedema volume was measured with the water displacement method, and the pain was measured with a Visual Analog Scale (VAS). The mean percentage of volume reduction was 46% after phase one and 17% after phase two. The subjects experienced a significant reduction in edema volume and pain by the end of the four weeks (Oshnari et al., 2016). All four studies identified that CDT as a lifestyle management intervention improved the QOL and reduced the pain of those managing secondary lymphedema (Kim et al., 2010; Melam et al., 2016; Oshnari et al., 2016; Sezgin Ozcan et al., 2018).

The qualitative study examined a report from the Institute of Medicine on how the needs of patients finishing cancer treatments are not being met (Silver & Gilchrist, 2011). This study identified several adverse effects of cancer treatment that could be reduced with



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intervention from a rehabilitation team member, such as an occupational therapist. Some of these adverse effects included lymphedema, decreased range of motion (ROM), and increased pain. Occupational therapists can improve health maintenance for these individuals by administering CDT (Silver & Gilchrist, 2011).

CDT has been recognized by many as the most effective lifestyle management intervention for lymphedema symptoms (Kim et al., 2010; Melam et al., 2016; Oshnari et al., 2016; Sezgin Ozcan et al., 2018). It was discovered that with CDT, the mean percentage of lymphedema decreased by 38.1% in individuals (Sezgin Ozcan et al., 2018). The estimated marginal means showed a higher reduction in pain through the utilization of CDT than other conventional treatments by a margin of 0.98% according to a VAS (Melam et al., 2016). CDT, with the addition of active resistive exercise, has been shown to reduce the volume of lymphedema (Kim et al., 2010; Melam et al., 2016). The active resistive exercises included bench press, seated row, latissimus dorsi pull-down, one arm bent over row, tricep extension, and bicep curls (Kim et al., 2010). An increase in the mobility of the affected limb was found due to a decrease in the volume of lymphedema (Oshnari et al., 2016; Sezgin Ozcan et al., 2018). To determine one's overall mobility in the affected limb, Sezgin Ozcan et al. (2018) used the DASH questionnaire that found individuals scored lower after CDT, meaning that they had less difficulty with mobility.

Reduced lymphatic volume (Kim et al., 2010; Oshnari et al., 2016; Sezgin Ozcan et al., 2018), decreased pain (Kim et al., 2010; Melam et al., 2016; Oshnari et al., 2016; Sezgin Ozcan et al., 2018), and increased mobility (Sezgin Ozcan et al., 2018) all contributed to increased quality of life (QOL) by increasing an individual's ability to participate in desired occupations. Due to the decrease in lymphatic volume and pain and an increase in mobility, occupational



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participation is more attainable. Individuals are more likely and able to complete their desired occupations like getting dressed, washing the dishes, and caring for others. Sezgin Ozcan et al. (2018) discovered that the SF-36 scores increased after CDT, indicating that their QOL was improved. The results of this questionnaire suggest that as secondary lymphedema symptoms decrease and occupational participation increases, overall QOL is increased through lifestyle management. Rehabilitation therapists such as physical and occupational therapists administer CDT; unfortunately, those services are not frequently recommended for those with secondary lymphedema (Silver & Gilchrist, 2011). Incorporating CDT into the treatment plan as a lifestyle management intervention has been shown to reduce the severity of pain experienced by individuals with secondary lymphedema (Kim et al., 2010; Oshnari et al., 2016; Sezgin Ozcan et al., 2018).

In these five studies, internal validity was limited due to the lack of random selection of participants. This was due to the specificity of the inclusion criteria. Smaller, less generalizable, sample sizes were noted due to location and available participants that met criteria. Lack of long-term lifestyle management follow-ups was noted as a contributor to the limited external validity of CDT. The main weaknesses identified in these studies include limited internal and external validity. The strengths of the studies include rigorous study designs with statistically significant results showing the effectiveness of CDT. Overall, the results from these five studies helped to illustrate the effectiveness of CDT as a lifestyle management intervention for secondary lymphedema.

### **Clinical Practice Applicability**

These five studies provided information on treatment options for those with secondary lymphedema comparing *complete decongestive therapy* (CDT) as a lifestyle management



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intervention for health maintenance paired with exercise, CDT compared with conventional therapy (CT), and CDT by itself with pre-post tests on those affected with secondary lymphedema. There was a significant decrease in lymphatic volume in the extremities of clients undergoing the CDT treatment. CDT was shown to reduce lymphatic volume more than CT. CDT paired with exercise resulted in the most effective lifestyle management option for adults with secondary lymphedema.

There is sufficient evidence to support the positive effects of CDT as a lifestyle management intervention for health maintenance. However, in order to maintain a high standard of care, more rigorous and up-to-date studies continuously need to be completed. A gender bias may have been introduced to this research as women were the primary participants. This was likely because women are at a higher risk of developing secondary lymphedema compared to men. The leading cause of developing secondary lymphedema is linked to breast cancer. Breast cancer is more common among women; however, it is important to note that men are also at risk for developing breast cancer. Ethical considerations include being mindful of cultural backgrounds, customs, and any language barriers. Additionally, clients should have the option to receive treatment in a private room and have their choice of practitioner.

Occupational therapists' education in the lifestyle management techniques of CDT can provide them with an opportunity to obtain condition-specific assessments and treatment expertise that are at the core of guiding appropriate clinical care for those experiencing secondary lymphedema. Some recommendations to guide occupational therapists with managing secondary lymphedema include becoming lymphedema certified, maintaining strong relationships with the oncologists to receive the referrals, and staying up to date with the research to maintain the best evidence-based practice. If an occupational therapy practitioner is



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implementing CDT into practice, the inclusion of a pneumatic pump drainage, compression bandages, manual lymph drainage (lymphatic massage), exercise, and proper skin care should be incorporated. When implementing CDT in the treatment process, team members should include lymphedema certified specialists such as an occupational or physical therapist, nurses, physicians, oncologists, insurance agents, and clients. When applicable, speech therapy, translators, and clients' family/friends should be included as well. There is a need for therapists to participate in raising awareness of the importance of CDT as a lifestyle management intervention to increase health maintenance occupations and thus increase overall *quality of life* (QOL). By enhancing a knowledge base in CDT as a lifestyle management intervention for those with secondary lymphedema, occupational therapists will be able to provide more efficacious and client-centered treatment.



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