

THESIS

DO PARTICIPANTS WITH CHRONIC PAIN HAVE IMPROVED SELF-EFFICACY
AFTER COMPLETING THE MY-SKILLS INTERVENTION?

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ABSTRACT

DO PARTICIPANTS WITH CHRONIC PAIN HAVE IMPROVED SELF-EFFICACY AFTER COMPLETING THE MY-SKILLS INTERVENTION?

Purpose: The aim of this study was to explore if participants with chronic pain have improved self-efficacy in performing daily activities and managing pain symptoms after completing the Merging Yoga and self-management Skills program (MY-Skills).

Method: Care dyads, comprised of caregivers and care-recipients with chronic pain were recruited to complete the 8-week MY-Skills intervention. Twice each week, participants engaged in a one-hour group self-management course followed by a one-hour group yoga session developed for care dyads with chronic pain. Self-efficacy outcomes were collected using the Chronic Pain Self-Efficacy Scale (pain management, physical function, coping with symptoms); the PROMIS® Self-Efficacy for Managing Daily Activities Short Form 4a; and the PROMIS Self-Efficacy for Managing Symptoms Short Form 4a. Data for all participants were analyzed using a paired *t*-test. A post hoc exploratory analysis of separate caregiver and care-recipient outcomes was conducted using a Wilcoxon signed ranks test.

Results: Eight participants completed the study (50.23±14.77 avg. age, 77% female, 69% with pain for > 10 years). The participants reported increased self-efficacy across all measures and domains, with significant improvement found for self-efficacy for physical function (38.97±19.45 vs. 59.10±18.60, *p* = .004). The post hoc exploratory analysis showed increased self-efficacy in all caregiver outcomes. Care-recipients reported increased self-efficacy in all areas except pain management, which significantly decreased.

Conclusion: MY-Skills improved self-efficacy to varying degrees for participants in aggregate. Improvements in self-efficacy related to physical function demonstrated that MY-Skills increased participants' confidence in performing everyday occupations such as running errands, doing chores, working, and socializing. Interventions that improve self-efficacy, like MY-Skills, may help people with chronic pain gain function, problem-solving, and coping skills to reclaim a sense of control and enhance quality of life.

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CHAPTER 1: INTRODUCTION

1.1 Purpose

The purpose of this study was to explore if participants with chronic pain have improved self-efficacy in performing daily activities and managing symptoms after completing the Merging Yoga and self-management Skills program (MY-Skills). MY-Skills is an 8-week, 16-session intervention that merges group yoga and self-management education to improve the mind-body connection, chosen disease management skills, and self-efficacy for care dyads with chronic pain.

1.2 Background and Statement of Problem

Chronic pain is a pervasive and debilitating condition that impedes daily functioning for millions of people and costs hundreds of billions of dollars each year (Dahlhamer et al., 2018; National Institutes of Health, 2016). This complex condition is affected by biological, psychological, and social factors that influence the manifestation and experience of chronic pain (Gatchel et al., 2007).

Individuals with chronic pain report that the condition interferes with all areas of daily living, including self-care, interpersonal relationships, and work (Hadi et al., 2019). These activities that occupy everyday life and contribute to the performance of meaningful roles are known as “occupations.” Prolonged disruption of occupational performance and participation impairs health, well-being, and quality of life (Dickie, 2014; Whiteford, 2003).

From an occupational perspective, it is not surprising to learn that people with greater pain-related disability (the interference of pain with daily activities) also report lower self-efficacy (Börsbo et al., 2010). Self-efficacy is the perceived ability to assert control over one’s

self and the environment (Bandura, 2001). Self-efficacy is a powerful component in developing and maintaining the healthy, adaptive behaviors required to manage a chronic condition long-term. Higher self-efficacy is associated with reduced pain-related disability, less pain severity, and improved mood (Jackson et al., 2014). Perhaps even more importantly, individuals with higher self-efficacy have better overall health and quality of life (Börsbo et al., 2010).

Yoga is an effective physical intervention for individuals with chronic pain. It has been shown to improve mind-body connection (Büssing et al., 2012), reduce pain (Ward et al., 2013), and improve self-competence and self-efficacy among individuals with chronic pain (Schmid, Fruhauf, et al., 2019). Yoga may also serve as a coping strategy to lower stress and interrupt the stress-pain feedback loop (Crowe et al., 2016; Pascoe & Bauer, 2015).

Self-management interventions incorporate education and skills training to improve health management and performance of daily occupations. Self-management emphasizes skills like problem-solving to adapt to changing needs and circumstances (Lorig & Holman, 2003). Researchers have shown that self-management programs increase perceived self-efficacy for individuals with chronic conditions (Elbers et al., 2018).

For individuals with chronic stroke, merged yoga and self-management intervention is beneficial and feasible and improved self-efficacy (Schmid et al., 2016). However, to date, researchers have not investigated if merging yoga and self-management improves self-efficacy for people with chronic pain. Therefore, the purpose of this study is to explore if participants with chronic pain have improved self-efficacy after completing the MY-Skills intervention.

1.3 Research Question

Do participants with chronic pain have improved self-efficacy after completing the MY-Skills intervention?

CHAPTER 2: LITERATURE REVIEW

2.1 Chronic Pain

Incidence and Impact

Chronic pain is a pervasive condition, affecting an estimated 50 million adults in the United States (Dahlhamer et al., 2018). Of those, nearly 20 million people have pain to the extent that it interferes with their daily lives (Dahlhamer et al., 2018). The financial costs of chronic pain are far-reaching. An estimated \$560 to \$635 billion is spent each year on medical expenses, lost productivity, and disability programs related to chronic pain (National Institutes of Health [NIH], 2016). The incidence and impact of chronic pain, along with the ensuing opioid crisis, have driven innovative, non-pharmaceutical initiatives to address chronic pain and enable individuals to regain their quality of life.

Definition

Chronic pain is not merely the symptom of another condition. It is recognized by the U.S. Department of Health and Human Services (HHS) as a separate condition with a “distinct pathology, causing changes throughout the nervous system that often worsen over time” (NIH, 2016, p. 16). While there is no hard-and-fast definition for chronic pain, it is generally accepted that chronic pain persists beyond the period of typical tissue healing or occurs on at least half of the days over six months (NIH, 2019a).

Biopsychosocial Model

Pain researchers indicate that chronic pain is not merely the biological nociception of a noxious stimulus, but rather it is a complex interaction between biological, psychological, and social systems (Gatchel et al., 2007). Individuals with chronic pain encounter biological,

psychological, and social factors that contribute to and interact with the experience of pain. Collectively, these factors comprise the biopsychosocial model of pain.

Biological Factors

The biological aspect of pain includes factors like genetic variation in sensitivities to pain, neurological structures, nociception of a stimulus, and the physiological response to that stimulus. When the body perceives a threat, such as an injury, it triggers a series of intricate reactions through the hypothalamic-pituitary-adrenal axis (HPA-axis) that results in the release of various corticosteroids (stress hormones) (Vachon-Preseau, 2018). In instances of acute pain, cortisol interferes with pain sensation. However, the high allostatic load produced by prolonged stress affects the function of various systems, which can increase an individual's sensitivity to pain (Gatchel et al., 2007). Vachon-Preseau (2018) proposed that persistent high cortisol levels alter the corticolimbic system, impairing the ability to inhibit the HPA-axis. This maladaptive response creates a feedback loop that perpetually contributes to pain and stress.

Psychological Factors

Psychological components that contribute to pain involve emotional and cognitive factors (Gatchel et al., 2007). Pain is an emotional experience. Not only is emotional distress a response to pain, but any emotional distress can predispose a person to pain, increase or inhibit pain severity, or prolong a pain experience (Gatchel et al., 2007). Researchers have indicated that emotional and psychological stress may increase the risk of acute pain developing into chronic pain (Meints & Edwards, 2018). A bidirectional relationship exists between pain and anxiety and depression. Negative affect such as depression and anxiety increase the risk of chronic pain, and conversely, chronic pain increases the risk of depression and anxiety (Meints & Edwards, 2018).

Recently, researchers have explored the relationship between trauma and chronic pain. Post-traumatic stress (PTS) is correlated with increased pain-related disability and pain severity, and it is a risk factor for the evolution of acute pain to chronic pain (Meints & Edwards, 2018). In a meta-analysis of 71 studies, Afari et al. (2014) reported that “individuals reporting exposure to trauma were 2.7 times more likely to have [a functional somatic syndrome diagnosis]” (p. 4) and were 3.35 times more likely to have a diagnosis of widespread chronic pain.

Cognitive elements contributing to the pain experience include personal beliefs, values, pain impact (the sense of control over pain), pain appraisal (the meaning an individual ascribes to their pain), resiliency, and self-efficacy (Gatchel et al., 2007). Emotional and cognitive factors are essential influences of pain behavior. Cognition and emotions affect the things people do, think, or say when experiencing pain. For instance, pain-related anxiety and fear of pain contribute to avoidant pain behaviors that interfere with daily functioning.

Woby et al. (2007) found that cognitive factors accounted for 30% of the variance in pain intensity after adjusting for demographic factors and 32% of the variance in pain-related disability after controlling for pain intensity among individuals with chronic low back pain. Self-efficacy and catastrophizing beliefs independently predicted pain intensity while self-efficacy was most strongly associated with disability (Woby et al., 2007). Self-efficacy, described in more detail below, is the confidence in one’s capabilities to meet the demands of life. (Bandura, 2001). It is a protective cognitive factor and an essential component of resiliency. When present, self-efficacy related to managing chronic pain is associated with improved functional outcomes (Stewart & Yuen, 2011).

Social Factors

Social factors also contribute to the chronic pain experience. Close interpersonal relationships, relationships at work, and daily social interactions can amplify or inhibit the experience of pain or pain behaviors (Gatchel et al., 2007). Pain interference may strain relationships at all levels of social participation and lead to social isolation. In a qualitative study of individuals with chronic low back pain, participants reported that their condition contributed to a loss of social roles at home and work (Bailly et al., 2015). Poor interactions with coworkers and limited social support at work are associated with increased pain-related disability (Meints & Edwards, 2018). When present, social support is associated with improved functional outcomes for individuals with pain related to various conditions, including spinal cord injury, multiple sclerosis, and cancer (Meints & Edwards, 2018).

Chronic pain interferes with all aspects of life: the ability to perform daily activities; participate in work; maintain mood; and sustain relationships (Hadi et al., 2019). Consequently, individuals with chronic pain report reduced quality of life compared to both the general population and people with other chronic conditions (Hadi et al., 2019).

2.2 Care Dyad

As described above, the experience of chronic pain impacts social roles and relationships for the individual as well as for the people in their lives (Bailly et al., 2015). With an individual's increased pain-related disability, a close family member or friend may perform more caregiving tasks, altering the dynamic into a caregiver/care-recipient relationship.

Informal caregivers are individuals who provide unpaid assistance, often to family members, for activities of daily living and medical management (Family Caregiver Alliance,

2019). More than 43 million informal caregivers provide care each year at an estimated economic value of \$470 billion in 2013 (Family Caregiver Alliance, 2019).

The role of caregiving can take a toll on one's physical and mental health. Informal caregivers experience more stress and depression and lesser well-being, health, and self-efficacy than noncaregivers (Pinquart & Sörensen, 2003). Researchers indicate that high proportions of caregivers experience pain and poor physical health compared to noncaregiving counterparts (Darragh et al., 2015; Hung et al., 2007; Jones et al., 2011). In one study, 75% of caregivers over the age of 60 reported having persistent pain over the previous six months (Jones et al., 2011). Chronic pain experienced by caregivers and care-recipients alike is not an isolated experience but has a dynamic, bidirectional impact on close relationships. For instance, "family members have increased odds of reporting chronic pain if another family member also has chronic pain" (Campbell et al., 2018, p. 44). Additionally, caregivers with self-reported pain tend to overestimate the pain experience of the care-recipient, which can influence how caregivers respond to pain behaviors and interact with care-recipients (Hung et al., 2007).

The relationship between a caregiver and care-recipient is so closely intertwined that the partnership can be viewed as a dyadic unit. In a review of studies on caregiver-cancer patient dyads, Li and Loke (2014) noted that members of the dyad have a 'reciprocal influence' on each other that affects quality of life, self-efficacy, mental health, emotional coping, and role adjustment, which relate to the psychosocial aspects of the biopsychosocial model. Together, the dyad engages in a spectrum of behaviors to address the condition as well as the needs and health of both members and the relationship over time (Lyons & Lee, 2018). An assumption of dyadic illness management theory is that improved collaboration between the members contributes to the greater health of the dyad (Lyons & Lee, 2018). Approaches for dyads managing chronic or

severe illnesses show trends toward increased relational functioning, quality of life, and self-efficacy for members of the dyad; decreased depressive symptoms and care burden for caregivers; as well as reduced pain for care-recipients (Badr et al., 2015; Ferrell & Wittenberg, 2017; Laver et al., 2017; Lyons et al., 2002; Martire et al., 2010; Titler et al., 2017).

2.3 Self-Efficacy and Pain

Self-efficacy is the personal belief in one's capabilities "to exercise control of their own functioning and over environmental events" (Bandura, 2001, p. 13815). Self-efficacy is the sense of competence that is essential for individuals to consider constructive behavior, commit to goals, initiate change, persevere despite challenges, sustain modified behaviors, and cope with setbacks (Bandura, 2001). Self-efficacy is not a broad, static measure. It varies for each individual, depending on the activities and specific tasks they need to perform (Bandura, 2012). For example, a person with high self-efficacy in their role at work could have low self-efficacy if asked to give a presentation in front of an audience. Self-efficacy also influences motivation. For instance, individuals with higher self-efficacy have the confidence to establish goals for themselves, have a stronger belief in attaining those goals, and as such, are more apt to pursue those goals (Bandura, 2001).

Self-efficacy is closely connected with health and well-being. Individuals with chronic pain who report low self-efficacy also report greater pain-associated disability, pain severity, depression, and anxiety (Börsbo et al., 2010; Jackson et al., 2014; Turner et al., 2005). This relationship between self-efficacy and pain-related outcomes can create a maladaptive cycle of functional impairment and poor affect, which contribute to an even lower sense of self-efficacy. Since the association between self-efficacy and function is bidirectional, self-efficacy is a protective factor against pain-related disability. Strong self-efficacy may deflect stressors that

can negatively impact health (Bandura, 2001). If an individual believes in their ability to exert control over a circumstance, that situation may not be acknowledged by the body as a stressor, and the body will not produce a physiological stress response (Bandura, 2001). Similarly, Turner et al. (2005) found that self-efficacy was positively associated with pain coping strategies among older adults with chronic pain.

People with higher self-efficacy scores “experience less functional impairment, affective distress, and severe pain” (Jackson et al., 2014, p. 803). Researchers have also shown that reduced pain-associated disability is associated with better overall health and higher quality of life (Börsbo et al., 2010). Self-efficacy is a critical factor in initiating and sustaining healthy lifestyle behaviors, particularly for individuals managing a chronic condition, such as chronic pain. As such, interventions that improve self-efficacy in managing chronic pain symptoms have the potential to increase daily function and enhance health and well-being.

2.4 Occupational Therapy Perspective on Pain

Occupational therapy is a profession that helps others gain or regain the ability to perform and participate in occupations – the meaningful activities and roles that occupy daily lives. Occupations include the things we need, want, and are expected to do, including self-care, work, leisure, socializing, and sleep (American Occupational Therapy Association, 2014). Central to the philosophy of occupational therapy is the perspective that engaging in meaningful occupations – the very act of doing – supports health, well-being, and quality of life (Dickie, 2014; Hasselkus, 2011).

Occupational therapists are uniquely equipped to address chronic pain. They employ a holistic approach with clients and recognize the complex factors and integrated systems that support or impede occupational performance and participation. Occupational therapists are

knowledgeable about physical, cognitive, social, and contextual systems; skilled in assessing the impacts of chronic pain; and adept at modifying personal factors, task demands, and environmental factors to reduce pain interference in daily activities (Lagueux et al., 2018). With a central focus on occupation, occupational therapist leverage occupations both as a means of intervention and as the end goal to enhance, restore, modify, and maintain occupational participation and enrich clients' quality of life.

2.5 Interventions for Chronic Pain

In 2016, the National Institutes of Health (NIH) released the National Pain Strategy in response to the 2011 Institute of Medicine report *Relieving Pain in America* (NIH, 2019b). The National Pain Strategy recognizes the use of self-management and complementary approaches such as yoga, meditation, and relaxation as relevant and beneficial strategies to address chronic pain. It also supports research aimed at identifying effective nonpharmacological pain management strategies, including complementary health approaches (NIH, 2016).

Yoga

Yoga is an ancient practice rooted in ritual and spiritual beliefs. In Western society, yoga is often abridged to three foundational practices: meditation, breathing techniques (pranayama), and physical postures (asanas) (Mailoo, 2005). Yoga is a holistic practice that integrates the mind with the body through unified breath, movement, and introspection.

The positive effects of yoga for various chronic conditions are numerous. In a study of a yoga intervention for individuals with chronic pain, researchers found that yoga significantly improved participant performance and satisfaction with valued activities and increased participation in daily activities, despite pain severity (Schmid, Van Puymbroeck, et al., 2019).

Yoga also improved pain severity and pain-related disability (Bussing et al., 2012; Ward et al., 2013). In a Cochran review on yoga treatment for chronic low back pain, the authors concluded that yoga has a moderate effect on improving functioning over 3 to 6 months (Wieland et al., 2017). The benefits of yoga in addressing pain are attributable to body-factors such as improved physical flexibility, coordination, and strength as well as mind-factors, including focusing the mind and reducing anxiety and distress (Bussing et al., 2012). Together these mind-body changes can improve pain intensity, reduce the experience of pain-related disability, enhance mood, and support higher quality of life (Cramer et al., 2017).

Yoga can also be employed as a coping strategy, which may help in managing stressors that exacerbate pain. Pascoe and Bauer (2015) indicated that yoga might reduce the physiological fight-or-flight response of the sympathetic nervous system, which could ultimately help break the stress-pain feedback loop. Crowe and colleagues (2016) proposed that yoga can serve as a coping strategy by allowing individuals a 'break' from stressful situations, enhancing mood, and providing social companionship. Similarly, yoga may help people to regulate their emotions and adjust their perceptions in response to stress (Crowe et al., 2016). Yoga may also provide individuals experiencing stress related to managing a chronic condition with an increased sense of capability and self-competence that fosters self-efficacy (Hewett et al., 2018; Janalipour et al., 2018; Schmid, Fruhauf, et al., 2019).

A study by Portz et al. found that participation in yoga predicted an increase in self-efficacy for people with chronic pain (in review). However, studies examining the direct effects of yoga intervention on self-efficacy among individuals with pain conditions have reported mixed results. Some researchers indicated that yoga significantly increased self-efficacy (Evans et al., 2010; Groessl et al., 2019; Schmid, Fruhauf, et al., 2019; Tilbrook et al., 2011) while

others found no difference between intervention groups (Cox et al., 2010; Lewis et al., 2019; Williams et al., 2005). In a qualitative study, Tul et al. (2011) found that participants with chronic pain felt that yoga restored a positive mind-body connection, which enabled them to live beyond the chronic pain experience. These mixed results suggest that while yoga may contribute to increased feelings of capability and confidence, yoga as a stand-alone intervention may not impart a strong enough effect to improve self-efficacy outcomes significantly.

Self-Management

Self-management is the process of managing one's health and well-being. It involves knowledge of the condition as well as the behaviors and activities necessary to manage health, particularly for chronic conditions (Lorig & Holman, 2003). The National Pain Strategy endorses self-management as a critical strategy for individuals battling chronic pain “to prevent, cope with, and reduce pain and its disability” to improve quality of life (NIH, 2016, p. 6).

Lorig and Holman (2003) identify three primary tasks necessary for self-management: 1) medical management (appointments, medications, etc.); 2) managing meaningful behaviors and life roles (work, interests, and activities); and 3) handling emotions related to the condition. To enhance the performance of these tasks, self-management training focuses on developing essential skills, including problem-solving, decision making, accessing resources, establishing relationships with care providers, and taking action through purposeful action planning (Lorig & Holman, 2003). When provided in a group setting, individuals with chronic pain benefit from collective problem solving, peer modeling, and a supportive social community (Mann et al., 2013).

In contrast to typical patient education, self-management participants actively: engage in identifying solutions to address challenges, apply these strategies in daily life, and use internal

and external feedback to modify their challenges (Mann et al., 2013). Mastering transferable skills, like problem-solving and action planning, are vital to meet the changing demands related to managing a chronic condition. Self-management interventions for individuals with chronic pain have resulted in reduced pain medication and healthcare utilization (i.e., fewer medical consultations, emergency visits, and hospitalizations) as well as decreased pain intensity, catastrophizing beliefs, and anxiety (Mann et al., 2013).

Mann et al. (2013) caution that “acceptance of the chronic nature of their pain is a necessary step before individuals are ready to self-manage” (p. 212). They propose that participants should be mentally prepared to take an active role in managing their pain and should not expect curative results from self-management. Armed with this motivation and self-management strategies, individuals can increase their sense of control and mastery over challenges, enhance self-efficacy, and experience improved quality of life (Mann et al., 2013).

Merging Yoga and Self-Management Skills (MY-Skills)

Merging yoga and self-management skills (MY-Skills) into a single intervention for chronic pain enables participants to optimize benefits from physical and skills-development interventions simultaneously. Physical activity, like yoga, is associated with positive self-management intervention outcomes (Mann et al., 2013). Gothe et al. (2014) suggested that yoga may influence cognitive function, including working memory, task shifting, and processing time, which may enhance the comprehension and application of self-management content.

Merging yoga and self-management education is feasible and beneficial for individuals managing chronic conditions, which suggests that it could also benefit people with chronic pain (Schmid et al., 2016). A yoga-only intervention for individuals with chronic stroke increased balance, decreased fear of falling, and reduced stroke-related disability fall risk (Schmid et al.,

2012). However, the intervention could increase the incidence of falls due to participants' increased confidence in their balance, coupled with high-risk choices (Schmid et al., 2012; Schmid et al., 2016). When yoga was merged with self-management education, the curriculum emphasized the management of fall risk factors, and participants demonstrated significant improvement in fall prevention strategies (Schmid et al., 2016). Qualitative analysis from interviews with the same study participants indicated that the merged intervention increased participants' confidence in their physical, mental, functional, and coping capabilities, pointing to potential increases in self-efficacy (Atler et al., 2017).

Merging yoga and education programs has been beneficial in other diagnostic populations. However, to date, researchers have not examined the impact of a merged yoga and pain-specific self-management intervention on self-efficacy among people with chronic pain. Self-efficacy is a crucial element to manage a chronic condition, optimize health and well-being, and support quality of life despite the pain experience. Therefore, the purpose of this study is to explore if participants with chronic pain have improved self-efficacy, a protective factor against pain-related disability, after completing the MY-Skills intervention.

2.5 Summary

In summary, chronic pain is a pervasive, debilitating condition that impacts individuals' ability to participate in the occupations they need and want to do every day. Numerous biopsychosocial factors contribute to and are affected by the pain experience (Gatchel et al., 2007). Chronic pain not only impacts the individual; it also interferes with interpersonal relationships (Gatchel et al., 2007). Caregivers are at increased risk of experiencing pain and discomfort (Darragh et al., 2015). However, dyadic interventions may increase collaboration

between caregivers and care-recipients and lead to better health for both members (Lyons & Lee, 2018).

Self-efficacy, one's sense of competence and control over the environment, is a protective factor that reduces symptoms of depression, anxiety, and pain severity and supports function, health, and quality of life (Börsbo et al., 2010; Stewart & Yuen, 2011). Yoga and self-management are complementary approaches that independently improve outcomes, including self-efficacy, for people with chronic pain (Mann et al., 2013; Schmid, Fruhauf, et al., 2019). Merging yoga and self-management into a combined protocol enables participants to concurrently benefit from physical activity and applied skills development. However, no known studies to date have examined the impact of the MY-Skills intervention on self-efficacy. Therefore, this study aims to assess the influence of MY-Skills on self-efficacy among care dyads with chronic pain.

CHAPTER 3: METHODS

3.1 Research Design

A quasi-experimental quantitative study design was used to analyze the impact of the MY-Skills program on self-efficacy for care dyads with chronic pain. Dyads comprised of individuals with chronic pain and their identified caregivers who also reported chronic pain, referred to as the “care dyad.” Self-efficacy outcome measures were completed at baseline and following the eight-week intervention.

3.2 Participants

Care dyads were derived from a convenience sample and recruited via pain clinics, community centers, local events, and paid advertising. Interested participants were screened during an initial phone interview and individuals completed the Brief Pain Inventory (BPI), short Mini Mental Status Exam (“Mini Mental”), and Physical Activity Readiness Questionnaire Plus (PAR-Q+) for eligibility (Callahan et al., 2002; Cleeland, 1989; Warburton et al., 2011).

Inclusion criteria required caregivers and care-recipients to be: 18 years of age; English-speaking; in chronic musculoskeletal pain for at least three months; able to stand with or without an assistive device; living in a private home within the community; part of a care dyad; report a sedentary lifestyle (no more than 30 minutes of organized physical activity twice per week); in moderate pain (BPI score ≥ 5); and able to follow instructions (short Mini Mental ≥ 4). Any participant not cleared for physical activity by the PAR-Q+ required physician approval to participate in the study. Caregivers also identified as the primary caregiver for the care-recipient, and they must have performed those duties for at least the previous six months. The care-recipient did not have to reside with the caregiver. Exclusion criteria included: significant

cardiovascular disease (class 3 or 4 congestive heart failure or myocardial infarction within the past 3 months); stroke or transient ischemic attack within the past six months; receiving/planning to receive cancer treatment within six months; Alzheimer's disease or dementia diagnosis; expectation of death within twelve months; currently undergoing physical rehabilitation for chronic pain; undergoing drug or alcohol treatment; currently participating in an exercise study; or completed self-management education in the previous year. The university Institutional Review Board approved the study, and all participants provided written consent.

3.3 Intervention

The MY-Skills intervention occurred twice weekly over eight weeks for a total of sixteen sessions. Each session consisted of one hour of a group self-management course followed by 60-minutes of yoga, jointly attended by caregivers and care recipients.

The study team, comprised of experts in the areas of caregiving, pain management, rehabilitation, and self-management education, developed the self-management course content after gathering and examining focus group data with participants on proposed topics. The program incorporated core skills associated with effective self-management and was tailored to address pain management, which included skills such as: problem-solving, action planning, coping, and effective communication (Fruhauf et al., 2016). Every session, participants received a manual that included handouts, recommended strategies, interactive worksheets, and action planning worksheets. Trained research assistants with backgrounds in health and human sciences delivered the self-management portion of the intervention.

A certified yoga therapist trained in providing graded, therapeutic hatha and viniyoga yoga led the yoga sessions. Yogic mantras were chosen for each session to coincide with self-management content and affirm themes. For example, the content for session four addressed

factors that influence pain for the care dyad, and the yoga mantra was “I am strong, together we are stronger.” Table 3.1 provides an outline of the yoga mantras and self-management content.

Table 3.1 Self-Management Content and Yoga Mantra by Session

Session	Theme	Self-Management Content	Yoga Mantra
1	Taking Care of You	Introduction to MY-Skills, yoga, and self-management	“I am here for my care.”
2	Taking Care of Us	Community resources and the influences of partnership	“We are here for our care.”
3	Pain 101	Overview of pain, triggers, and meaningful activities	“I will help myself.”
4	Pain as a Pair	Factors influencing pain as a pair	“We will help each other.”
5	Motivation and Pain	Motivators when experiencing pain	“I am capable.”
6	Body Mechanics	Body mechanics tips with different activities and corrections	“We are capable.”
7	Stress Management	Stress management and strategies	“Breathe in quiet, breathe out calm.”
8	Dealing with Difficult Emotions	Identify difficult emotions and identify adaptive strategies	“Breathe in quiet, breathe out calm.”
9	Communication as a Pair	Assessing communication and tips	“I am strong, together we are stronger.”
10	Communication with your Medical Team	Communicating your pain, preparing for visits, practicing communication	“I am strong, together we are stronger.”
11	Fatigue and Pain	Fatigue and pain, exercise and yoga as strategies	“I will work with my energy.”
12	Activity Modification	Activity log, tips, and strategies	“We will work with our energy.”
13	Healthy Eating and Pain	Food choices to help with pain	“I choose health.”
14	Yoga and Pain	Yoga basics, compare to other forms of physical activity	“We choose health.”
15	Applying Skills and Forming Habits	Applying skills and forming habits at home and in the community	“I can help myself.”
16	Summary and Long-Term Action Planning	Program summary, long-term action planning	“We can help each other.”

Yoga was developed as a progressive practice, and with each session, more challenging postures were presented. For instance, yoga involved primarily seated postures to start and slowly incorporated standing postures and supine postures on the floor throughout the intervention. The yoga postures were intentionally selected to allow for modification for participants' abilities and to promote body awareness, mind-body connection, strength, and flexibility. All participants received a yoga mat and an eye pillow.

3.4 Data Collection and Outcome Measures

Trained research assistants collected demographic data, pain characteristics, and outcome measures via pen-and-paper assessments before the program and immediately following the 8-week intervention. Demographic data included age, gender, race, marital status, and level of education. Pain characteristics measured at baseline included the time since pain started, activity limitations, and pain level as measured by the BPI. Self-efficacy outcome measures included the Chronic Pain Self-Efficacy Scale (CPSS), PROMIS[®] Self-Efficacy for Managing Daily Activities Short Form 4a (SE-Daily Activities), and PROMIS Self-Efficacy for Managing Symptoms Short Form 4a (SE-Symptoms).

The CPSS measures the perception of self-efficacy in individuals with chronic pain (Anderson et al., 1995). The assessment is a 22-item self-report questionnaire organized into three self-efficacy domains: pain management (9 items), physical function (5 items), and coping with symptoms (8 items). Participants rate each item on a scale from 0% (very uncertain) to 100% (very certain). Scores are determined by calculating the mean for each domain and the total score with a higher score representing greater self-efficacy. Psychometric analysis indicates the CPSS has good internal reliability ($\alpha = 0.88, 0.87, \text{ and } 0.90$ for pain management, physical function, and coping with symptoms respectively) and significant construct validity for the three

domains. Anderson et al. (1995) found that the domain for physical function self-efficacy was a significant predictor of pain severity, daily pain interference, and activity level. Similarly, self-efficacy related to physical function and coping with symptoms were significant predictors of depression, hopelessness, affective distress, and a sense of control in life (Anderson et al., 1995).

The series of PROMIS Self-Efficacy for Managing Chronic Conditions questionnaires measure “an individual’s confidence in his/her ability to successfully perform specific tasks or behaviors related to one’s health in a variety of situations” (Gruber-Baldini et al., 2017, p. 1916). The SE-Daily Activities and SE-Symptoms forms are two scales the PROMIS Self-Efficacy for Managing Chronic Conditions bank of assessments. The SE-Daily Activities measures the self-reported belief in one’s ability to perform daily activities. The SE-Symptoms measures self-confidence related to controlling symptoms and preventing symptom interference in various areas of life. The SE-Daily Activities and SE-Symptoms short forms include four questions scored on a 5-point Likert scale from 1 (I am not at all confident) to 5 (I am very confident). Possible scores range from 4 to 20 with a higher score indicating greater self-efficacy.

Both the SE-Daily Activities and SE-Symptoms demonstrated high internal consistency (Cronbach’s alpha >0.85) and good fit using the comparative fit index (SE-Daily Activities = 0.952; SE-Symptoms = 0.923, whereas >0.95 indicates good fit) (Gruber-Baldini et al., 2017). Both 4-item short forms had high correlation to the full-form versions ($r > 0.85$). Concurrent validity to the legacy Self-Efficacy for Managing Chronic Disease 6-Item scale (SEMCD-6) was moderate to strong for SE-Daily Activities ($r = 0.65$) and SE-Symptoms ($r = 0.76$) respectively. The SE-Daily Activities was most strongly correlated to general physical health ($r = 0.75$) and physical function ($r = 0.78$). The SE-Symptoms was most correlated to global mental health ($r = 0.63$) and global physical health ($r = 0.60$).

3.5 Data Analysis

Each member of the care dyad was treated as an individual in the analyses. Demographic data were expressed with descriptive statistics, including mean, standard deviation, frequency, and percentage. Data were found to be normally distributed using the Shapiro-Wilk test, and paired *t*-tests were completed on baseline and 8-week data for each outcome. A post hoc exploratory analysis was conducted to survey the outcomes for caregivers and care-recipients separately. Due to the small sample size, a nonparametric Wilcoxon signed ranks test was used to compare data at baseline and 8-weeks for each outcome for caregivers and care-recipients. Alpha was set at .05 to indicate statistical significance for all analyses. Lastly, the percent change was calculated for each variable to note any trends in the data between the baseline and 8-weeks using the formula $(([8\text{-week} - \text{baseline}]/\text{baseline}) * 100)$. Researchers used SPSS® Statistics Version 26.0 software for all data analysis.

CHAPTER 4: RESULTS

4.1 Demographics and Pain Characteristics

Demographic and pain characteristic data were collected at baseline for 13 participants. During the study, one care-recipient replaced their caregiver with another individual. As such, baseline data were collected for two caregivers for one care-recipient in this case, contributing to the odd sample size at baseline. The average participant age was 50.23 years old, 77% identified as female, and 69% reported having at least some college education. Nine participants (69%) reported having pain for more than ten years, and 54% of participants reported limitations in activities. The mean Brief Pain Inventory (BPI) score, an indicator of pain severity and interference, was 7.08 at baseline. Researchers suggest that a score of 7 or higher out of 10 indicates moderate to severe BPI-reported pain severity and interference (Li et al., 2007). Demographic and pain characteristic data are presented in Table 4.1.

Table 4.1 Demographics and Pain Characteristics

	All Participants (<i>n</i> = 13)
Age, years	50.23 ± 14.77
Gender (female)	10 (77%)
Race (White)	12 (92%)
Part of a couple (no)	8 (62%)
Education (some college)	9 (69%)
Time since pain started, > 10 years	9 (69%)
Are you limited in any activities because of physical, mental or emotional problems? (yes)	7 (54%)
BPI total (range: 0-10)	7.08 ± 0.95

4.2 Self-Efficacy Outcomes

Eight participants completed the intervention, which is a 61.5% completion rate. Reported reasons for not completing the intervention included a motor vehicle accident unassociated with the study and a change in dyadic relationship. Others were lost to follow up. Mean attendance for all participants was 10.63 ± 3.46 yoga sessions and 10.75 ± 2.92 self-management sessions out of a possible 16 sessions over the 8-weeks intervention.

The data were found to be normally distributed using the Shapiro-Wilk test. Change from baseline to post 8-week for all outcomes were compared using paired *t*-tests. Outcome measures included the Chronic Pain Self-Efficacy Scale (CPSS) total and subdomain scores, PROMIS Self-Efficacy for Managing Daily Activities Short Form 4a (SE-Daily Activities), and the PROMIS Self-Efficacy for Managing Symptoms Short Form 4a (SE-Symptoms). Participants reported a 51.7% increase in self-efficacy related to physical function, as reported on the CPSS, which was a statistically significant improvement ($p = .004$). Total CPSS scores increased 19.4% and reported self-efficacy coping with symptoms improved 22.8%, but neither scores rose to the level of significance. Mean outcomes increased slightly for CPSS pain management, SE-Daily Activities, and SE-Symptoms, and no statistically significant change was found (Table 4.2).

A post hoc exploratory data analysis was conducted to examine outcomes for caregivers and care-recipients separately (Tables 4.3 and 4.4). Due to the small sample sizes (caregiver $n = 3$, care-recipient $n = 5$), the nonparametric Wilcoxon signed ranks test was used for data analyses. While scores at baseline appeared higher for care-recipients than caregivers, no significant differences were found between the groups ($p > .05$). Caregivers reported increased scores for all outcomes, with CPSS domain and total scores improving 18.7 to 22.4%. However, scores did not change significantly. Reported change by care-recipients was more variable with

notable increases in self-efficacy for CPSS total (19.8%), physical function (39.3%), and coping with symptoms (44.3%). However, care-recipients' self-efficacy related to pain management significantly declined ($p = .043$, -7.5%). Little or no change was noted for SE-Daily Activities and SE-Symptoms for caregivers or care-recipients following the 8-week intervention.

Table 4.2 Self-Efficacy Scores for All Participants
 $n = 8$

	Baseline	8-weeks	p	Percent change*
CPSS, total	48.51 ± 18.92	57.92 ± 16.58	.128	+19.4%
CPSS, pain management	51.50 ± 23.98	53.63 ± 23.15	.574	+4.1%
CPSS, physical function	38.97 ± 19.45	59.10 ± 18.60	.004	+51.7%
CPSS, coping with symptoms	50.23 ± 17.97	61.70 ± 16.83	.207	+22.8%
SE-Daily Activities	13.63 ± 1.41	14.34 ± 3.20	.451	+5.2%
SE-Symptoms	12.75 ± 3.20	13.00 ± 3.16	.815	+2.0%

CPSS = Chronic Pain Self-Efficacy Scale; SE-Daily Activities = PROMIS Self-Efficacy for Managing Daily Activities Short Form 4a; SE-Symptoms = PROMIS Self-Efficacy for Managing Symptoms Short Form 4a
*Percent change = $([8\text{-week} - \text{baseline}] / \text{baseline}) \times 100\%$

Table 4.3 Self-Efficacy Scores for Caregivers
n = 3

	Baseline	8-weeks	<i>p</i>	Percent change*
CPSS, total	44.41 ± 30.18	52.71 ± 15.47	.593	+18.7%
CPSS, pain management	38.67 ± 36.68	46.0 ± 29.96	.655	+19.0%
CPSS, physical function	42.53 ± 27.85	52.04 ± 13.03	.598	+22.4%
CPSS, coping	46.77 ± 25.60	57.25 ± 19.32	.666	+22.4%
SE-Daily Activities	14.33 ± 1.53	15.00 ± 1.73	.655	+4.7%
SE-Symptoms	12.33 ± 3.51	13.00 ± 5.20	.655	+5.4%

CPSS = Chronic Pain Self-Efficacy Scale; SE-Daily Activities = PROMIS Self-Efficacy for Managing Daily Activities Short Form 4a; SE-Symptoms = PROMIS Self-Efficacy for Managing Symptoms Short Form 4a
 *Percent change = ([8-week - baseline]/baseline) x 100%

Table 4.4 Self-Efficacy Scores for Care-recipients
n = 5

	Baseline	8-weeks	<i>p</i>	Percent change*
CPSS, total	51.6 ± 8.89	61.81 ± 18.52	.068	+19.8%
CPSS, pain management	59.2 ± 11.65	54.8 ± 22.3	.043	-7.4%
CPSS, physical function	45.46 ± 17.53	63.33 ± 21.46	.068	+39.3%
CPSS, coping	48.29 ± 6.6	69.69 ± 13.86	.500	+44.3%
SE-Daily Activities	13.20 ± 1.30	14.00 ± 4.00	.581	+6.1%
SE-Symptoms	13.00 ± 3.39	13.00 ± 2.00	.786	0.0%

CPSS = Chronic Pain Self-Efficacy Scale; SE-Daily Activities = PROMIS Self-Efficacy for Managing Daily Activities Short Form 4a; SE-Symptoms = PROMIS Self-Efficacy for Managing Symptoms Short Form 4a
 *Percent change = ([8-week - baseline]/baseline) x 100%

CHAPTER 5: DISCUSSION

This study aimed to assess the influence of the **M**erging **Y**oga and self-management **Skills** (MY-Skills) program on perceived self-efficacy among care dyads with chronic pain. Participants reported a statistically significant increase in self-efficacy related to physical function. While self-efficacy increased across other measures as well, the change did not rise to the level of statistical significance. A post hoc exploratory analysis showed trends in the improvement of Chronic Pain Self-Efficacy Scale (CPSS) scores for caregivers and care-recipients, except for care-recipients' pain management.

5.1 Self-Efficacy Outcomes

The majority of participants reported living with chronic pain for more than 10 years. This timeframe may have contributed to lower reported self-efficacy at baseline (< 50% average confidence on CPSS total) as, over time, the experience of chronic pain potentially impacted daily function. After completing the MY-Skills intervention, participants generally felt more confident in performing daily activities and fulfilling their life roles. Specifically, participants reported statistically significant improvement in self-efficacy related to physical function. As measured by the CPSS, the physical function domain assesses one's confidence in performing everyday activities that contribute to daily function, such as lifting ten pounds, grocery shopping, socializing and family activities, doing chores, working, and engaging in recreation (Anderson et al., 1995).

The trend toward improved self-efficacy following MY-Skills was demonstrated in similar research combining yoga and self-management for chronic illness. In a study by Schmid et al. (2019), participants with chronic pain in the yoga group attended twice-weekly yoga

sessions in addition to usual care, while a wait-listed usual care group served as the control. Usual care for both groups included self-management courses offered by a pain clinic once each month. In the Schmid et al. study (2019), self-efficacy scores for participants in the yoga group increased significantly for all measures, including: CPSS total score; CPSS domains for pain management, physical function, and coping with symptoms; and the Stanford Self-Efficacy for Managing Chronic Disease (SSMCD-6) total score. In a separate analysis of the same study, Portz et al. (in review) reported similar results of statistically significant increases in reported CPSS total self-efficacy scores. Schmid and colleagues (2016) conducted a comparable study merging yoga and group occupational therapy (MY-OT) to develop skills related to managing fall risk after chronic stroke. The researchers used the Activities-specific Balance Confidence Scale (ABC) to investigate perceived balance self-efficacy and found a significant increase following the 8-week intervention (Schmid et al., 2016).

The CPSS physical function domain and the PROMIS Self-Efficacy for Managing Daily Activities (SE-Daily Activities) questionnaires rate perceived confidence in performing daily activities. The MY-Skills participants reported significant improvement in CPSS physical function but indicated nominal increases in SE-DA scores. The 9-item CPSS physical function domain and the 4-item SE-Daily Activities measures overlap in assessing self-efficacy related to the daily activities people typically perform, such as walking, shopping, working, and exercising (Anderson et al., 1995; National Institutes of Health, 2017b). However, the CPSS physical function domain includes the social components of daily living like participating in social activities, family activities, and hobbies and recreation (Anderson et al., 1995). The additional areas of function assessed on the CPSS possibly contributed to the greater reported change in self-efficacy.

Similarly, participants reported greater change in scores for the CPSS coping with symptoms domain than the PROMIS Self-Efficacy for Managing Symptoms (SE-Symptoms) questionnaire. The 8-item CPSS coping with symptoms domain and the 4-item SE-Symptoms assessments have no direct overlap in questions. The CPSS coping with symptoms domain asks questions such as “doing something to make yourself feel better,” dealing with frustrations, controlling fatigue, and coping with various levels of pain severity (Anderson et al., 1995). The 4-item SE-Symptoms measure is more specific to symptom management, including managing symptoms during the day and coordinating with medical providers (National Institutes of Health, 2017e). MY-Skills possibly influenced self-efficacy related to coping more so than influencing self-efficacy related to managing symptoms.

The CPSS and the SE-Daily Activities and SE-Symptoms assessments also differ in the scales they employ. The CPSS uses a 0 to 100% scale for respondents to indicate their perceived certainty in performing each task (Anderson et al., 1995). The SE-Daily Activities and SE-Symptoms measures, on the other hand, use a 5-point Likert scale to rate current level of confidence from not at all confident to very confident (Gruber-Baldini et al., 2017). The differences in the way the assessments are scaled may contribute to the trends in greater reported change on the CPSS and nominal change on the SE-Daily Activities and SE-Symptoms.

The SE-Daily Activities and SE-Symptoms questionnaires used for the MY-Skills study were 4-item short forms, which lessen the assessment burden on participants but limit the extent of information gathered. The slightly longer 8-item SE-Daily Activities measure adds specific questions about perceived certainty in performing daily activities, including walking around the home, carrying groceries, caring for others, and managing clothes during toileting (NIH, 2017c). These tasks are unique to the SE-Daily Activities questionnaire and do not overlap with CPSS

items. The expanded 8-item SE-Symptoms measure asks about symptom management at home, interference with personal care and work, and the ability to find needed information (NIH, 2017d). Overall, the 8-item assessments may provide more precise information and sensitivity to measure change in perceived self-efficacy (NIH, 2017a). Researchers and practitioners should consider if the 8-item questionnaires would better assess self-efficacy for their participants and clients without substantially increasing the assessment burden.

MY-Skills results denoted variability of scores among participants, indicated by large standard deviations. However, considerable variability is not uncommon when using assessments with large scales like the CPSS and ABC with scales from 0 to 100%. Comparable studies using these assessments also reported standard deviations larger than 20 (Portz et al., in review; Schmid, Fruhauf, et al., 2019; Schmid et al., 2016). Additionally, standard deviations were reduced across measures for aggregate participant data after 8-weeks, suggesting that participation in a shared MY-Skills intervention may reduce outcome variability.

5.2 Exploring Differences between Caregivers and Care-recipients

Self-efficacy scores were examined for caregivers and care-recipients separately in a post hoc exploratory analysis. Interestingly, caregivers reported lower average self-efficacy at baseline on all domains compared to care-recipients, though no significant difference between groups was noted ($p > .05$). Following the intervention, caregivers reported increased self-efficacy across all measures and domains, including a 19% increase in CPSS pain management. Caregivers also reported decreased variability in scores after 8-weeks, suggesting a slight normalizing of response after participating in a common MY-Skills intervention. These results, while preliminary, reflect the literature related to dyadic interventions for people with chronic

illness. Researchers have found that dyadic interventions can enhance the psychological function, including self-efficacy, of partner-caregivers (Martire et al., 2010).

Care-recipients reported a larger change in self-efficacy related to physical function and coping than caregivers. However, care-recipients reported significantly lower self-efficacy related to pain management following the intervention, whereas caregivers reported greater confidence in this domain. MY-Skills may have influenced care-recipients' awareness of their pain-related capabilities, which could have contributed to more variability in reported scores and lower perceived self-efficacy related to pain management.

Dyadic interventions for partners managing cancer have demonstrated significant improvement in competence and self-efficacy among caregivers and care-recipients (Badr et al., 2015; Titler et al., 2017). Similarly, individuals with osteoarthritis participating in an intervention combining group coping skills training and group exercise with their spouses reported significant increases in self-efficacy (Keefe et al., 2004). Participants in the Keefe et al. (2004) study were also more likely to have improved coping, pain control, physical fitness, and psychological disability than those participating in the exercise or the coping skills training without their spouses. However, further research is needed to understand the outcomes for caregivers and care-receivers participating in dyadic intervention for managing chronic pain.

5.3 Implications for Occupational Therapy

Occupational therapists specialize in helping individuals gain or restore the ability to perform and participate in occupations and meaningful roles of daily life. The MY-Skills intervention aligns well with occupational therapists' scope of practice and skill set.

Occupational therapists adopt a holistic approach with clients, which coincides with the yogic perspective, and consider the complex and integrated biopsychosocial factors that influence

chronic pain. Additionally, occupational therapists are skilled in assessing and addressing these factors through education and skills training, which makes them uniquely qualified to administer self-management programs like MY-Skills.

A disabling condition like chronic pain can disrupt an individual's desire and ability to engage in meaningful occupations (Fisher et al., 2007). The prolonged hindrance of engagement in occupations by external factors beyond the individual's control is referred to as occupational deprivation (Whiteford, 2003). Social determinants of health beyond an individual's control, including inaccessible environments, the social stigma associated with chronic pain, and confounding sociocultural factors (socioeconomic status, systematic discrimination, educational opportunities, and so on), may further impede occupational participation (Office of Disease Prevention and Health Promotion, 2020; World Health Organization, 2008). Internal factors like self-limiting behavior and low self-efficacy can also disrupt engagement in occupations. Consequently, individuals with debilitating chronic pain may find themselves more isolated and dispossessed of occupational opportunities. Yet, individuals with chronic pain report that participation in an enjoyable occupation can decrease pain or serve as a diversion from pain rumination (Fisher et al., 2007). Through the MY-Skills intervention, occupational therapists can introduce supportive contexts for individuals with chronic pain, such as improved self-efficacy, physical capacity, and social support, to restore participation in health-promoting, meaningful occupations.

People are not islands but continually interact with those around them. Occupational therapists recognize the closely interdependent relationship between caregivers and care-recipients. Acknowledging that members of the care dyad have a reciprocal influence on each other, occupational therapists can address the health of both members of the dyad through

collaborations that enhance self-efficacy. Enhanced self-efficacy for caregivers, specifically, may serve as a mediator for physical and mental health well-being and influence caregiving stress (Löckenhoff et al., 2011; Tang & Chan, 2016; Waelde et al., 2004). By utilizing dyadic interventions like MY-Skills, occupational therapists can address and leverage the reciprocal influence that members of the dyad have on each other to support self-efficacy, mental health, coping skills, and quality of life for all parties (Li & Loke, 2014).

One purpose of occupational therapy for people with chronic pain is to help individuals reduce pain-related disability and improve general health and quality of life through thoughtful and effective intervention. Self-efficacy has been shown to positively influence quality of life and general health and is associated with reduced pain-related disability among individuals with chronic pain (Börsbo et al., 2010; Silva et al., 2016). Specifically, self-efficacy combined with pain intensity predicted 42% of the variance in reported quality of life, and self-efficacy alone accounted for 29% of social quality of life (Yazdi-Ravandi et al., 2013). Notably, Yazdi-Ravandi et al. (2013) also found that years since the onset of chronic pain was not a significant predictor of quality of life. These outcomes and associations suggest that interventions that address self-efficacy can be beneficial for all clients regardless if they have had chronic pain for two or 25 years.

5.4 Limitations and Future Research

As this was a quasi-experimental research design, there was no control group for comparison. Further research is needed, through a randomized control trial, to understand better the impact and effect size of the MY-Skills intervention on self-efficacy among care dyads with chronic pain.

Recruitment for the MY-Skills study was challenging, and consequently, the sample size was small. A larger sample size would contribute more data points, which would increase the likelihood of finding statistically significant change and potentially decrease variability in the data. In future studies, scheduling MY-Skills sessions in the evening might enable individuals who work during the day to participate, which may increase the pool of eligible participants and improve attendance.

While a post hoc exploratory analysis of outcomes for caregivers and care-recipients was conducted, the small sample size ($n = 3$ and $n = 5$, respectively) limited the conclusions drawn from the data. Additional research is needed to explore confounding variables for caregivers and care-recipients to understand differences in outcomes better. For instance, such studies might examine the correlation between baseline pain severity and reported self-efficacy for both groups, the relationship between care burden and self-efficacy outcomes for caregivers, or readiness for change and outcomes for care-recipients. Overall, the impact of MY-Skills on self-efficacy for caregivers, care-recipients, and the dyadic unit requires further study.

The outcome measures selected for this study, while directly related to self-efficacy for managing chronic conditions, may have limited the results. The 0 to 100% scale of the CPSS may have contributed to a large variation in outcomes, which impacts the likelihood of achieving statistically significant change. The large range of potential responses may make it challenging for respondents to quantify their level of confidence. Researchers might consider modifying the CPSS into a Likert-scale to simplify the range of responses, as other researchers have demonstrated (Woby et al., 2007). However, this revision to the assessment must be weighed in regard to the sensitivity that a 100-point scale provides.

The 4-item SE-Daily Activities and SE-Symptoms questionnaires may lack sensitivity to capture change. Researchers should consider the benefits of utilizing the 8-item SE-Daily Activities and SE-Symptoms scales, as the more detailed assessments may be more sensitive and better capture change. Researchers should weigh the benefits of a potentially more sensitive assessment with the increased assessment length, which may potentially increase the assessment burden on participants. Researchers should also explore the correlation between the CPSS physical function domain and the SE-Daily Activities questionnaire to determine if the outcome measures capture unique data that would indicate the need to use both assessments.

Quality of life is an indicator of an individual's satisfaction with their life in relation to their values, culture, and expectations (World Health Organization, 1997). Self-efficacy has been shown to be a predictor of quality of life. Future MY-Skills studies should include a quality of life assessment to understand how the intervention impacts this outcome for people with chronic pain.

The MY-Skills study took place in a relatively affluent small city with a generally active and healthy population. The majority of MY-Skills participants were female, white, unpartnered, and with some college education. Due to the limited sample size, participant demographics, and location of the MY-Skills intervention, the results may not be generalizable to other chronic pain populations.

5.5 Conclusion

The purpose of this study was to explore if participants with chronic pain have improved self-efficacy after completing the MY-Skills intervention. Chronic pain is a debilitating condition that affects participation in a myriad of meaningful occupations and fulfilling social roles.

Merging yoga and self-management skills into a single program addresses the biopsychosocial factors necessary for care dyads to manage chronic pain.

Self-efficacy is a sense of confidence in one's own ability to meet the demands of the environment and adequately perform needed and wanted activities (Bandura, 2001). Self-efficacy is a critical component underlying individuals' motivation to establish goals, initiate change, and persevere through challenges and setbacks (Bandura, 2001). Higher self-efficacy is associated with lower pain-related disability, pain severity, depression, and anxiety (Börsbo et al., 2010; Jackson et al., 2014). Further, self-efficacy contributes significantly to the quality of life for people with chronic pain (Yazdi-Ravandi et al., 2013).

MY-Skills improved self-efficacy to varying degrees for all participants, with self-efficacy related to physical function increasing significantly. The physical function outcome reflected participants' confidence in the ability to perform occupations like household chores, errands, work, recreation, and social activities. An exploratory analysis showed some interesting trends for caregivers and care-recipients, which should be studied in greater depth in future studies. Increased self-efficacy in performing daily occupations may reduce pain-related disability and improve quality of life, and further research is needed to explore this association for MY-Skills participants.

Occupational therapists are skilled practitioners helping clients preserve and restore their performance and participation in meaningful occupations. Through self-efficacy enhancing interventions like My-Skills, occupational therapists can enrich clients' lives by helping them develop confidence in their functional capabilities, coping skills, and problem-solving abilities to meet daily demands, regain a sense of control, and enhance quality of life.

REFERENCES

- Afari, N., Ahumada, S. M., Wright, L. J., Mostoufi, S., Golnari, G., Reis, V., & Cuneo, J. G. (2014). Psychological trauma and functional somatic syndromes: A systematic review and meta-analysis. *Psychosomatic Medicine, 76*(1), 2-11.
- American Occupational Therapy Association. (2014). Occupational therapy practice framework: Domain & process (3rd ed.). *American Journal of Occupational Therapy, 68*, S1-S48. <https://doi.org/http://dx.doi.org/10.5014/ajot.2014.682006>
- Anderson, K. O., Dowds, B. N., Pelletz, R. E., Edwards, W. T., & Peeters-Asdourian, C. (1995). Development and initial validation of a scale to measure self-efficacy beliefs in patients with chronic pain. *Pain, 63*(1), 77-83.
- Atler, K. E., Van Puymbroeck, M., Portz, J. D., & Schmid, A. A. (2017). Participant-perceived outcomes of merging yoga and occupational therapy: Self-management intervention for people post stroke. *British Journal of Occupational Therapy, 80*(5), 294-301.
- Badr, H., Smith, C. B., Goldstein, N. E., Gomez, J. E., & Redd, W. H. (2015). Dyadic psychosocial intervention for advanced lung cancer patients and their family caregivers: Results of a randomized pilot trial. *Cancer, 121*(1), 150-158. <https://doi.org/10.1002/cncr.29009>
- Bailly, F., Foltz, V., Rozenberg, S., Fautrel, B., & Gossec, L. (2015). The impact of chronic low back pain is partly related to loss of social role: A qualitative study. *Joint Bone Spine, 82*(6), 437-441. <https://doi.org/https://doi.org/10.1016/j.jbspin.2015.02.019>

- Bandura, A. (2001). Self-efficacy and Health. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Sciences* (pp. 13815-13820). Pergamon. <https://doi.org/10.1016/B0-08-043076-7/03806-7>
- Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal Of Management*, 38(1), 9-44. <https://doi.org/10.1177/0149206311410606>
- Börsbo, B., Gerdle, B., & Peolsson, M. (2010). Impact of the interaction between self-efficacy, symptoms and catastrophising on disability, quality of life and health in with chronic pain patients. *Disability and Rehabilitation*, 32(17), 1387-1396. <https://doi.org/10.3109/09638280903419269>
- Büssing, A., Michalsen, A., Khalsa, S. B. S., Telles, S., & Sherman, K. J. (2012). Effects of yoga on mental and physical health: A short summary of reviews. *Evidence-Based Complementary And Alternative Medicine: Ecam*, 2012, 165410-165410. <https://doi.org/10.1155/2012/165410>
- Bussing, A., Ostermann, T., Ludtke, R., & Michalsen, A. (2012). Effects of yoga interventions on pain and pain-associated disability: A meta-analysis. *The Journal of Pain*, 13(1), 1-9. <https://doi.org/10.1016/j.jpain.2011.10.001>
- Callahan, C. M., Unverzagt, F. W., Hui, S. L., Perkins, A. J., & Hendrie, H. C. (2002). Six-item screener to identify cognitive impairment among potential subjects for clinical research. *Medical care*, 40(9), 771-781.
- Campbell, P. P., Jordan, H. K., Smith, M. B., Scotland, M. G., & Dunn, M. K. (2018). Chronic pain in families: A cross-sectional study of shared social, behavioural, and environmental influences. *Pain*, 159(1), 41-47. <https://doi.org/10.1097/j.pain.0000000000001062>

- Cleeland, C. S. (1989). Measurement of pain by subjective report In C. R. Chapman, Loeser, J.D. (Ed.), *Advances in Pain Research and Therapy* (Vol. 12, pp. 391-403). Raven Press.
- Cox, H., Tilbrook, H., Aplin, J., Semlyen, A., Torgerson, D., Trehwela, A., & Watt, I. (2010). A randomised controlled trial of yoga for the treatment of chronic low back pain: Results of a pilot study. *Complementary Therapies In Clinical Practice, 16*(4), 187-193.
<https://doi.org/10.1016/j.ctcp.2010.05.007>
- Cramer, H., Klose, P., Brinkhaus, B., Michalsen, A., & Dobos, G. (2017). Effects of yoga on chronic neck pain: A systematic review and meta-analysis. *Clinical Rehabilitation, 31*(11), 1457-1465. <https://doi.org/10.1177/0269215517698735>
- Crowe, B. M., Van Puymbroeck, M., & Schmid, A. A. (2016). Yoga as coping: A conceptual framework for meaningful participation in yoga. *International Journal of Yoga Therapy, 26*(1), 123-129.
- Dahlhamer, J., Lucas, J., Zelaya, C., Nahin, R., Mackey, S., DeBar, L., Kerns, R., Von Korff, M., Porter, L., & Helmick, C. (2018). *Prevalence of chronic pain and high-impact chronic pain among adults - United States, 2016* (Morbidity and Mortality Weekly Report, Issue. <https://www.cdc.gov/mmwr/volumes/67/wr/mm6736a2.htm>
- Darragh, A. R., Sommerich, C. M., Lavender, S. A., Tanner, K. J., Vogel, K., & Campo, M. (2015). Musculoskeletal discomfort, physical demand, and caregiving activities in informal caregivers. *Journal of Applied Gerontology, 34*(6), 734-760.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3964150/pdf/nihms-523250.pdf>
- Dickie, V. (2014). What is occupation? In B. A. B. Schell, G. Gillen, & M. E. Scaffa (Eds.), *Willard & Spackman's Occupational Therapy* (12th ed., pp. 2-8). Lippincott Williams & Wilkins.

- Elbers, S., Wittink, H., Pool, J. J. M., & Smeets, R. J. E. M. (2018). The effectiveness of generic self-management interventions for patients with chronic musculoskeletal pain on physical function, self-efficacy, pain intensity and physical activity: A systematic review and meta-analysis. *European Journal of Pain*, 22(9), 1577-1596.
<https://doi.org/10.1002/ejp.1253>
- Evans, S., Moieni, M., Taub, R., Subramanian, S. K., Tsao, J. C. I., Sternlieb, B., & Zeltzer, L. K. (2010). Iyengar yoga for young adults with rheumatoid arthritis: Results from a mixed-methods pilot study. *Journal of Pain and Symptom Management*, 39(5), 904-913.
<https://doi.org/https://doi.org/10.1016/j.jpainsymman.2009.09.018>
- Family Caregiver Alliance. (2019). *Caregiver Statistics: Demographics*. Retrieved November 13 from <https://www.caregiver.org/caregiver-statistics-demographics>
- Ferrell, B., & Wittenberg, E. (2017). A review of family caregiving intervention trials in oncology. *CA: A Cancer Journal for Clinicians*, 67(4), 318-325.
<https://doi.org/10.3322/caac.21396>
- Fisher, G. S., Emerson, L., Firpo, C., Ptak, J., Wonn, J., & Bartolacci, G. (2007). Chronic pain and occupation: An exploration of the lived experience. *American Journal of Occupational Therapy*, 61(3), 290-302. <https://doi.org/10.5014/ajot.61.3.290>
- Fruhauf, C., Schmid, A. A., & Van Puymbroeck, M. (2016). *The most useful tools in the Powerful Tools for Caregivers program* The Gerontological Society of America New Orleans.
- Gatchel, R. J., Peng, Y. B., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: Scientific advances and future directions.

Psychological Bulletin Journal, 133(4), 581-624. <https://doi.org/10.1037/0033-2909.133.4.581>

Gothe, N. P., Kramer, A. F., & McAuley, E. (2014). The effects of an 8-week hatha yoga intervention on executive function in older adults. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 69(9), 1109-1116.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4202261/pdf/glu095.pdf>

Groessler, E. J., Liu, L., Schmalzl, L., Chang, D. G., McCarthy, A., Chun, W. I., Sinclair, C., & Bormann, J. E. (2019). Secondary outcomes from a randomized controlled trial of yoga for veterans with chronic low-back pain. *International Journal of Yoga Therapy*.

<https://doi.org/10.17761/2020-D-19-00036>

Gruber-Baldini, A. L., Velozo, C., Romero, S., & Shulman, L. M. (2017). Validation of the PROMIS((R)) measures of self-efficacy for managing chronic conditions. *Quality of Life Research*, 26(7), 1915-1924. <https://doi.org/10.1007/s11136-017-1527-3>

Hadi, M. A., McHugh, G. A., & Closs, S. J. (2019). Impact of chronic pain on patients' quality of life: A comparative mixed-methods study. *Journal of Patient Experience*, 6(2), 133-141. <https://doi.org/10.1177/2374373518786013>

Hasselkus, B. R. (2011). *The Meaning of Everyday Occupation* (2nd ed.). Slack, Inc.

Hewett, Z. L., Pumpa, K. L., Smith, C. A., Fahey, P. P., & Cheema, B. S. (2018). Effect of a 16-week Bikram yoga program on perceived stress, self-efficacy and health-related quality of life in stressed and sedentary adults: A randomised controlled trial. *Journal of Science and Medicine in Sport*, 21(4), 352-357. <https://doi.org/10.1016/j.jsams.2017.08.006>

Hung, S.-Y., Pickard, A. S., Witt, W. P., & Lambert, B. L. (2007). Pain and depression in caregivers affected their perception of pain in stroke patients. *Journal of clinical*

epidemiology, 60(9), 963-970.

<https://doi.org/https://doi.org/10.1016/j.jclinepi.2006.12.010>

Jackson, T., Wang, Y., Wang, Y., & Fan, H. (2014). Self-efficacy and chronic pain outcomes: A meta-analytic review. *Journal of Pain*, 15(8), 800-814.

<https://doi.org/10.1016/j.jpain.2014.05.002>

Janalipour, K., Essazadegan, A., Jahanbin, E., & Hatamian, H. (2018). The effectiveness of yoga therapy in increasing the self-efficacy of women with MS. *Caspian Journal of Neurological Sciences*, 4(2), 77-82. <https://doi.org/10.29252/cjns.4.13.77>

Jones, S. L., Hadjistavropoulos, H. D., Janzen, J. A., & Hadjistavropoulos, T. (2011). The relation of pain and caregiver burden in informal older adult caregivers. *Pain Medicine*, 12(1), 51-58.

Keefe, J. F., Blumenthal, S. J., Baucom, S. D., Affleck, S. G., Waugh, S. R., Caldwell, S. D., Beaupre, S. P., Kashikar-Zuck, S. S., Wright, S. K., Egert, S. J., & Lefebvre, S. J. (2004). Effects of spouse-assisted coping skills training and exercise training in patients with osteoarthritic knee pain: a randomized controlled study. *Pain*, 110(3), 539-549.

<https://doi.org/10.1016/j.pain.2004.03.022>

Lagueux, E., Depelteau, A., & Masse, J. (2018). Occupational therapy's unique contribution to chronic pain management: A scoping review. *Pain Research and Management*, 2018, 19, Article 5378451. <https://doi.org/10.1155/2018/5378451>

Laver, K., Milte, R., Dyer, S., & Crotty, M. (2017). A systematic review and meta-analysis comparing carer focused and dyadic multicomponent interventions for carers of people with dementia. *Journal of Aging and Health*, 29(8), 1308-1349.

<https://doi.org/10.1177/0898264316660414>

- Lewis, K., Metcalfe, S., Pearson, T., & Whichello, R. (2019). Implementing yoga into the management of patients with refractory low back pain in an outpatient clinic setting. *Journal of Holistic Nursing*, 37(3), 238-247. <https://doi.org/10.1177/0898010118797193>
- Li, K. K., Harris, K., Hadi, S., & Chow, E. (2007). What should be the optimal cut points for mild, moderate, and severe pain? *Journal of palliative medicine*, 10(6), 1338. <https://doi.org/10.1089/jpm.2007.0087>
- Li, Q., & Loke, A. Y. (2014). A literature review on the mutual impact of the spousal caregiver-cancer patients dyads: 'Communication', 'reciprocal influence', and 'caregiver-patient congruence'. *European Journal of Oncology Nursing*, 18(1), 58-65. <https://doi.org/10.1016/j.ejon.2013.09.003>
- Löckenhoff, C. E., Duberstein, P. R., Friedman, B., & Costa, P. T., Jr. (2011). Five-factor personality traits and subjective health among caregivers: The role of caregiver strain and self-efficacy. *Psychology and aging*, 26(3), 592-604. <https://doi.org/10.1037/a0022209>
- Lorig, K. R., & Holman, H. R. (2003). Self-management education: History, definition, outcomes, and mechanisms [Editorial Research Support, U.S. Gov't, P.H.S. Review]. *Annals of Behavioral Medicine*, 26(1), 1-7.
- Lyons, K. S., & Lee, C. S. (2018). The theory of dyadic illness management. *Journal of Family Nursing*, 24(1), 8-28. <https://doi.org/10.1177/1074840717745669>
- Lyons, K. S., Zarit, S. H., Sayer, A. G., & Whitlatch, C. J. (2002). Caregiving as a dyadic process: Perspectives from caregiver and receiver. *Journal of Gerontology: Psychological Sciences and Social Sciences*, 57(3), 195-204.
- Mailoo, V. J. (2005). Yoga: An ancient occupational therapy? *The British Journal of Occupational Therapy*, 68(12), 574-577.

- Mann, E. G., LeFort, S., & VanDenKerkhof, E. G. (2013). Self-management interventions for chronic pain. *Pain management*, 3(3), 211-222.
<https://www.futuremedicine.com/doi/pdfplus/10.2217/pmt.13.9>
- Martire, L. M., Schulz, R., Helgeson, V. S., Small, B. J., & Saghafi, E. M. (2010). Review and meta-analysis of couple-oriented interventions for chronic illness. *Annals of Behavioral Medicine*, 40(3), 325-342.
- Meints, S. M., & Edwards, R. R. (2018). Evaluating psychosocial contributions to chronic pain outcomes. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 87, 168-182. <https://doi.org/https://doi.org/10.1016/j.pnpbp.2018.01.017>
- National Institutes of Health. (2016). *National Pain Strategy: A comprehensive population health-level strategy for pain*. https://iprcc.nih.gov/docs/HHSNational_Pain_Strategy.pdf
- National Institutes of Health. (2017a). PROMIS General Self-Efficacy and Self-Efficacy for Managing Chronic Conditions Manual.
- National Institutes of Health. (2017b). PROMIS Self-Efficacy for Managing Chronic Conditions - Managing Daily Activities - Short Form 4a.
http://www.healthmeasures.net/index.php?option=com_instruments&view=measure&id=535&Itemid=992
- National Institutes of Health. (2017c). PROMIS Self-Efficacy for Managing Chronic Conditions - Managing Daily Activities - Short Form 8a.
http://www.healthmeasures.net/index.php?option=com_instruments&view=measure&id=537&Itemid=992
- National Institutes of Health. (2017d). PROMIS Self-Efficacy for Managing Chronic Conditions - Managing Symptoms - Short Form 8a.

http://www.healthmeasures.net/index.php?option=com_instruments&view=measure&id=572&Itemid=992

National Institutes of Health. (2017e). PROMIS Self-Efficacy for Managing Chronic Conditions - Managing Symptoms -Short Form 4a.

http://www.healthmeasures.net/index.php?option=com_instruments&view=measure&id=556&Itemid=992

National Institutes of Health. (2019a). *Chronic pain information page*. Retrieved Oct 5 from

<https://www.ninds.nih.gov/Disorders/All-Disorders/Chronic-Pain-Information-Page>

National Institutes of Health. (2019b). *National Pain Strategy Overview*. Retrieved Oct 20 from

<https://www.iprcc.nih.gov/National-Pain-Strategy/Overview>

Office of Disease Prevention and Health Promotion. (2020). *Social determinants of health*. U.S.

Department of Health and Human Services. Retrieved May 19 from

<https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health>

Pascoe, M. C., & Bauer, I. E. (2015). A systematic review of randomised control trials on the effects of yoga on stress measures and mood. *J Psychiatr Res*, *68*, 270-282.

<https://doi.org/https://doi.org/10.1016/j.jpsychires.2015.07.013>

Pinquart, M., & Sörensen, S. (2003). Differences between caregivers and noncaregivers in psychological health and physical health: a meta-analysis. *Psychol Aging*, *18*(2), 250-267.

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12825775

- Portz, J. D., Hafer, A., Andrews, M., Baker, A., Eidmann, A., Mendez, V., Randall, K., Yuma-Guerrero, P., & Schmid, A. (in review). Enhancing chronic disease self-management through yoga for people with chronic pain. *Pain Management Nursing Journal*.
- Schmid, A. A., Fruhauf, C. A., Sharp, J. L., Van Puymbroeck, M., Bair, M. J., & Portz, J. D. (2019). Yoga for people with chronic pain in a community-based setting: A feasibility and pilot RCT. *Journal of Evidence Based Integrated Medicine*, 24, 1-11.
<https://doi.org/10.1177/2515690X19863763>
- Schmid, A. A., Van Puymbroeck, M., Altenburger, P., Schalk, T., Miller, K., Damush, T., Bravata, D., & Williams, L. (2012). Poststroke balance improves with yoga. *Stroke*, 43(9), 2402-2407. <https://doi.org/10.1161/strokeaha.112.658211>
- Schmid, A. A., Van Puymbroeck, M., Fruhauf, C. A., Bair, M. J., & Portz, J. D. (2019). Yoga improves occupational performance, depression, and daily activities for people with chronic pain. *Work*, 63(2), 181-189. <https://doi.org/10.3233/WOR-192919>
- Schmid, A. A., Van Puymbroeck, M., Portz, J. D., Adler, K. E., & Fruhauf, C. A. (2016). Merging Yoga and Occupational Therapy (MY-OT): A feasibility and pilot study. *Complement Therapy Medicine*, 28, 44-49. <https://doi.org/10.1016/j.ctim.2016.08.003>
- Silva, M. S. e., Hortense, P., Napoleão, A. M., & Stefane, T. (2016). Self-efficacy, pain intensity, and quality of life in individuals with chronic pain. *Revista Eletrônica de Enfermagem*, 18(0). <https://doi.org/10.5216/ree.v18.29308>
- Stewart, D. E., & Yuen, T. (2011). A systematic review of resilience in the physically ill. *Psychosomatics*, 52(3), 199-209. <https://doi.org/10.1016/j.psych.2011.01.036>

- Tang, W. K., & Chan, C. Y. J. (2016). Effects of psychosocial interventions on self-efficacy of dementia caregivers: A literature review. *International journal of geriatric psychiatry*, 31, 475-493. <https://doi.org/10.1002/gps.4352>
- Tilbrook, H. E., Cox, H., Hewitt, C. E., Kang'ombe, A. R., Chuang, L.-H., Jayakody, S., Aplin, J. D., Semlyen, A., Trehwela, A., Watt, I., & Torgerson, D. J. (2011). Yoga for chronic low back pain: A randomized trial. *Annals Of Internal Medicine*, 155(9), 569-578. <https://doi.org/10.7326/0003-4819-155-9-201111010-00003>
- Titler, M. G., Visovatti, M. A., Shuman, C., Ellis, K. R., Banerjee, T., Dockham, B., Yakusheva, O., & Northouse, L. (2017). Effectiveness of implementing a dyadic psychoeducational intervention for cancer patients and family caregivers. *Support Care Cancer*, 25(11), 3395-3406. <https://doi.org/10.1007/s00520-017-3758-9>
- Tul, Y., Unruh, A., & Dick, B. D. (2011). Yoga for chronic pain management: A qualitative exploration. *Scandinavian Journal of Caring Sciences*, 25(3), 435-443. <https://doi.org/10.1111/j.1471-6712.2010.00842.x>
- Turner, J. A., Ersek, M., & Kemp, C. (2005). Self-efficacy for managing pain is associated with disability, depression, and pain coping among retirement community residents with chronic pain. *The journal of pain : official journal of the American Pain Society*, 6(7), 471-479. <https://ezproxy2.library.colostate.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie,ip,url,cpid&custid=s4640792&db=cmedm&AN=15993826&site=ehost-live>

- Vachon-Preseau, E. (2018). Effects of stress on the corticolimbic system: Implications for chronic pain. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 87, 216-223. <https://doi.org/10.1016/j.pnpbp.2017.10.014>
- Waelde, L. C., Thompson, L., & Gallagher-Thompson, D. (2004). A pilot study of a yoga and meditation intervention for dementia caregiver stress. *Journal Of Clinical Psychology*, 60(6), 677-687. <https://ezproxy2.library.colostate.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie,ip,url,cpid&custid=s4640792&db=cmedm&AN=15141399&site=ehost-live>
- Warburton, D., Jamnik, V., Bredin, S., & Glendhill, N. (2011). The Physical Activity Readiness Questionnaire for Everyone (PAR-Q+) and Electronic Physical Activity Readiness Medical Examination (ePARmed-X+). *Health & Fitness Journal of Canada*, 4(2), 3-23.
- Ward, L., Stebbings, S., Cherkin, D., & Baxter, G. D. (2013). Yoga for functional ability, pain and psychosocial outcomes in musculoskeletal conditions: a systematic review and meta-analysis. *Musculoskeletal Care*, 11(4), 203-217. <https://doi.org/10.1002/msc.1042>
- Whiteford, G. (2003). Occupational deprivation: Understanding limited participation. In C. H. Christiansen & E. A. Townsend (Eds.), *Introduction to Occupation: The Art and Science of Living* (2nd ed., pp. 303-328). Pearson.
- Wieland, L. S., Skoetz, N., Pilkington, K., Vempati, R., D'Adamo, C. R., & Berman, B. M. (2017). Yoga treatment for chronic non-specific low back pain. *Cochrane Database Of Systematic Reviews*(1). <https://doi.org/10.1002/14651858.CD010671.pub2>
- Williams, K. A., Petronis, J., Smith, D., Goodrich, D., Wu, J., Ravi, N., Doyle, E. J., Jr., Juckett, R. G., Kolar, M. M., Gross, R., & Steinberg, L. (2005). Effect of Iyengar yoga therapy

for chronic low back pain. *Pain*, 115(1-2), 107-117.

<https://doi.org/10.1016/j.pain.2005.02.016>

Woby, S. R., Roach, N. K., Urmston, M., & Watson, P. J. (2007). The relation between cognitive factors and levels of pain and disability in chronic low back pain patients presenting for physiotherapy. *European Journal of Pain*, 11(8), 869-877.

<https://doi.org/10.1016/j.ejpain.2007.01.005>

World Health Organization. (1997). WHOQOL - Measuring quality of life.

https://www.who.int/mental_health/media/68.pdf

World Health Organization. (2008). *Closing the gap in a generation health equity through action on the social determinants of health : Commission on Social Determinants of Health final report*. World Health Organization, Commission on Social Determinants of Health.

Yazdi-Ravandi, S., Taslimi, Z., Jamshidian, N., Saberi, H., Shams, J., & Haghparast, A. (2013). Prediction of quality of life by self-efficacy, pain intensity and pain duration in patient with pain disorders. *Basic and clinical neuroscience*, 4(2), 117-124.

<https://pubmed.ncbi.nlm.nih.gov/25337337>