SNAPSHOT SURVEY OF CURRENT MINDFULNESS TECHNIQUES IN OCCUPATIONAL THERAPY PRACTICE TO TREAT CHRONIC PAIN

A thesis submitted to the faculty to Stanbridge University in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy

by

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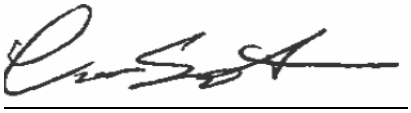
Certification of Approval

I certify that I have read Snapshot Survey of Current Mindfulness Techniques in Occupational Therapy Practice to Treat Chronic Pain by Jannet Chen, Katherine Chen, Nadia Rashid, and Kathryn Respicio, and in my opinion, this work meets the criteria for approving a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy at Stanbridge University.



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“Perhaps the most "spiritual" thing any of us can do is simply to look through our own eyes, see with eyes of wholeness, and act with integrity and kindness.”

— Jon Kabat-Zinn, Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life

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Abstract

Chronic pain is a debilitating condition that negatively impacts the health and well-being of people around the world. Although the number of OT practitioners using mindfulness interventions is growing, there is limited research that explores specific mindfulness techniques and its usage in practice. Further research on mindfulness techniques in occupational therapy can provide insight on how it can benefit clients with chronic pain and their occupational performance and supports the current national initiative for pain treatment alternatives. By using an online survey, this exploratory research tries to answer what is the current use of mindfulness strategies in OT practice for treating patients with chronic pain, how current OT practitioners view mindfulness and how current practitioners utilize mindfulness interventions in the treatment of chronic pain diagnostic categories.

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Snapshot Survey of Current Mindfulness Techniques in Occupational Therapy Practice to Treat Chronic Pain

Chronic Pain

Chronic pain is a complex and debilitating condition that negatively impacts the health and well-being of many people around the world. This condition can be defined as pain that lasts longer than three to six months, or as pain that persists beyond the expected time frame of healing for an injury (Devan, 2014). This pain can be associated with many different categories of diagnoses including musculoskeletal conditions, neurocognitive or neuromotor conditions, spinal cord injuries, traumatic brain injuries, and stroke. In America alone, more than 130 million people are affected by chronic pain or frequently occurring pain (Driscoll & Baker, 2016).

Chronic pain limits occupational performance in all aspects of life, including activities of autonomy, work performance, social role fulfillment, community participation, leisure, sexual relations, and self-care (Robinson, Kennedy, & Harmon, 2011). Patients with chronic pain describe their pain triggering emotional distress, leading to feelings of stress and frustration, weakening of interpersonal relationships, and eventual avoidance of once enjoyable activities (Fisher et al., 2007).

Financial losses from this condition exceeds $600 billion in healthcare expenditures and lost productivity every year (Driscoll & Baker, 2016). Despite the exorbitant amount of money and resources used for treating chronic pain, some patients still express feeling that healthcare professionals do not take their pain seriously and are not responsive to their needs (Fisher et al., 2007). Chronic pain is often treated with opioid medication, which can be abused and is currently contributing to the opioid

epidemic in the United States (American Occupational Therapy Association [AOTA], 2018). The United States Congress has passed legislation in late 2018 to prioritize non-opioid based medications and approaches to manage pain to combat this epidemic (AOTA, 2018). With these concerns of chronic pain not being met by traditional primary care settings, patients seek alternative care practices instead, such as mindfulness techniques, to supplement the care they receive (Hilton et al., 2006). Healthcare providers, including occupational therapists, should integrate these alternative care practices into treatment to address the needs of the patient and discourage non-opioid and other potentially harmful approaches to treat chronic pain.

Mindfulness and Chronic Pain

Mindfulness based stress reduction practices (MBSR) and interventions developed years ago by John Kabat-Zinn is characterized by paying attention to the present moment with openness, curiosity, and acceptance (Kabat-Zinn, Lipworth, & Burney, 1984; Hilton et al., 2006). These strategies include yoga, tai chi, breathing exercises, guided imagery, and progressive muscle relaxation or body scan meditation.

Mindfulness techniques have been found to significantly reduce multiple aspects of chronic pain. In a case series magnetic resonance imaging study conducted by Zeidan et al. (2011), meditation during the administration of pain showed altered brain activity in the anterior cingulate cortex, anterior insula, orbitofrontal cortex, and thalamus- all areas of the brain which modulate an individual's perception of pain. In a mindfulness-based stress reduction study conducted by Kabat-Zinn et al. (1984), researchers found significant reductions for multiple aspects of chronic pain such as present-moment pain, inhibition of activity caused by pain, pain symptoms, and mood disturbance in the

intervention group compared to the control group. Improvements in these areas of pain were not seen in the control group, who were treated with more traditional interventions for chronic pain (Kabat-Zinn et al., 1984). More recent studies often mirror this sentiment of how mindfulness strategies can benefit participants who experience chronic pain. In 2014, a randomized control trial conducted by Ussher et al. found that a 10-minute mindfulness-based body scan exercise produced the immediate benefits of reduced rating for severity of pain, pain related distress, and rating of perceived interference of pain in social relations for patients affected by chronic pain. A 2016 scoping review on mindfulness treatments for treating chronic pain found that groups treated with mindfulness, from patients with musculoskeletal and pain disorders to patients with neurocognitive and neuromotor disorders, often experienced decreased perceptions of pain and significant improvements in quality of life as compared to usual care control groups (Hardison and Roll, 2016).

While evidence was found to support mindfulness-based interventions with patients with chronic pain, researchers repeatedly indicate a need for more high-quality research on the subject due to the methodological issues of existing studies producing low quality evidence (Hilton et al., 2006). Even well-designed, rigorous, and large randomized control trials required larger sample sizes to more decisively provide estimates of the effectiveness of mindfulness-based stress reduction practices on treating pain symptoms and build stronger conclusions (Hilton et al., 2006). More high-quality research is needed to draw more conclusive evidence on whether or not mindfulness practices are effective in reducing chronic pain symptoms.

Scope of Mindfulness in Occupational Therapy Practice

Current and emerging research support the idea of mindfulness being not only a means to an end but as an occupation in itself. Mindfulness strategies and interventions can be used a preparatory method prior to the performance of an activity of daily living or instrumental activity of daily living, or as an incorporated habit or routine in patients' day-to-day lives (American Journal of Occupational Therapy, 2017). In physical rehabilitation settings, mindfulness has been shown to help clients with chronic pain and traumatic brain injury adapt to illness and disability, promoting functional performance and recovery while complementing symptom remediation (Hardison & Roll, 2016).

Although mindfulness techniques may already be used in occupational therapy (OT) practice today, there is limited research that explores specific techniques and current usage in practice. Right now, it is unclear which kinds of mindfulness techniques OT practitioners are implementing for which kinds of diagnoses with chronic pain symptoms and how often techniques are being utilized. Additionally, it is unclear whether OT practitioners are using mindfulness strategies as a preparatory activity to meet a goal or using mindfulness strategies as a end goal of coping and adjusting to chronic pain symptoms. As indicated prior, there is a lack of high-quality research providing strong evidence that mindfulness-based interventions are effective in helping patients with chronic pain (Hilton et al., 2006). During the formulation of this study's literature review, there was limited research found on the use of mindfulness strategies and interventions for treating chronic pain through the perspective of OT practitioners. Further research on mindfulness techniques in occupational therapy can provide insight on how it can benefit clients with chronic pain and their occupational performance.

Statement of Purpose

The OT research agenda produced by both the American Occupational Therapy Foundation (AOTF) and the American Occupational Therapy Association identify the prevention and management of chronic conditions, such as chronic pain, a research priority (2011). The objectives of this study were to gather descriptive information about OT practitioners' use of mindfulness practices to treat specific or various chronic pain conditions, the perceptions OT professionals have toward mindfulness practices in the current scope of occupational therapy, and willingness to incorporate mindfulness techniques and interventions into their current practice. This study aimed to contribute to the AOTA's 2025 centennial vision by gathering information about the effectiveness and accessibility of the use of mindfulness in OT practice (AOTA, 2017). Using an online survey design, a self-made questionnaire was created to learn specifically what kinds of mindfulness-based interventions and techniques were used for treating chronic pain, which categories of diagnoses that experienced chronic pain were treated, how mindfulness-based interventions and techniques were utilized during a treatment session, and what was the current perception of the use of mindfulness in occupational therapy practice. Findings from this research will contribute to the understanding of the current use of mindfulness as well as a better understanding of the use of mindfulness interventions for treatment of chronic pain conditions from an OT practitioner perspective.

For these reasons, the primary research question for our study was "what is the current use and perception of mindfulness-based treatment in OT practitioners who treat patients with chronic pain?"

Literature Review

Mindfulness Stress-Based Reduction

Jon Kabat-Zinn defined mindfulness as the awareness that arises from paying attention on purpose, in the present moment, nonjudgmentally (Paulson, Davidson, Jha, & Kabat-Zinn, 2013). His operational definition for conceptualizing mindfulness serves as the scaffolding for how occupational therapy practitioners cultivate therapeutic use of self. The ability to suspend any type of judgement and narrative so practitioners can be fully present with their clients has demonstrated empirical support across professional domains. Practitioners who receive mindfulness training are found to be markedly more fully present with clients and their needs, demonstrate increased positive affect and self-compassion, and more self-awareness and acceptance (Richardson, 2018). In addition, practitioners also experience beneficial effects in their self-care routine, interpersonal relationships, and life satisfaction.

The primary practices taught in mindfulness-based stress reduction include the body scan, breath awareness practice, mindful yoga, and meditation. While each of these practices is unique to its intended focus, they all share significant commonalities, such as intentionally attuning nonjudgmentally to our experience in the present moment (Richardson, 2018). By using these practices to help clients cope with changes in their current situation, practitioners can increase their clients' capacity to meet change without aversion. Practitioners and clients alike can recognize what is most essential for their well-being and tune into their experience and the experience of others with greater degrees of insight and understanding (Richardson, 2018).

Kabat-Zinn developed MBSR techniques to help individuals cope with stress, pain, and illness. His research indicated that guided meditation, mindful movement, and education significantly reduced present-moment pain, inhibition of activity by pain, pain symptoms, and mood disturbance (Kabat-Zinn et al., 1984). His work continues to be relevant as researchers and practitioners utilize mindfulness as a treatment modality for chronic pain. Robinson et al. (2011) reported that since chronic pain interferes with every area of occupation, it is vital for practitioners to collaborate and create individualized tools and strategies that allow their clients to engage in social roles and occupations that are significant. While preliminary evidence exists for how the mindfulness approach compliments biomechanical-rehabilitative models, its emerging practice suggests that it could be successful in treating chronic pain.

Musculoskeletal Conditions

In their scoping review, Hardison and Roll (2016) identified studies that support the use of mindfulness techniques when treating musculoskeletal conditions. According to the identified studies, significant effects when practitioners used mindfulness techniques in parallel with physical rehabilitation interventions. The authors found that this increased clients' participation in therapy and improved functional outcomes despite pain. They also found significant secondary effects in using mindfulness to reduce pain and severity which included increased acceptance of pain, improved functioning with pain, and decreased distress (Hardison & Roll, 2016). Hardison and Roll (2016) also found evidence that supports that current mindfulness protocols fit within the occupational therapy scope of practice as preparatory, activity, and occupation-based interventions.

Bruckenthal, Marino, and Snelling (2016) investigated the effects of complementary and integrative medicine approaches in treating the geriatric population. The incorporation of guided imagery, yoga, mindfulness meditation, and tai chi interventions were all found to be effective in working with this population. Guided imagery was used as a form of focused relaxation to enhance an individual's coping resources through visualization and direct suggestion (Bruckenthal et al., 2016). Participants reported a reduction in pain and pain medication among the geriatric population. Yoga was used as a way of harmonizing the mind, body, and spirit through dictated body poses, breathing, and meditation techniques. This evidence suggests that participants diagnosed with osteoarthritis revealed improvements with joint pain and stiffness (Bruckental et al., 2016). Improvements in low back pain were also exhibited. The authors found the use of mindfulness-based stress reduction to be a beneficial strategy in reducing pain in older adults. Tai chi, an Ancient Chinese practice that promotes mind-body relaxation and balance through movement, meditation, and deep breathing, were effective in reducing both pain and stiffness (Bruckenthal et al., 2016). This was particularly potent in participants diagnosed with knee osteoarthritis. Overall, the authors found that complementary and integrative medicine approaches could be used in conjunction with physical rehabilitation and home exercise programs. Client-centered practice could be reinforced by having clients choose an intervention that aligns with their preferences.

Zgierska et al. (2016) determined the effectiveness of mindful-based meditations in patients with chronic lower back pain who require daily opioid treatment. When the intervention combined thirty minutes of home practice in conjunction with their opioid

treatments, participants reported overall satisfaction with the intervention and its potency in pain management and improving pain coping skills (Zgierska et al., 2016). Implications for this study indicate that mindfulness-based interventions can operatively manage chronic lower back pain symptoms and decrease reliance on pain medication treatments.

Neurological Conditions

In their scoping review, Hardison and Roll (2016) identified studies that showed the effectiveness of mindfulness techniques when combined with physical rehabilitation. The combination of these interventions can primarily help clients with chronic pain and traumatic brain injury adapt to illness and disability. Implications for occupational therapy practice indicate that mindfulness in physical rehabilitation can primarily be used to promote functional performance and recovery while completing symptom remediation (Hardison & Roll, 2016). This is evident with the use of yoga and tai chi. When participants combined these approaches with strengthening exercises, the mindfulness interventions improved upper-extremity functioning, balance, mobility, and participation in people with neuromotor impairments (AOTA, 2017). AOTA (2017) also reported that yoga improved balance and selective attention among clients diagnosed with multiple sclerosis.

Tavee, Rensel, Planchon, Butler, and Stone (2011) examined the effects of meditation on pain and quality of life in individuals diagnosed with multiple sclerosis and peripheral neuropathy. The intervention included breathing techniques, qigong, tai chi, and walking meditation. The study was a randomized controlled trial that was conducted in a university hospital. Results indicated significant improvement for overall physical

health, mental health, vitality, and physical roles. Patients diagnosed with multiple sclerosis also noted substantial improvement in bodily pain scores (Tavee et al., 2011). Even though robust results were not noted in every assessment domain, the researchers found that the control group did not report any improvements in pain scores, physical and mental health, and well-being. This study indicated that mindfulness-based interventions could treat symptoms more effectively than standard treatment.

Cancer

Poulin et al. (2016) sought to explore the effects of mindfulness in cancer survivors experiencing chronic neuropathic pain. Researchers choose participants that were 1-year post-treatment for chemotherapy. Results revealed significant effects on participants' pain intensity, mood, and mental health-related quality of life. More specifically, participant results indicated that mindfulness negatively correlated with pain intensity, pain catastrophizing, pain interference, and depression. Preliminary evidence suggests that mindfulness can mitigate the effects of pain and pain experiences in cancer survivors.

Current Findings

Because chronic pain interferes with every aspect of life, occupational therapists can utilize mindfulness-based approaches to help clients cope with chronic pain and improve function (AOTA, 2017) explored how complementary health approaches and integrative health interventions can be used as a component of occupational therapy practice. These methods can be used to avert symptoms, manage clinical conditions, and enable people to meet their personal responsibilities (AOTA, 2017). In addition, AOTA also explored how mindfulness interventions align with the Occupational Therapy

Practice Framework: Domain and Process, 3rd ed., (AOTA, 2014). Evidence-based practice supports the use of these interventions as preparatory methods, tasks, occupations, and activities when supporting active engagement and participation in meaningful occupations. Bradshaw (2017) reported that this allows individuals to enhance their quality of life and enrich their personal sense of well-being.

Hardison and Roll (2016) similarly explored the application of mindfulness techniques in a rehabilitation setting within the Occupational Therapy Practice Framework, 3rd ed., (AOTA, 2014). By using body scans, mindful yoga, guided meditation, and education about stress and health, the primary goal of mindfulness-based stress reduction is to enhance mindfulness within clients. These interventions align with education, therapeutic activities, or preparatory methods within the occupational therapy framework. Current mindfulness protocols fit within the occupational therapy scope of practice as preparatory, activity, or occupation-based interventions (Hardison & Roll, 2016). However, more research is needed to determine the best practices of mindfulness in a physical rehabilitation setting by occupational therapists.

McCullough (2011) studied the efficacy of occupational therapy intervention, within a multidisciplinary and integrative approach, for people suffering from chronic pain. Participants who received occupational therapy services in conjunction with structural integration yielded the most notable difference from pre- to post-treatment along with an overall decrease in pain. By teaching participants to manage pain symptoms and restructure their daily routines to improve function, the study provided a foundation for how occupational therapy interventions can be used for pain management (McCullough, 2011). By introducing interdisciplinary practitioners in the treatment

phase, patients can learn to manage their pain through a variety of therapeutic interventions.

Overall, support can be found in the literature for the use of mindfulness interventions in conjunction with traditional OT treatment can be used as preparatory, therapeutic activities, and occupation-based interventions in a physical rehabilitation setting. Because mindfulness interventions promote functional performance and recovery while complementing symptoms remediation, our research aims to investigate how many practitioners are using mindfulness techniques in their current practice. In addition, our research seeks to explore which chronic conditions yield the most the success with pain reduction and management.

Theoretical Framework

To be able to collect descriptive data from occupational therapists regarding the use of mindfulness techniques to treat chronic pain, it is based on evidence-based research that has supported that mindfulness techniques can decrease chronic pain symptoms. In occupational therapy practice, mindfulness can be viewed through the Person-Environment-Occupation model of occupational performance. This model can be described as the product of a dynamic relationship that exists between people, their occupations and roles, and their environment in which they live, work, and play in (Law et al., 1996). Disability advocates propose that problems with disability arise from the interaction between person and environment, in which the environment may foster dependency or poor solutions that affects the person with the disability (Law et al., 1996). Therefore, this model focuses on changing the environmental conditions of the person with a disability to enhance occupational engagement. Christiansen and Baum focus on

how environmental factors such as cultural, social, and physical can enable or impede occupational engagement (Christiansen & Baum, 2005).

The focus of occupational engagement is exploring the outcomes of competence, contentment, and satisfaction of clients engaged in their occupation of choice. This may affect how often a person engages in their occupation and has been linked to a person's health and well-being (Law et al., 1996). Research has demonstrated that mindfulness can improve the functioning of the brain and subjective well-being thus a technique that occupational therapists provide to clients with chronic pain conditions. Mindfulness is an active and intentional state in which a person must attend to a situation and embodies the sense of being present. This presence of being in the now forces people to be free of problems, thinking, and time that can be used an intervention for those that feel chronic pain daily which limits their occupational engagement. In addition to the connection between person, occupation, and mind, mindfulness can occur in a variety of settings. Mindfulness techniques can be applied to societal, cultural, and social environment which can enhance a person's occupational performance and ability to form social interactions. A person's environment can shape the type of interactions they have in their surroundings and a person's ability to form interpersonal relationships. This model demonstrates a client-centered approach and will allow the focus to be on the client's needs and goals to be able to enhance occupational engagement.

Another frame of reference that can be used to describe mindfulness technique is the cognitive-behavioral theory. According to this frame of reference, it is having the ability to process, respond, and react appropriately in situations and everyday events (Grensman et al., 2018). Cognitive-behavioral therapy emphasizes the client's ability to

self-regulate and be aware of their body and environment (Grensman et al., 2018). This outcome measures a client's occupational engagement and performance in their environment.

Zgierska et al., demonstrated how the use of cognitive-behavioral therapy with the use of mindfulness techniques can decrease pain on adults with chronic lower back pain who required daily opioid treatment. The authors found meditation-based interventions can improve both medical and mental health problems including anxiety, depression, poor sleep, and stress reactivity (Zgierska et al., 2016). Mindfulness techniques in combination with cognitive-behavioral therapy has allowed individuals to improve their pain coping skills. Using cognitive behavioral therapy as a foundation for mindfulness techniques will allow a client to work on their thoughts, emotions, and feelings when they are experiencing pain and what actions to be taken to cope with this pain (Zgierska et al., 2016).

Methodology

This study was a mixed methodology consisting of a quantitative and qualitative research design, using online survey method to gather both descriptive statistics and qualitative outcomes. A mixed-methods online survey was created by the researchers in order to collect data to explore the use of mindfulness techniques to treat chronic pain by occupational therapists. The online survey was a self-made questionnaire by the primary researchers in order to include questions that specifically targeted the focus of the research and conducted questions that would be easily analyzed. The respondents of this survey included both OTs and COTAs currently working with clients with chronic pain conditions. For the purpose of this research, chronic pain was defined as an individual

who experiences pain from three to six months, or an extended period of time past the recovery period (Devon, 2014). This excluded any OTs and COTAs who did not work with clients with chronic pain and those who did not have English literacy as translation from English to other languages was not provided. Respondents for this study were recruited from different hospitals, educational institutions and occupational therapy associated organizations, such as American Occupational Therapy Association (AOTA), Occupational Therapy Association of California (OTAC), American Occupational Therapy Foundation (AOTF), and World Federation of Occupational Therapy (WFOT).

The researchers formed twenty-two questions exploring the use of mindfulness techniques to treat chronic pain conditions by current occupational therapy practitioners. Questions were created regarding demographics such as the years the occupational therapy practitioner has been practicing, current practice setting, and location of practice. It is important to know the background and demographics of the respondents and how it can affect the outcome of the surveys. There were questions regarding the use of mindfulness interventions such as yoga, tai chi, breathing exercises, guided imagery, or progressive muscle relaxation in order to treat chronic pain conditions. The survey included questions about whether OT practitioners would consider mindfulness interventions for treating chronic pain conditions or how receptive the respondent would be if the opportunity of mindfulness intervention training. The online survey used Likert scales measurement to rate on a numerical scale how likely it was for the practitioner to use mindfulness and a constant comparative data analysis method to generate qualitative results from survey respondents. There were specific questions that required descriptive answers whereas the rest of the questions were multiple choices.

It was beneficial to use an online survey to explore the use of mindfulness techniques by occupational therapy practitioners to reach a large amount of people over the short amount of time that was given to practitioners to complete the survey. It allowed for faster administration of the survey in comparison to using a physical paper document for a survey and having to collect from multiple places. In addition to faster administration, it allowed for the data to be directly imported for analysis as all the data can be found in the private email account of the primary researchers set up by the media department at Stanbridge University. The email account was only accessed through Stanbridge University computers and firewall to ensure safety of all information collected.

After the survey was created, a consent letter was formed that was sent out in conjunction with the online survey. This consent form (See Appendix A) includes the purpose of the study, implications of this study, number of questions, and additional information. It stated that the survey would only take about 15 - 20 minutes and that there were no anticipated risks from completing the survey. There was no payment or compensation given to participants for responding to the survey and completing the survey was voluntary. The introductory letter and online survey were sent to OT faculty via Stanbridge University emails. Ten faculty members self-selected to complete survey and provide feedback. Only researchers had access to this account, and this is the private email account to be used for all online database interaction. After piloting the survey, it was revised according to feedback; the introductory letter and online survey was distributed via aforementioned databases to our targeted respondents. It was important for

researchers to pilot survey with faculty prior to launch of survey due to self-made surveys lacking validity and reliability.

Practitioners were given three weeks to complete the survey to allow for data collection. Data was evaluated using statistical analysis such as cross-tabulations to find frequencies of response and to determine if trends exists among the data. An independent t-test was conducted to examine whether there is a statistically significant difference between two independent sample of practitioners that use mindfulness techniques in practice and practitioners who do not use mindfulness techniques. This statistical analysis compares and contrasts mindfulness interventions outcome for practitioners who utilize these techniques and those who do not utilize them during practice. Descriptive statistics was used to determine the average of specific answers that were chosen in the survey and modes to explore the frequency of every answer to determine trends within the data.

Results

In the survey, there were a total of 101 respondents, however, the number of respondents who answered each question varied. Some questions which were not answered were coded separately from respondents who chose a response and were not used during analysis. Our survey also included questions that were coded with multiple response choices. This allowed our respondents to select various responses to reflect their opinions with how mindfulness techniques fall under the current scope of occupational therapy practice.

Demographic Results

Participants were asked what kind of practitioner they were and how many years of experience they had. From the data analyzed, 77.2% (n=78) respondents were

occupational therapists and 10.9% (n=11) were certified occupational therapy assistants. 53.5% (n=54) respondents had over 10 years of experience in occupational therapy, 15.8% (n=16) respondents had between 5-10 years of experience in occupational therapy, and 18.8% (n=19) respondents had <5 years of experience in occupational therapy.

Practice settings varied between acute inpatient, acute rehabilitation, skilled nursing facilities, subacute, outpatient, home health, school, community, pediatrics, academia, and other practice settings. More responders indicated practice in academia (23.1%, n=28), skilled nursing facilities (14.9%, n=18), and outpatient (13.2%, n=16) settings. This was followed by acute inpatient (12.4%, n=15), acute rehabilitation (11.6%, n=14), community (7.4%, n=9), and home health (5.0%, n=6). Subacute, school, and other practice settings were represented by 3.3% (n=4) of all responses, and pediatric settings was represented by 2.5% (n=3) of all total responders.

A total of 89 respondents chose to identify their geographical country of practice. Of all 89 respondents for the survey question, 68.3% (n=69) worked within the United States. Of those 69, the majority of respondents (n=33) were from the state of California despite the survey being distributed nationally. International participants from Australia, Canada, United Kingdom, Lithuania, Greece, Portugal, and Korea also responded to the questionnaire.

Results of Diagnoses

One of the purposes of this study was to explore which diagnoses were treated with mindfulness based techniques in occupational therapy. In the survey, respondents were able to describe the diagnoses they used mindfulness interventions for. Given the wide scope of possible diagnoses that occupational therapy practitioners may treat, the

survey narrowed down the diagnoses to the most commonly seen diagnostic categories such as musculoskeletal pain, neurocognitive/neuromotor, traumatic brain injury, and stroke. 38.6% (n=39) of the diagnoses were conditions with musculoskeletal pain which was followed by 35% (n=35) of the diagnoses being neurocognitive/neuromotor. Traumatic brain injury and stroke (28.7%, 29) were equally common for occupational therapy practitioners to treat with mindfulness techniques. Lastly, 22.8% (n=23) were other diagnoses and 21.8% (n=22) were spinal cord injury.

Results of Interventions

One of the aims of the study was to explore the different types of mindfulness techniques that occupational therapy practitioners were using in their practice settings, which was demonstrated through one of the questions from the survey. Out of the total 101 respondents, there was a total of 53 respondents for this question regarding types of interventions used. From the data analyzed, 30.2% (n=16) respondents used yoga, 9.4% (n=5) used tai chi, 71.7% (n=38) used breathing techniques, 54.7% (n=29) used guided imagery, 43.4% (n=23) used progressive muscle relaxation / body scan meditation, and lastly 17% (n=9) replied stating they do not use mindfulness techniques in their current practice. The data evaluated does not account for respondents that did not reply to this portion of the survey.

To find the relationship between how often a technique is used with each diagnosis, the chi-square test was used to see how the intervention's expected usage compares with its actual counted usage by practitioners. For each diagnostic category, respondents were asked how often they used each technique with a choice of: all the time, most of the time, some of the time, and rarely. The most commonly used mindfulness-

based interventions for each diagnostic category were breathing techniques, progressive muscle relaxation/body scan meditation, and guided imagery meditation. The chi-square test was not used to find any relationships for yoga and taichi due to lack of substantial data.

Respondents indicated breathing techniques as their most preferred mindfulness technique to use in the treatment of all listed diagnostic categories (see Appendix D.1). The respondents' frequency to use breathing techniques was most of the time for musculoskeletal conditions with a count of 15 (expected=8.7, df= 4, chi-square= 58.641, p=.000), neurocognitive/neuromotor (n=13, expected =6.9, chi-square=45.106, p=.000), traumatic brain injury (n=13, expected =6.1, chi-square=37.511, p=.000), stroke (n=13, chi-square=47.806, p=.000), other diagnoses (n=12, expected=5.5, chi-square=34.980, p=.000) and all (n=10, expected = 3.0, chi-square=40.210, p=.000) of the time for spinal cord injury. In summary, the majority of respondents used breathing techniques most of the time for musculoskeletal conditions.

The second most commonly used intervention in occupational therapy was guided imagery meditation. The participants used guided imagery meditation some of the time for all diagnostic categories (see Appendix D.2); musculoskeletal conditions (n=23, expected=8.9, chi-square=69.425, p=.000), neurocognitive/neuromotor (n=12, expected=5.3, chi-square=34.972, p=.000), traumatic brain injury (n=6, expected=2.8, chi-square=24.205, p=.000), stroke (n=7, expected=3.9, chi-square=30.001, p=.000), spinal cord injury (n=6, expected=3.3, chi-square= 35.132, p=.000), and for other diagnoses (n=11, expected=5.0, chi-square= 33.363, p=.000). Majority of the respondents used guided imagery meditation some of the time for musculoskeletal conditions.

Progressive muscle relaxation/body scan meditation was the last most significantly used intervention for occupational therapy practitioners (see Appendix D.3). The participants used progressive muscle/body scan meditation some of the time for musculoskeletal conditions (n=17, expected=5.7, chi-square=75.218, p=.000), neurocognitive/neuromotor (n=12, expected=4.0, chi-square=52.657, p=.000), traumatic brain injury (n=4, expected=1.8, chi-square=26.632, p=.000), and other diagnoses (n=11, expected=3.6, chi-square= 40.386, p=.000). Progressive muscle relaxation was used evenly for stroke (chi-square=48.106, p=.000) for all (n=5, expected=0.6) and some of the time (n=5, expected=2.6). Finally, the usage of progressive muscle relaxation for spinal cord injury presented as (n=4, expected=0.3, chi-square= 48.501, p=.000). Overwhelmingly, most respondents used guided imagery meditation for musculoskeletal conditions some of the time.

Results of the Seven Statements

One of the aims of our study was to explore how mindfulness techniques fit within the current scope of occupational therapy practice. Out of 101 respondents, 14 respondents answered this question. This question was coded as multiple response choices. From the various responses, we coded this data using a frequency count to see where occupational therapy practitioners placed mindfulness techniques with the current scope of practice. From the data we analyzed, 21.1% saw mindfulness as a form of cognitive-behavioral therapy (n=12), 19.3% viewed mindfulness as a psychosocial intervention (n=11), 15.8% used mindfulness as a sensorimotor activity (n=9), 14.0% saw mindfulness as a preparatory task (n=8), 12.3% saw mindfulness as an energy conservation technique (n=7), 10.5% viewed mindfulness as a leisure activity, and 7.0%

saw mindfulness as an activity of daily living. The data evaluated does not account for respondents who did not answer this question.

Results of Continuing Education

Overall, the vast majority of our participants considered mindfulness techniques to fall under the scope of current occupational therapy practice for treating pain conditions. Out of 101 respondents, only 1 participant did not answer the question. 84.2% of respondents considered mindfulness techniques to fall under the current scope of practice (n=85), while 14.9% did not consider mindfulness techniques to be under the current scope of practice (n=15). Even though we had limited results with how occupational therapy practitioners use mindfulness in their current setting, the majority of our respondents appeared very eager to learn about mindfulness techniques if the opportunity was offered. A frequency count was used to code the likelihood of respondents attending formal training and continuing education courses. Out of 101 respondents, 88 respondents answered the likelihood of attending formal training. If formal training was offered at the respondent's current practice setting, 61.4% were very likely to attend (n=62), 19.8% were somewhat likely to attend (n=19), 3.0% were somewhat unlikely to attend (n=3), 2.0% were very unlikely to attend (n=2), and 2.0% would not attend at all (n=2). For the likelihood of attending a continuing education course on mindfulness techniques, 87 respondents answered the question. When asked about the likelihood of attending an occupational therapy supported continuing education course on mindfulness training, 52.5% were very likely to attend (n=53), 24.8% were somewhat likely to attend (n=25), 4.0% were somewhat unlikely to attend (n=4), 4.0% were very unlikely to attend, and 1.0% would not attend at all (n=1).

We also explored the preferred mode of training-education for mindfulness strategies for treating chronic pain. Out of 101 respondents, 86 respondents answered this question. A frequency count was used to analyze the preferred training-education method that would be used by the respondents. When asked about their preferred mode of training-education, 45.5% would attend a local workshop seminar (n=46), 25.7% would use online courses (n=26), and 13.9% would attend a professional conference (n=14). The data evaluated does not account for respondents who did not answer the survey in its entirety.

Discussion

This research study provided an opportunity to evaluate current use of mindfulness techniques within occupational therapy practice. The utilization of mindfulness techniques is infrequently reported in literature but is prevalent in practice today. After analyzing the results, there was a greater response from experienced occupational therapists with an education background. A majority of respondents from the survey were located in California which can serve as a bias to the results due to differences in intervention techniques between states.

The results demonstrated a higher utilization of three mindfulness techniques: breathing techniques, guided imagery techniques, and progressive muscle relaxation. These three techniques demonstrated higher frequency for musculoskeletal conditions specifically, thus we inferred from our respondents that mindfulness techniques are useful when treating chronic pain for individuals with musculoskeletal diagnoses. The additional conditions such as neurocognitive, TBI, stroke, SCI, and extraneous conditions fluctuated in frequency of implementing mindfulness techniques. Through data analysis

to assess the correlation between mindfulness techniques use and their treatment for diagnoses with chronic pain, there was a significant support for responding practitioners utilizing various mindfulness techniques to treat patients with chronic pain.

As mentioned prior, while this survey garnered the attention and responses of many respondents, many of the survey respondents did not fill this survey in its entirety, which may have influenced the conclusions reached after data analysis. This can be due to a multitude of reasons, which is further elaborated in our limitations listed below. Despite setbacks in access to occupational therapy practitioners, method in distribution, and data collection period, this rudimentary survey did succeed in identifying which practice contexts current occupational therapy practitioners are utilizing mindfulness and collecting a snapshot of how practitioners utilize mindfulness techniques to treat patients with chronic pain. While there is not enough data to conclusively view how mindfulness techniques fit within the current occupational therapy scope of practice, a majority of respondents indicated a willingness to learn more about mindfulness and its application to occupational therapy practice.

Potential Limitations

One of the limitations during the recruitment process of this study was the lack of access to occupational therapy practitioners. This lack of access led to a smaller sample size due to the limited network of occupational therapy practitioners that the researchers had access to. The network was limited due to two factors: 1) the researchers themselves are students and therefore did not have the opportunity to build their networks within the profession and 2) their school supporting the research is a recently accredited occupational therapy program that lacked the established connections to various facilities

and alumni. To counteract this, the researchers utilized occupational therapy platforms such as the WFOT, AOTA, and OTAC to distribute the survey to their members. Another limitation to the recruitment process was that the survey was only offered in English which excluded occupational therapists who did not understand English.

The other limitation during the recruitment process was the method of distribution. For ease and quicker response rate, the researchers used the internet as the method of distribution via email. Distributing the survey via email was a limitation in many ways. It was a limitation for practitioners who no longer use the emails. The fraction of practitioners who were unfamiliar with technology did not have access to the internet or the survey. Not only that, but the survey was also completed online and, though the link was provided in the email, practitioners would have had difficulty accessing the survey. Distributing through email, however, did have benefits such as reaching a wider pool of respondents and the survey platform organizing the data for the researchers. Responses were also received promptly while traditional mail would have taken several days to collect. Given that most modern documentation systems are adapted to internet and technology, the number of those unfamiliar to email was minimal.

The data collection period was also another limitation due to its short duration. This was a limitation because practitioners struggled with replying in three weeks due to not receiving the email in time or neglecting to respond or finish the survey. To counteract this, the survey was able to be completed within 20 minutes and was also available online at any time.

Future Directions

Future directions for this research would be looking further into mindfulness techniques as a treatment for pediatric chronic pain. In developing the literature, little to no research was found in the usage of mindfulness for children with chronic pain. Copious studies have been done on the utilization of mindfulness for attention, emotional regulation, metacognition, trauma rehabilitation, and more. However, little to no studies have been conducted on the usage of mindfulness in pediatric physical disabilities despite children also having symptoms of chronic pain. This study can also look further into the international usage of mindfulness interventions for chronic pain in occupational therapy and comparing those rates with that of the United States. Various cultures have a higher emphasis on mindfulness as an occupation and holistic treatment for chronic pain which can lead to higher utilization of mindfulness-based techniques in occupational therapy. This can be accomplished by first translating the survey into multiple languages for future studies. Another future direction for this research could be creating specific survey instruments such as mindfulness inventory to assess the clients' interest in mindfulness interventions pre and post. This creates a foundation for gauging the interest for mindfulness-based techniques from both the practitioners' and clients' perspective.

Ethical and Legal Considerations

The ethical and legal considerations of the research study were addressed by providing participants with an introduction letter. The introduction letter also served as informed consent because it contained information about the researchers, the purpose of their study, and what the researchers plan to do with the data. By choosing to respond to the survey, practitioners implicitly gave their consent to participate in the study (See

Appendix A). Given that this survey was consensual and anonymous due to the internet, there were no necessary consents to be obtained. The only tool used in this study was the survey created by the researchers to study occupational therapy practitioners using mindfulness-based techniques in the treatment of chronic pain. Permission was not necessary to be obtained since the survey was created by the researchers and never implemented by anyone else before this study. Further ethical and legal considerations of this study were reviewed and approved by the Stanbridge University Institutional Review Board prior to the distribution of the survey to human subjects. The results of the research study were shared through a written thesis, a poster presentation with the students and faculty of Stanbridge University.

Conclusion

The purpose of this study was to research the current use and practice of mindfulness-based interventions for chronic pain in the field of occupational therapy. Current legislation in the United States supports more research in non-opioid treatments for pain management. This calls for occupational therapists to take a greater role in treating symptoms of chronic pain. Mindfulness-based techniques are within the scope of practice for occupational therapy practitioners, yet it is rarely seen as a viable option for the treatment of chronic pain. The aims for this research was to better understand which specific diagnoses mindfulness-based techniques are most effective for and also to gauge the openness practitioners have for utilizing mindfulness to treat symptoms of chronic pain. This project is significant to the field of occupational therapy because practitioners need to be aware of the full scope of their practice to better treat their clients' symptoms of chronic pain. This self-made online survey serves as a foundation to collecting

information and better understanding current practitioners' perspectives and uses of mindfulness techniques as a therapeutic modality and occupation in order to treat clients with chronic pain.

By bringing awareness to the effectiveness of mindfulness-based techniques in the treatment of chronic pain, this research study hopes to broaden the practitioners' perspectives and understanding of the current scope of occupational therapy, and inspire future research projects.

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Appendix A

IRB Approval Form

IRB Reviewer Feedback

Reviewer Name:	Dr. Melissa Samaniego
Student Name(s):	Nadia Rashid, Katherine Chen, Kathryn Respicio, Jannet Chen
Advisor Name(s):	Cristina Scionti
Study Title:	Snapshot survey of current mindfulness techniques in occupational therapy practice to treat chronic pain
Study ID:	085
Decision:	X Approve □ Minor Revisions □ Major Revisions

Reviewer Comments:

My only suggestion would be to include a date on which the survey will close when sending the link to participants (or in the consent form), so they know specifically when the last day is that they can complete the survey.

I think this is a valid topic and study that has the potential to contribute positively to the field of occupational therapy, and I approve the application.

Appendix B

Stanbridge University Research Consent Form

Test Survey: Mindfulness and Occupational Therapy 0 %

STANBRIDGE UNIVERSITY RESEARCH CONSENT FORM

Description: You are invited to respond to a survey distributed to occupational therapy practitioners about the practice of mindfulness-based interventions for the treatment of chronic pain. This study is being done by Jannet Chen, Katherine Chen, Nadia Rashid, Kathryn Christel Respicio from Stanbridge University. The purpose of this research study is to collect data from occupational therapy practitioners on the use of mindfulness techniques for chronic pain conditions through an online survey. If you agree to take part in this study, you will be asked to complete the survey/questionnaire on the next page. This survey/questionnaire consists of potentially 22 questions and will ask about your experience in treating chronic pain, your familiarity with mindfulness-based techniques, and openness to learning mindfulness based techniques for future practice. Benefits of participating in this survey research include contributing to the knowledge base of complementary and alternative treatments for chronic pain and potentially learning more about the use of mindfulness based techniques in occupational therapy practice. Participation in this survey is voluntary and anonymous. Any data that you provide will only be used for data analysis and will only be accessible by researchers conducting the study. This survey is voluntary, you are free to answer as many questions as you wish and to stop answering at any time.

Your Time Involvement: The survey will take approximately 15-20 minutes.

Risks and Benefits: There are no anticipated risks from responding to the survey.

Payment: There will be no payment for participation in this study.

Participant Rights: By completing this survey, you are consenting to participate in this project. Participation is voluntary and you have the right to withdraw at any point without penalty. Your alternative is to not participate in this study. You have the right to refuse to answer specific questions. Your specific questionnaire and interview responses will be kept confidential. The results of this study may be disseminated at professional meetings or published in scientific journals. All information will remain confidential.

Contact Information: If you have any questions about this research you may contact the Faculty Advisor: Professor Cris Scionti; (Master of Science in Occupational Therapy Faculty) at cscionti@stanbridge.edu

Independent Contact: If you are in some way dissatisfied with this research and how it is conducted, you may contact the Stanbridge University Vice President of Instruction.

Do you wish to continue with the survey? *

- ○ Yes, I consent to these conditions.
- ○ No, I do not consent to these conditions.

Appendix C

Research Survey

Are you an OT (Occupational Therapist) or a COTA (Certified Occupational Therapist Assistant)? *

- ○ OT
- ○ COTA

How many years have you been an occupational therapist? *

- ○ > 5 yrs
- ○ 5 - 10 yrs
- ○ < 10 yrs

What is your current practice setting? (Check all that apply) *

- ☐ Acute In-patient
- ☐ Acute Rehab
- ☐ Skilled Nursing Facility
- ☐ Subacute Care
- ☐ Outpatient
- ☐ Home health
- ☐ Other (Please specify) _____

Which state and country do you practice OT? *

State _____

Country _____

Have you ever used mindfulness for symptoms other than chronic pain? *

- ○ yes
- ○ no

Do you use any of the following interventions/techniques in your current OT practice when treating patients with chronic pain? (Please check all that apply) *

- ☐ Yoga
- ☐ Tai Chi
- ☐ Breathing Exercise
- ☐ Guided Imagery
- ☐ Progressive muscle relaxation / Body scan meditation
- ☐ I do not currently use any of these techniques

How often do you use Yoga? *

Please choose...

Which category of diagnoses would you use Yoga? (Select all that apply) *

- [ ] Musculoskeletal / Pain
- [ ] Neurocognitive / Neuromotor
- [ ] Spinal Cord Injury
- [ ] Traumatic Brain Injury
- [ ] Stroke
- [ ] Other

How often do you use Tai Chi? *

Please choose...

Which category of diagnoses would you use Tai Chi? (Select all that apply) *

- [ ] Musculoskeletal / Pain
- [ ] Neurocognitive / Neuromotor
- [ ] Spinal Cord Injury
- [ ] Traumatic Brain Injury
- [ ] Stroke
- [ ] Other

How often do you use Breathing Exercise? *

Please choose...

Which category of diagnoses would you use Breathing Exercise? (Select all that apply) *

- [ ] Musculoskeletal / Pain
- [ ] Neurocognitive / Neuromotor
- [ ] Spinal Cord Injury
- [ ] Traumatic Brain Injury
- [ ] Stroke
- [ ] Other

How often do you use Guided Imagery? *

Please choose...

Which category of diagnoses would you use Guided Imagery? (Select all the apply) *

- [ ] Musculoskeletal / Pain
- [ ] Neurocognitive / Neuromotor
- [ ] Spinal Cord Injury
- [ ] Traumatic Brain Injury
- [ ] Stroke
- [ ] Other

How often do you use Progressive muscle relaxation / Body scan meditation? *

Please choose...

Which category of diagnoses would you use Progressive muscle relaxation / Body scan meditation? (Select all the apply) *

- [ ] Musculoskeletal / Pain
- [ ] Neurocognitive / Neuromotor
- [ ] Spinal Cord Injury
- [ ] Traumatic Brain Injury
- [ ] Stroke
- [ ] Other

Do you consider alternative mind/body or mindfulness techniques to be under the scope of current occupational therapy practice for pain conditions? *

- ( ) Yes- I do consider alternative mind-body or mindfulness techniques to be under the scope of current occupational therapy practice for pain conditions
- ( ) No- I do not consider alternative mind-body or mindfulness techniques to be under the scope of current occupational therapy practice for pain conditions

Prev Next

If formal training in alternative mind/body techniques for the treatment of chronic pain were offered at your current practice setting- how likely would you be willing to attend? *

Please choose...

How likely would you attend an occupational therapy supported continuing education course on mindfulness training? *

Please choose...

Prev Next

Appendix D

Recruitment Letter

Dear Occupational Therapy Practitioners,

We are conducting research regarding occupational therapy practitioners using mindfulness treatment/intervention when working with clients with chronic pain. Our research aim is to better understand the current use of mindfulness in occupational therapy to treat symptoms of chronic pain and spreading awareness of mindfulness use in occupational therapy practice. This survey is part of completing our thesis at Stanbridge University in Irvine, California.

Please extend our invitation to practicing OTRs/OTAs at your universities, organizations, alumni, or facilities. This survey should take approximately 15-20 minutes to complete.

Please click on the link below to a browser: https://www.esurveycreator.com/s/3a235c8

Thank you very much,
Katherine Chen, OTS
Jannet Chen, OTS
Nadia Rashid, OTS
Kathryn Respicio, OTS

Appendix E

Frequency x Intervention Tables

Appendix E.1: Breathing Techniques x Diagnostic Categories

Diagnoses	Frequency of Use	Count (Expected)	N	%	Pearson Chi-Square Test	Degrees of Freedom
MUS	Most	15 (8.7)	44	34.1	58.641***	4
NEU	Most	13 (6.9)	35	37.1	45.106***	4
SCI	All	10 (3.0)	22	45.4	40.210***	4
TBI	Most	13 (6.1)	31	41.9	50.398***	4
STR	Most	13 (5.9)	30	43.3	47.806***	4
OTH	Most	12 (5.5)	28	42.9	34.980***	4

MUS- Musculoskeletal/Pain Conditions *NEU-Neurological Conditions* *SCI- Spinal Cord Injury* *TBI- Traumatic Brain Injury* *STR- Stroke* *OTH- Other*

*** = $p \leq .000$

Appendix E.2: Guided Imagery x Diagnostic Categories

Diagnoses	Frequency of Use	Count (Expected)	N	%	Pearson Chi-Square Test	Degrees of Freedom
MUS	Some	23 (8.9)	32	71.9	69.425***	4
NEU	Some	12 (5.3)	19	63.2	34.972***	4
SCI	Some	6 (3.3)	12	50.0	35.132***	4
TBI	Some	6 (2.8)	10	60.0	24.205***	4
STR	Some	7 (3.9)	14	50.0	30.001***	4
OTH	Some	11 (5.0)	18	61.1	33.363***	4

MUS- Musculoskeletal/Pain Conditions *NEU-Neurological Conditions* *SCI- Spinal Cord Injury* *TBI- Traumatic Brain Injury*
STR- Stroke *OTH- Other*
*** = $p \leq .000$

Appendix E.3: Progressive Muscle Relaxation x Diagnostic Categories

Diagnoses	Frequency of Use	Count (Expected)	N	%	Pearson Chi-Square Test	Degrees of Freedom
MUS	Some	17(5.7)	29	58.6	75.218***	4
NEU	Some	12 (4.0)	20	60.0	52.657***	4
SCI	All	4 (0.3)	7	57.1	48.501***	4
TBI	Some	4 (1.8)	9	44.4	26.632***	4
STR	All Some	5 (0.6) 5 (2.6)	13	38.5	48.106***	4
OTH	Some	11 (3.6)	18	61.1	40.386***	4

MUS- Musculoskeletal/Pain Conditions *NEU-Neurological Conditions* *SCI- Spinal Cord Injury*

TBI- Traumatic Brain Injury

STR- Stroke *OTH- Other*

*** = $p \leq .000$