



The Efficacy of Trauma Informed Yoga as a Trauma Therapy

Prepared for
Sheilah Laffan (Quite a Stretch Yoga)

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Definitions

Adjunct therapy - a secondary treatment used concurrently with a primary treatment to enhance treatment efficacy.

Asana - any body posture or pose used in yoga practice.

Comorbid - the existence of a health condition simultaneously with at least one other health condition in an individual (Valderas et al. 2009).

Hatha yoga - a style of yoga composed of *asanas* to improve strength and flexibility, and *pranayama* to induce relaxation (Macy et al., 2018).

Iyengar yoga - a style of hatha yoga that emphasizes the precision and alignment of asanas (Macy et al., 2018).

Post-traumatic stress disorder - a mental health condition that can occur when someone has experienced or witnessed a terrifying event, such as natural disasters, war, combat or violent personal assaults (American Psychiatric Association, 2020b).

Pranayama - the practice of breath control in yoga.

Trauma - the experience of emotional and/or physical harm inflicted on an individual as a result of a single event or a series of events (Macy et al., 2018).

Trauma-informed yoga - a yoga practice designed to create a safe space and address the needs of trauma survivors. Core elements of the practice include choice, mindfulness, and breathing components (Justice et al., 2018; Nguyen-Feng et al., 2019b).

Sadhu - An ascetic in Hinduism or Jainism who abstains from all forms of self-indulgence to follow a path of spiritual discipline (Parikh, 2015).

Viniyoga - a style of hatha yoga that incorporates personalized instruction for individuals, based on their needs (Cushing et al., 2018).

Yoga - a physical, mental, and spiritual practice that originated in India. While the practice of yoga has expanded into various schools and audiences, the central practice has continued to involve breathing exercises, bodily postures, and meditation designed to improve physical and mental well being (Parikh, 2015; Woodyard, 2011).

Executive Summary

This report presents the findings of a project conducted by McMaster Research Shop for Sheilah Laffan, the owner of Quite a Stretch Yoga. The studio provides a safe space for clients to work through trauma and its classes are guided by a trauma-informed facilitator. The studio offers a trauma-informed yoga (TIY) program (Yoga for Warriors), a 10-week yoga series designed for those who suffer from post-traumatic stress disorder (PTSD), anxiety, stress, or other mental and physical health conditions connected to trauma. Laffan has seen first-hand that TIY has improved the mental health of those who attend her yoga series but wants scientific validation of her experiences. The purpose of this report is to evaluate the evidence for the effectiveness of TIY as a treatment for trauma.

To understand the potential of trauma-informed yoga as a trauma therapy, the research team conducted a literature review. Although research examining the efficacy of trauma-informed yoga is in its infancy, existing studies suggest the potential for positive outcomes.

TIY has been shown to be effective, primarily as an adjunct therapy, in diminishing and/or regulating symptoms of certain trauma related disorders, such as PTSD and depression. For example, TIY has been demonstrated to increase concentration, decrease repetitive negative thinking, and regulate emotional arousal.

TIY has been especially effective for special populations of trauma survivors, including female sexual assault survivors, war veterans, youth, and incarcerated individuals.

However, scholars are hesitant to generalize these preliminary findings since studies measuring the effectiveness of TIY as a trauma therapy tend to lack a standardized methodology. The current consensus is that having yoga as a complementary treatment in addition to psychopharmaceuticals, trauma reduction exposure therapy, and/or psychotherapy could lead to greater effectiveness in symptom reduction.

1.0. Introduction

Quite a Stretch Yoga is a body-positive and accessible yoga facility with the goal of increasing the mental and physical health and well-being of the Hamilton community. The studio provides a safe space for clients to work through trauma and its classes are guided by a trauma-informed facilitator. The studio offers a trauma-informed yoga (TIY) program (Yoga for Warriors), a 10-week yoga series designed for those who suffer from post-traumatic stress disorder (PTSD), anxiety, stress, or other mental and physical health conditions connected to trauma.

Sheilah Laffan, the studio owner, has seen first-hand that TIY has improved the mental health of those who attend her yoga series and wants to raise awareness of it. In the fall of 2019, Laffan approached the McMaster Research Shop (RShop) to conduct a literature review to answer the following question:

What is the effectiveness of trauma-informed yoga as a trauma therapy?

The goal of this research is to provide Laffan with a plain-language literature review about the effectiveness of TIY as a trauma therapy. The team was also tasked with the creation of an infographic to summarize this report in an easy-to-read visual format. Laffan will use these materials to raise awareness of TIY among Hamilton health service providers, as well as to promote her 10-week yoga series to the Hamilton community.

The RShop agreed to take on the project and this report is a summary of the team's research methods, findings, and recommendations for Laffan to consider.

2.0. Methodology

This section details the methods we used to meet our research objectives: a literature review. It also discusses research limitations and how the team attempted to address them.

2.1. Literature Review

A literature review is a scholarly paper that highlights and summarizes current knowledge on a particular topic. The purpose of this literature review is to demonstrate the effectiveness of TIY as a trauma therapy. To conduct the review, the team looked for existing research on the definition of TIY and the populations and conditions treated using it.

The team only included studies found in peer-reviewed scholarly journals and searched the following databases:

- Proquest
- JSTOR
- EBSCOhost
- PubMed
- PsychARTICLES
- Scholars Portal
- Google Scholar
- McMaster Library Discovery Search

As the term “trauma-informed yoga” is used inconsistently in the literature, the team not only searched for studies referencing the term word-for-word, but also for studies of yoga that emphasizes the essential elements of TIY: choice, mindfulness, and breathing. Search terms included: “trauma-informed yoga,” “trauma-sensitive yoga,” “yoga and trauma,” “trauma-informed yoga defined,” “trauma-informed yoga and adjunct therapy,” “branches of yoga,” “trauma-informed yoga versus regular yoga,” “trauma-informed yoga and sexual assault,” “sexual assault survivors,” “sexual abuse and yoga,” “trauma-informed yoga and violence,” “jail inmates and trauma-informed yoga,” “trauma-informed yoga and inmates,” “trauma-informed yoga and incarceration,” “trauma-informed yoga inmate studies,” “trauma-informed yoga and jail or prison or incarceration,” “trauma-informed yoga and youth trauma,” “trauma-informed yoga and youth,” “trauma-informed yoga for anxiety,” “trauma-informed yoga and depression,”

“trauma-informed yoga and PTSD,” “trauma-informed yoga and veterans,” “trauma-informed yoga and the military,” and “mind body therapy and the military.”¹

2.2. Effectiveness

The term ‘effectiveness’ is a key word used throughout the report. Our literature review provides a summary of research reports that have explored how populations experiencing trauma and/or mental illness respond to TIY as a form of treatment. These studies measured the effectiveness of TIY by using both qualitative and quantitative measuring tools, including Likert scales, questionnaires, and interviews. Through our analysis, the research team attempted to synthesize both quantitative and qualitative outcomes to report on the effects of TIY on trauma symptom reduction. We reviewed articles discussing its theoretical effectiveness, as well as empirical studies evaluating intervention outcomes.

2.3. Limitations

The team encountered two limitations when conducting the literature review. First, scholarly research about TIY is in its infancy. Second, the literature on TIY does not consistently use the same terminology to define the intervention used to treat physical and/or mental health conditions. Some researchers refer to the practice as TIY, while others use trauma-sensitive yoga or just “yoga” without any qualifiers. Those scholars who use the general term yoga often do not specify the branch of yoga being practiced or even the postures being used in their studies. Thus, it was not always possible for the team to determine if a study was about “yoga” or TIY. To address this issue, the team looked for yoga studies that included the core elements of TIY practices (as defined by the research in our literature review): choice, mindfulness, and breathing components.

¹ Searches including the term trauma-informed yoga were also searched using the term trauma-sensitive yoga and yoga.

3.0. Literature Review

The purpose of this literature review is to examine the effectiveness of TIY as a trauma therapy. It is divided into two sections, responding to the following guiding questions:

1. What is TIY?
2. What evidence is there for the effectiveness of TIY as a trauma therapy?

3.1. Overview of TIY

This section provides an overview of the origins and characteristics of TIY, including instructor training and best practices.

3.1.1. Yoga

Yoga originated as a religious discipline in India that continues to be practiced in Hinduism, Jainism, and Buddhism (Parikh, 2015). Yoga was first mentioned around 1500 B.C. in the *Vedas*, an ancient and sacred set of Hindu scriptures, as a component of Hindu practice. The popularity of yoga grew in northern India primarily by *sadhus* (monks) who encouraged lay people to engage in practices such as breath control and meditation. The philosophy and practice of yoga was eventually penned by the scholar Patanjali in the Sanskrit texts *Yoga Sutras* around 300 CE. Today yoga is practiced around the world. Although yoga has developed into various schools and practices, the central goal of this discipline is to connect one's mind to one's body and unify the physical and spiritual realms (Parikh, 2015).

Yoga combines muscle movements with mindfulness practice focused on self-awareness, energy, and breath (Woodyard, 2011). Hatha yoga is the most common form of yoga practiced in the Western world and is comprised of an array of *asanas* (body postures and movements) to improve strength and flexibility, and *pranayama* (breathing exercises) to induce relaxation and deter the mind from distraction (Macy et al., 2018; Woodyard, 2011). The National Institutes of Health classifies yoga as a type of complementary and alternative medicine (Woodyard, 2011).

3.1.2. Trauma

Trauma is the experience of emotional and/or physical harm inflicted on an individual as a result of a single event or a series of events (Macy et al., 2018). Trauma can impact an individual's overall wellbeing. Examples of traumatic events include child abuse, spousal abuse, sexual violence, war, and natural disasters. Victims of traumatic events

may develop conditions such as post-traumatic stress disorder (PTSD), anxiety, and/or depression (Macy et al., 2018). After experiencing trauma, individuals may experience emotional and/or physiological reactivity (e.g., flashbacks, nightmares, etc.) to reminders of the event (e.g., positions, smells, sounds, etc.) (Badour & Feldner, 2013).

Neuroscience has identified that trauma disrupts the formation of neural connections that are necessary for healthy responses to experiences and emotions (Muskett, 2014). As a result, the experience of trauma is often stored in the body and is expressed in varying physical and psychological forms, such as back and neck pain, muscle tension, anxiety, depression, and more (Rousseau et al., 2019b). Some researchers argue that since trauma affects an individual's physiological and psychological health, recovery treatments require an emphasis on the mind-body connection, which involves experiencing bodily sensations and deepening the connection between the mind, body, and brain in order to work through trauma (Clarke et al., 2018; Ong et al., 2019).

3.1.3. TIY

Yoga is notionally beneficial to the treatment of various health conditions, especially those associated with trauma (Woodyard, 2011). Trauma-informed care acknowledges that patients are likely to have a history of trauma, and existing services can potentially re-traumatize them (Muskett, 2014). There are many potential triggers within the yoga practice including, but not limited to: straps and ropes, instructor contact, music lyrics, and even mixed-sex classes (Muskett, 2014). Two major types of yoga programs exist that specifically focus on trauma: trauma-informed yoga and trauma-sensitive yoga (Cook-Cottone et al. 2017). Although often used interchangeably by literature, these two terms describe two distinct programs. This report specifically focuses on trauma-informed yoga, in which instructors of the program are knowledgeable about the various forms of trauma and trauma symptoms but do not belong to a treatment team (Cook-Cottone et al. 2017). In contrast, instructors of trauma-sensitive yoga often work with a treatment team that may contain counselors, doctors, and other professionals to address the needs of the trauma survivors (Cook-Cottone et al. 2017).

TIY classes provide safe and inclusive environments for individuals suffering from trauma (Cook-Cottone et al. 2017). The primary goal of TIY, in contrast to non-adapted yoga routines is to reduce trauma-induced symptoms and decrease reactivity through breathwork and mindfulness components (Justice et al. 2018). To ensure that clients feel empowered and safe, they are encouraged to modify positions based on ability and comfort.

Of important is prioritizing participant choice in the yoga practice as it allows clients to make active decisions on if, whether, and/or, how to engage with the yoga postures suggested throughout a yoga class. Following a traumatic event, individuals may feel a loss of control and ownership over their body and personal experiences (Stevens & McLeod, 2019). Participant choice allows clients to regain a sense of agency by encouraging autonomous decisions rather than following an “all-knowing and all-powerful teacher” (Rousseau et al., 2019b). Additionally, participant choice facilitates trust, which leads to the development of a strong client-instructor relationship. As a result, clients are more likely to participate in class, challenge their capabilities, and develop positive associations with the practice of TIY (Clark et al., 2014).

Several techniques can be used to prioritize participant choice. In order to encourage individuals of different fitness levels and capabilities to engage fully throughout the class, instructors can guide participants through modification of yoga postures (Ong et al., 2019). Additionally, instructors can use language that is invitational and non-directive in order to ensure that participants feel empowered to modify and opt-out of poses (Rousseau et al., 2019b). Examples of invitational language include phrases such as “If you choose,” “If you are able,” or “If you feel comfortable” (Murphy et al., 2019). Finally, instructors can use tools such as adjustment cards to allow participants to indicate whether they prefer hands-on assistance, non-directive touch, or practice without interruption (Rousseau et al., 2019b).

3.1.4. Instructor Training and TIY Classes

TIY yoga instructors generally have some training in or understanding of trauma and/or PTSD (Spinazzola et al., 2011). They are knowledgeable in designing yoga routines that address trauma, and typically have a good understanding of the barriers associated with trauma treatment (Cook-Cottone et al. 2017). According to West et al. (2017), instructors who provide TIY should be registered yoga teachers who have received specialized training in TIY. Individuals can become registered yoga teachers by completing either a 200- or 500-hour level training program at a registered yoga school. Upon successfully obtaining this credential, the registered yoga teacher can then complete a TIY certification program. The most popular TIY certification program is provided by the Massachusetts trauma center (Trauma Center Trauma Sensitive Yoga [TCTSY], 2020). Individuals who successfully graduate from the 300-hour certification program are then credentialed to teach TIY primarily as an adjunct therapy for trauma survivors (TCTSY, 2020).

TIY classes consist of guided mindfulness meditation, asanas, pranayama, and body postures, and end with a *savasana* (final relaxation pose) (Currie et al., 2019; Nolan,

2016). The session takes place in a quiet room with calming music without lyrics. During the sessions, the instructor makes predictable slow movements and invites, rather than instructs, participants to perform the session exercises (Currie et al., 2019; Mendez et al., 2018).

The practice is tailored to meet the needs of individuals who have experienced trauma and avoids triggering positions (Justice et al., 2018). TIY instructors also use invitational language to encourage individuals to be curious about their bodily sensations (Currie et al., 2019). They guide participants to appropriately and comfortably respond to situations and symptoms, as opposed to reacting to them, in an environment that is both safe and predictable (Justice et al. 2018; Mendez et al. 2018). Afterwards participants are invited to reflect on the breathing and physical exercises they have chosen to engage in (Currie et al., 2019).

3.2. Evidence for the Effectiveness of TIY as a Trauma Therapy

This section examines scholarly studies on the use of TIY in the treatment of:

- trauma related disorders (addictions and substance abuse, anxiety, depression, PTSD, and Schizophrenia), and,
- special populations who suffer from trauma (female sexual assault survivors, incarcerated populations, veterans, and youth).

For each disorder and special population, we provide an overview of the condition and group, the theoretical effectiveness of TIY in treating them, and a critical evaluation of empirical investigations of the effectiveness of TIY in treating them.

3.2.1. Trauma-Related Disorders

Addictions and Substance Abuse

Condition Overview

Substance use disorders (SUDs) involve excessive compulsive use of a substance despite harmful consequences (APA, 2020a). People suffering from a SUD may develop an addiction to substances including:

- alcohol,
- cannabis,
- opioids,
- hallucinogens, and,
- stimulants (APA, 2020a).

A history of trauma exposure is almost universal in populations seeking treatment for alcohol and other drug (AOD) abuse, and some studies have found up to 95% of patients in AOD treatment settings have experienced at least one childhood traumatic event (Giordano et al., 2016; Mills, 2015).

SUDs are highly comorbid with psychiatric conditions, and up to two-thirds of AOD treatment patients suffer from PTSD (Mills, 2015). Self-medication of the resulting symptoms has a large role in maintaining substance abuse disorders in these patients (Mills, 2015). Symptoms of SUD include:

- impaired control over substance use,
- social problems at home, school, and/or work potentially leading to isolation from friends and family,
- risky use, including overdose, and,
- drug effects, including tolerance and withdrawal (APA, 2020a).

Theoretical Effectiveness of TIY in Treating Addictions and Substance Abuse

Current AOD services are not usually trauma-informed, and place the onus of disclosing past trauma on the patient. However, due to reasons like shame and trust, patients are not likely to volunteer this information. Understanding a patient's trauma history is integral for AOD services to develop a suitable treatment approach. As a result, experts are advocating for a trauma-informed approach to care (Mills, 2015).

Although TIY does not involve disclosure of trauma, it offers a safe environment for AOD patients to receive treatment in an environment that does not promote re-traumatization (Muskett, 2014). Participation in yoga programs significantly decreases anxiety (including social phobia) and depression in SUD patients and increases self-esteem and subjective wellbeing. Yoga can also increase executive control and lower levels of perceived stress which can aid in the recovery process (Fitzgerald et al., 2020).

Empirical Evidence of Effectiveness

Three studies measuring the efficacy of a yoga intervention on SUDs were evaluated (Reddy et al., 2014; Shaffer et al. 1997; Smoyer, 2016).

Methods

Two randomized controlled clinical studies (Reddy et al., 2014; Shaffer et al. 1997) and a qualitative study (Smoyer, 2016) were reviewed for this report. Measures of effectiveness included:

- the Alcohol Use Disorder Identification Test (AUDIT),
- the Drug Use Disorder Identification Test (DUDIT),
- semi-structured interviews,
- the Addiction Severity Index, and,
- the Global Severity Index (GSI) and revised Symptom Checklist (SCL-90-R) to indicate any comorbid mental health disorders.

The yoga interventions discussed in all studies included pranayama, asanas, and meditation.

Reddy et al. (2014) and Smoyer (2016) incorporated TIY practices, such as pose modification for different fitness and comfort levels, avoiding physical contact, and using non-threatening language. It is unclear if the hatha yoga intervention used by Shaffer et al. (1997) incorporated these practices.

Unique Features

- The target population for Reddy et al.'s (2014) randomized controlled trial were women (including women veterans) with PTSD and high-risk substance use behaviours.
- The target population for Smoyer's (2016) qualitative study was low-income women with SUDs. This study used a volunteer with 10 hours of TIY training to help offset the costs associated with yoga classes.
- The target population for Shaffer et al.'s (1997) mixed-methods randomized controlled trial were patients admitted to a methadone maintenance treatment program.

Effectiveness

Smoyer (2016) reported that after participating in at least three TIY classes over a period of six months participants felt more relaxed, mindful, and had increased mobility, outcomes that aligned well with their recovery goals. A key component of SUD recovery is keeping busy. However, low-income individuals with SUDs often lack

the means to find health activities to fill their time. By using volunteer instructors, this study presents an accessible way for vulnerable populations to manage their recovery. In particular, the participants of Smoyer's study (2016) noted that they appreciated the yoga classes as they provided a healthy way for them to occupy their time and reduce stress.

In Reddy et al.'s (2014) study, participants showed a decrease in mean AUDIT (2.61 to 2.56) and DUDIT scores (1.00 to 0.52) after a 12-session yoga intervention. After one-month, 69% of the yoga participants reported that they noticed their PTSD symptoms less (Reddy et al., 2014).

Similarly, Shaffer et al. (1997) found that yoga participation was associated with reduced drug use and reduced criminal activity, however there was no significant difference between pre- and post-intervention in the GSI and SCL-90-R. Although there were no differences between the group of methadone patients undergoing traditional psychotherapy and the group undergoing yoga therapy, patients in the yoga intervention felt it contributed to an overall sense of physical well-being that helped them to remain sober. This suggests some patients may benefit from yoga as an alternative to conventional methadone treatment (Shaffer et al., 1997).

The results indicate that TIY could be an effective adjunct treatment for those with SUDs and may help patients remain active in their primary treatment. More research needs to be done with larger sample sizes to strengthen these claims, and to see which patients would benefit most from alternative TIY therapy rather than conventional psychotherapy.

Anxiety

Condition Overview

Anxiety disorders are characterized by excessive fear or anxiety that causes significant distress and can negatively affect job performance, school work, and personal relationships (APA, 2017a). There are several types of anxiety disorders:

- generalized anxiety disorder (GAD),
- panic disorder (PD),
- specific phobias,
- social anxiety disorder, and,
- separation anxiety disorder (APA, 2017a).

Childhood trauma is a significant risk factor for the development of an anxiety disorder (Fernandes & Osório, 2015; Hovens et al., 2015; Hovens et al., 2012). Additionally, adults who have experienced childhood trauma but are not diagnosed with anxiety disorder still demonstrate more severe levels of anxiety than the general population (Hovens et al., 2015).

Theoretical Effectiveness of TIY in Treating Anxiety

TIY is a good option for anxious patients, as it allows patients to participate in yoga with a lower chance of becoming anxious from re-traumatization. *Pranayama* in yoga relaxes the mind and body, which helps address the short, choppy breaths often experienced by anxious patients (Sharma & Haider, 2013). The exercise has also been shown to positively alter neurochemistry, increasing levels of γ -aminobutyric acid (GABA) - a neurotransmitter that helps to relieve anxiety (Forfylow, 2011; Sharma & Haider, 2013).

Additionally, anxiety is often comorbid with many other health conditions that yoga has been shown to effectively reduce in severity, including:

- chronic pain,
- hypertension,
- fibromyalgia, and,
- depression (Sharma & Haider, 2013).

Empirical Evidence of Effectiveness

Six studies measuring the efficacy of a yoga intervention on anxiety were evaluated (Forfylow, 2011; Duan-Porter et al., 2016; Sharma & Haider, 2013; Smith et al., 2007; Streeter et al., 2010; Telles et al., 2012). The studies involve yoga as a treatment for both anxiety disorders and anxiety in general.

Methods

The studies incorporated in this review included two randomized controlled trials (Smith et al., 2007; Streeter et al., 2010) and four systematic literature reviews (Forfylow, 2011; Duan-Porter et al., 2016; Sharma & Haider, 2013; Telles et al., 2012). Measures of effectiveness included:

- self-rating anxiety scales such as the State-Trait Anxiety Inventory (STAI),
- GABA levels, determined using a magnetic resonance spectroscopy scanner,
- blood pressure measurements, and,
- qualitative feedback from participants on their experience in the yoga class.

The yoga interventions discussed in the controlled trials were adapted based on the needs and abilities of the participants, and included:

- pranayama
- asanas
- meditation (Smith et al., 2007; Streeter et al., 2010).

Based on the descriptions of the interventions, it was unclear whether the yoga practiced in these studies embodied the characteristics of TIY.

Unique Features

- The clinical trials had target populations of healthy individuals or those with mild to moderate anxiety, rather than those with a clinical diagnosis.
- In addition to questionnaires, Smith et al. (2007) conducted blood pressure measurements and Streeter et al. (2010) conducted magnetic resonance spectroscopy scans.
- Duan-Porter et al. (2016) was the only study to explicitly differentiate between types of anxiety, focusing on generalized anxiety disorder and panic disorder.

Effectiveness

The study conducted by Smith et al. (2007) found a 10-week yoga intervention to be as effective as relaxation (a control group) in reducing anxiety and stress. However, yoga provided more improvements in mental health by the end of the intervention than relaxation. There were no significant differences in blood pressure measurements between the two groups throughout the study. Six weeks after the completion of the study, the control group had significantly higher scores for social functioning, mental health, and vitality than the yoga group, which might be attributed to only 42% of participants continuing their yoga practice after the study, whereas 64% kept up with relaxation (Smith et al., 2007).

Duan-Porter et al. (2016) also found that while studies showed yoga to have a positive effect on anxiety symptoms, this positive effect was not always statistically significant, and yoga interventions had a high attrition rate.

Streeter et al. (2010) demonstrated the link between increases in GABA neurotransmitter levels and decreased anxiety. They discovered that a yoga intervention could work similarly to a pharmacological intervention by quickly increasing GABA levels. Yet, Telles et al. (2012) warn that these findings were not measured in patients where a trauma history was taken, and so it is not clear if anxious trauma victims would also gain an improved psychological state due to increases in GABA after a yoga intervention. Many anxiety studies also look for reductions in comorbid disorders, and so it is unclear if reductions in anxiety resulting from yoga are secondary due to reduction in a comorbid disorder (Sharma et al., 2012).

Yoga seems to be a promising treatment for anxiety, but issues with research methodology need to be addressed before a conclusion can be drawn (Forfylow, 2011). There is a need for more randomized, controlled trials with larger sample sizes that specify which variation of anxiety is being discussed (Forfylow, 2011; Sharma et al., 2012). Clarifying breathing techniques and the types of yoga used is especially important for identifying what kind of yoga is beneficial for anxiety, and what kinds of breathing techniques help versus aggravate prominent anxiety symptoms like shortness of breath (Forfylow, 2011).

Depression

Condition Overview

Depression is a relatively common, yet underdiagnosed and undertreated mental health disorder that affects hundreds of millions of people worldwide (Cassano & Fava, 2002).

Exposure to traumatic events is a significant risk factor for developing depression. However, experiencing trauma does not necessarily result in depression, and depression does not necessarily originate from trauma (Macy et al., 2018). When comorbid with other medical illnesses (e.g., diabetes), depression negatively impacts the outcome of the illness and is a major contributor to the global burden of disease (Cassano & Fava, 2002; World Health Organization, 2020).

Symptoms of depression can include:

- decreased mood,
- lack of pleasure/interest in activities once enjoyed, including reduced libido,
- trouble sleeping or sleeping too much, or loss of energy or increased fatigue,
- changes in appetite with weight loss or gain unrelated to dieting,
- feeling worthless, hopeless, guilty, or helpless,
- low self-esteem,
- difficulty concentrating or making decisions, and,
- thoughts of death or suicide (Cassano & Fava, 2002).

Depressive symptoms must be present for at least two weeks for a diagnosis (APA, 2017b).

Theoretical Effectiveness of TIY in Treating Depression and Anxiety

The emphasis of mindfulness in yoga practice could be helpful in addressing trauma-related depressive symptoms by promoting adaptive thinking and decreasing repetitive negative thought processes, as well as increasing concentration (Macy, et al., 2018).

Additionally, the asanas used in yoga practice are a form of aerobic exercise, which may be equally as effective as medication in treating depression, and more effective than medication at preventing relapse (Uebelacker et al., 2010).

Empirical Evidence of Effectiveness

Four studies that included analysis of the effectiveness of yoga on depression were reviewed (Cramer et al., 2013; Louie, 2013; Macy et al., 2018; Van der Kolk et al., 2014).

Methods

The studies incorporated in this review include a meta-analysis (Cramer et al., 2013), a randomized controlled trial (Van der Kolk et al., 2014), and two critical literature reviews (Louie, 2014; Macy et al., 2018). Measures of effectiveness included:

- self-rating scales, such as the Beck Depression Inventory-II (BDI-II)
- clinician-rating scales, such as the Hamilton Rating Scale for Depression
- qualitative feedback from participants on their experience in the yoga class

Unique Features

- The literature review by Louie (2014) and Cramer et al.'s (2013) meta-analysis focus exclusively on yoga for depression.
- Macy et al. (2018) conducted a literature review focusing on yoga for both trauma and its related mental health conditions (i.e., PTSD, depression, and anxiety).
- The target population for Van der Kolk et al.'s (2014) randomized controlled trial were patients with PTSD. However, measures of depression were included as the disorders are often comorbid.

Effectiveness

Van der Kolk et al. (2018) found that a weekly one-hour TIY class for 10 weeks was able to significantly reduce BDI-II depression scores (20.89 to 13.92) in women with chronic treatment-resistant PTSD. However, there is a need for more studies that explore at-risk, younger populations of both genders for findings to be generalizable. The study also did not have any formal follow-up meaning that the long-term benefits of this practice are unknown (Van der Kolk et al., 2014).

The studies reviewed by Louie (2014) found that yoga interventions with a focus on *asanas* for depression resulted in reduced depression levels, even in the one study where the yoga intervention was only used as an adjunct treatment. While these

studies were diverse in cultural representation, had low attrition rates, and included a wide age range, they were limited by their small sample sizes and non-varied participant demographics (Louie, 2014).

The meta-analysis revealed that only yoga interventions that had meditation-based yoga interventions were effective for participants with depressive disorders. This may seem contrary to the evidence found by Louie (2014), however while the interventions studied focused on *asanas*, they also incorporated meditation and *pranayama* (Currie et al., 2019; Justice et al., 2018).

Most of the studies reviewed by Macy et al. (2018) reported that yoga significantly reduced depressive symptoms. *Pranayama* and meditation aspects of yoga were found to be particularly effective in this regard. However, the *asanas* were also found to improve mood (Macy et al., 2018).

The studies reviewed demonstrate a significant benefit of TIY over regular yoga for depressed individuals. TIY presents a practical, cost-effective, and safe way to treat depression as both an adjunct and individual therapy (Cramer et al., 2013; Louie, 2014; Macy et al., 2018). Although women were mainly studied, this may not affect generalizability because the prevalence of depression in women is higher than in the overall population (Louie, 2014).

Future research should investigate how yoga is able to improve mood, and clinical trials should include larger sample sizes, longer follow-ups, and participants with varying degrees of depression severity (Cramer et al., 2013; Louie, 2014). Research should also strive for transparency of methodology, as reporting of the yoga interventions is not always clear (Cramer et al., 2013).

PTSD

Condition Overview

According to the APA (2020), PTSD is a mental health condition that can occur when someone has experienced or witnessed a terrifying event, such as natural disasters, war, or, violent personal assaults.

Symptoms of PTSD can include:

- flashbacks,

- nightmares,
- negative thoughts and feelings,
- emotional arousal, which causes heightened physiological activity and can lead to anger, irritability, difficulty concentrating, and trouble sleeping, and
- fear and avoidance of people, places, and activities that bring about distressing memories (APA, 2020).

PTSD symptoms can last for over a month after experiencing a traumatic event and can persist for years.

Theoretical Effectiveness of TIY in Treating PTSD

Yoga may be beneficial in addressing the symptoms of PTSD due to its focus on mindfulness and asanas. Studies have found that mindfulness encourages adaptive thinking and decreases the persistence of negative thoughts (Macy et al., 2018). Additionally, asanas encourage physiological benefits, such as improved sleep and enhanced self-efficacy (Macy et al., 2018).

Empirical Evidence of Effectiveness

Five studies on the use of TIY as a form of therapy for PTSD were analyzed (Gallegos et al., 2017; Liu et al., 2018; Nguyen-Feng et al., 2019a; Niles et al., 2018; West et al., 2017).

Methods

One study was a cohort review that analyzed results qualitatively using patient interviews (West et al., 2017). The remainder of the studies reviewed existing literature and included quantitative measures, such as the PTSD Checklist (PCL) arousal score and the Davidson trauma score. These studies had significant differences in their methodologies and included the following:

- 2/5 solely analyzed randomized controlled trials (Gallegos et al., 2017; Liu et al., 2018),
- 2/5 were meta-analyses (Nguyen-Feng et al., 2019a; West et al., 2017), and,
- 1/5 was a systematic literature review (Niles et al., 2018).

The interventions included hatha, breath-based, and movement yoga.

Unique Features

- The target populations varied and included anyone with a PTSD diagnosis, adults, women, and veterans.
- Interventions ranged from 22 hours to 16 weeks.

Effectiveness

Literature on TIY for PTSD often uses the term “yoga” without any qualifiers as to whether it was trauma-sensitive. To address this issue, studies that described their interventions in general terms were included if they included elements of TIY, such as participant choice, mindfulness, and breathing. Overall, research on the effectiveness of yoga as an intervention for PTSD is varied and requires further investigation.

A meta-analysis conducted by Nguyen-Feng et al. (2019a) was unable to confirm or deny the effectiveness of yoga as an intervention for PTSD. Similar studies conducted by Gallegos et al. (2017) found small to moderate effects of yoga on PTSD. While Niles et al. (2018) stated that while there may be support for yoga and PTSD, the literature is limited due to methodological weakness, such as small sample sizes.

On the other hand, several studies found that yoga was effective as an intervention for PTSD. A meta-analysis done by Macy et al. (2018) found that yoga was able to reduce PTSD symptoms for survivors of natural disasters and witnesses of combat and war. Breath work was especially effective for survivors of violence, individuals with alcohol abuse disorders, and inmates in rehabilitation programs (Macy et al., 2018).

Additionally, a meta-analysis conducted by Liu et al. (2018) found that women with PTSD who participated in 60–75-minute yoga sessions for 10–12 weeks had decreased emotional arousal and trauma scores. West et al. (2017) reported similar results for women who experienced childhood trauma. In their cohort study, they found that mindful movement regulated emotional arousal, increased the ability to experience emotions safely and promoted a sense of safety and comfort within one’s body (West et al., 2017)

Schizophrenia

Condition Overview

Schizophrenia is a chronic brain disorder that develops based on several genetic and environmental factors (APA, 2017c). Childhood trauma is a risk factor for developing schizophrenia/psychosis later in life, and there seems to be a cumulative effect of trauma exposure on the overall risk (Dennison et al., 2012). The disorder affects approximately 1% of the population and involves positive, negative, and cognitive symptoms:

- positive symptoms: hallucinations, delusions, and thought disorder
- negative symptoms: decreased motivation, reduced speaking, and reduced ability to plan, find pleasure, and express emotion
- cognitive symptoms: difficulty relating to attention, memory, and concentration (APA, 2017c; National Institute of Mental Health, 2020).

Theoretical Effectiveness of TIY in Treating Depression and Anxiety

Schizophrenia is associated with cognitive deficits and even when patients are on medication, the symptoms of the disorder often relapse. Yoga has been shown to improve cognitive functions in healthy individuals and can reduce stress (Duraismamy et al., 2007; Dodell-Feder et al., 2017). Yoga may also lower blood sugar, cholesterol, and overall body-fat content - attributes that often increase due to schizophrenia medication, leading to obesity and diabetes.

Additionally, schizophrenic patients often suffer from negative symptoms that overlap with depression, such as apathy and a lack of motivation. Research shows that yoga is effective at reducing these symptoms in patients with depression (Duraismamy et al., 2007)

Empirical Evidence of Effectiveness

Three studies measuring the efficacy of a yoga intervention on schizophrenia were evaluated (Dodell-Feder et al., 2017; Duraiswamy et al., 2007; Visceglia & Lewis, 2011).

Methods

One study was a literature review (Dodell-Feder et al., 2017) and two were randomized controlled clinical trials (Duraiswamy et al., 2007; Visceglia & Lewis, 2011). Measures of effectiveness discussed in these studies included:

- the Positive and Negative Syndrome Scale (PANSS),
- the World Health Organization Quality of Life BREF questionnaire (WHOQOL-BREF),
- the Social and Occupational Functioning Scale, and
- the Abnormal and Involuntary Movement Scale (AIMS).

The yoga interventions discussed in each study include:

- pranayama
- asanas
- meditation²

Unique Features

- Duraiswamy et al. (2007) used an active control group, comparing a yoga intervention to a physical exercise control.

Effectiveness

Symptoms related to thought disorder (TD) - disordered thinking that can lead to paranoia, hallucinations, and other negative symptoms - did not decrease after a yoga intervention (Morgan et al., 2017; Visceglia & Lewis, 2011). Since TD did not decrease in schizophrenic patients completing yoga therapy, the therapy seems to be effective as an adjunct to standard-of-care treatment, which can include antipsychotic medications if necessary (Visceglia & Lewis, 2011).

² Duraiswamy et al. (2007) did not incorporate meditation in their yoga intervention.

Visceglia & Lewis (2011) used a yoga intervention tailored to the individual, and found significant improvements in schizophrenic participant quality of life ($p < 0.04$) and psychopathology ($p < 0.01$) compared to the control group. Hospital physicians found treatment-resistant patients to be less aggressive and had overall better functioning after the yoga intervention.

Duraiswamy et al., (2007) found that after a 4-month yoga intervention, schizophrenic patients had better social and occupational functioning ($p < 0.01$), as well as better physical ($p = 0.04$), psychological ($p < 0.01$), social ($p < 0.01$), and environmental ($p < 0.01$) quality of life than a control. Although both the physical exercise control group and the yoga intervention group showed better PANSS ratings after the trial, the patients practicing yoga showed increased benefits for several schizophrenic symptoms.

Dodell-Feder et al. (2017) also found yoga to be a promising adjunct therapy for schizophrenic patients. However, the consensus among the researchers was that more high-quality studies with larger sample sizes need to be completed (Dodell-Feder et al., 2017; Duraiswamy et al., 2007; Visceglia & Lewis, 2011).

3.2.2. Special Populations

Female Sexual Assault Survivors

Population Overview

Sexual assault and violence against women are prevalent global issues that have debilitating effects on survivors' physical and mental wellbeing. More than one in three women in the United States have experienced sexual assault, and/or intimate partner violence at some point in their life (Ong et al., 2019).

Women who have experienced sexual assault or domestic violence are at an increased risk for:

- depression,
- PTSD,
- anxiety,
- eating disorders,
- self-harming behaviours, and/or,

- substance abuse (Crews et al., 2016).

Theoretical Effectiveness of TIY in Treating Female Sexual Assault Survivors

Literature states that the recovery process entails survivors taking an active role in their recovery journey by acknowledging the presence of barriers and triggers and exploring different ways to address and overcome them.

TIY is beneficial for sexual assault survivors due to its:

- tailored practice in treating symptoms of mental illness,
- incorporation of grounding techniques,
- use of safe spaces and limited physical contact,
- sense of community,
- emphasis on client choice, and,
- invitational language (Murphy et al., 2019; Ong et al., 2019; Stevens & McLeod, 2019).

Through TIY, participants report feelings of mental clarity that helps with being more present and acts as a means of expression for manifested trauma within the body (Stevens & McLeod, 2019).

Empirical Evidence of Effectiveness

Seven studies on the use of TIY for sexual assault survivors were analyzed for this report (Clarke et al., 2014; Cooke-Cottone, 2018; Crews et al., 2016; Murphy et al., 2019; Ong et al., 2019; Stevens & McLeod, 2019; Rousseau et al., 2019b).

Methods

A mixed-methods approach was common among the studies. Semi-structured interviews were incorporated into the studies in order to gain a holistic understanding of participants' lived-experiences with TIY and its perceived effectiveness on their mental illness symptomatology. To quantitatively measure the effectiveness of TIY and the symptom severity of their mental illness, researchers used Hospital-Anxiety and Depression Scales and the PCL–Civilian Version.

All studies mentioned that the yoga instructors were certified in TIY. None of the studies mentioned the style of yoga used.

Unique Features

- Of the seven studies, Clarke et al. (2014) was the only one to have a control group.
- In one study, to mitigate triggers the instructor guided participants through their practice in an individualized way in order to consciously give power back to participants who have lost power and control after being sexually violated (Rousseau et al., 2019b).

Effectiveness

Four of the seven studies identified breathwork, specifically controlled breathing, as a key component of TIY that helped survivors with:

- anxiety,
- depression,
- improved sleep, and,
- decreased physical tension (Crews et al., 2016; Murphy et al., 2019; Ong et al., 2019; Stevens & McLeod, 2019).

Many participants reported integration of breathwork into their daily lives leading to:

- enhanced mental ability by increasing clarity of thoughts,
- improved concentration, and,
- diminished feelings of anxiety (Ong et al., 2019).

All seven studies had small sample sizes (5–15) and recommended that future studies have larger samples with greater diversity regarding gender, race, sexual orientation, and levels of yoga familiarity and ability (Murphy et al., 2019; Rousseau & Cooke-Cottone, 2018; Stevens & McLeod, 2019). The time between the assault and yoga intervention is another important consideration that can contribute to the efficacy of TIY (Crews et al., 2016).

Incarcerated Populations

Population Overview

Compared to non-incarcerated populations, prisoners commonly report higher levels of:

- personal distress,
- aggression,
- anti-social behaviour, and,
- substance abuse (Bartels et al., 2019; Harner et al., 2010; Muirhad & Fortune, 2016; Wimberley & Xue, 2016).

The lack of privacy, freedom, and social support associated with incarceration can negatively affect the physical and mental well-being of inmates (Duncombe et al., 2005). While current rehabilitation programs provide education and vocational training to inmates, they do not always provide support for mental wellbeing.

Theoretical Effectiveness of TIY in Treating Incarcerated Populations

Criminal justice officials believe that yoga and mindfulness programs could be a cost-efficient method for addressing the psychological needs of inmates since they could treat multiple people with one instructor (Auty et al., 2017; Sumter et al., 2009).

Several yoga programs have emerged in the last decade to meet this need, such as the Prison Yoga Project (2017) and Yoga 4 Change (2020).

Researchers in the United States, Britain, and Australia have recently conducted several studies of yoga programs with inmate populations to test their effectiveness on prisoner rehabilitation.

Empirical Evidence of Effectiveness

Eight studies on the use of TIY with incarcerated populations were reviewed for this report (Auty et al., 2017; Bartels et al., 2019; Bilderbeck et al., 2013; Duncombe et al., 2005; Harner et al., 2010; Rousseau et al., 2019a; Sumter et al., 2009; Wimberley & Xue, 2016).

Methods

All reviewed programs implemented a mixed-methods approach, including demographic questionnaires, qualitative interviews, and the use of pre- and post-testing Likert rating scales, such as the Perceived Stress Scale, Positive and Negative Affect Scale, Beck Depression and Anxiety Inventory, Rosenberg Self-Esteem Scale, and the PCL. The findings of these studies were largely based on inmate self reporting.

Only two of the nine studies used a control group (Bilderbeck et al., 2013; Sumter et al., 2009).

The following interventions were used by all studies:

- breathwork,
- meditation, and,
- yoga poses.

Only two studies specified the branch of yoga used - hatha and iyengar yoga (Bilderbeck et al., 2013; Harner et al., 2010). The rest were vague about the yoga style and postures used, as well as the training of the yoga instructors. However, Wimberley and Xue argue that hatha yoga is the most used yoga in studies with inmates (Wimberley & Xue, 2016).

Unique Features

Only one study, Bilderbeck et al. (2013), attempted to examine the physiological results of participating in a TIY program. They conducted a cognitive behavioural test before and after their 10-week yoga program to assess the inmate's executive functions, particularly their attention capacity and behavioural response.

Effectiveness

All studies reported that inmates who participated in TIY programs showed:

- improved moods, and,
- reduced symptoms of depression, anxiety, and aggression.

Two studies also reported that TIY programs provided inmates with valuable coping tools (e.g., breathwork) for managing emotions and stresses in their daily life (Rousseau et al., 2019a; Sumter et al., 2009).

Four studies concluded that these positive outcomes could not be generalized, due to small sample sizes and lack of a standardized methodology. However, they did agree that TIY programs show potential as a compliment to existing rehabilitation efforts for incarcerated populations (Auty et al., 2017; Bartels et al., 2019; Bilderbeck et al., 2013; Duncombe et al., 2005).

Bilderbeck et al. (2013) reported that the inmates who participated in the yoga sessions showed improved performance and accuracy in the cognitive behavioural test compared to the control group.

Veterans

Population Overview

Due to the nature of their work, service members frequently experience traumatic incidents while serving in the military, including life-threatening experiences, sexual harassment, and sexual assault. As a result, between 10-30% of veterans experience PTSD in their lifetime (U.S. Department of Veterans Affairs [USDVA], “How common is PTSD”). To further understand this subcategory of individuals with PTSD, the effectiveness of yoga for the treatment of PTSD in service members, veterans, and individuals with combat-related PTSD was evaluated.

Theoretical Effectiveness of TIY in Treating Veterans

Due to its focus on slow rhythmic breathing, yoga can combat heightened states of physiological activity that is often characteristic of veterans with PTSD. It was found that yoga activated the parasympathetic nervous system, allowing for greater regulation of heart rate, blood pressure, and stress hormones (Cushing et al., 2018).

Yoga has also been shown to help veterans increase strength, endurance, and discipline, and provide a greater sense of purpose (Steele et al., 2018). The perceived benefits of yoga led to the U.S. Department of Veterans Affairs requiring that all Veterans Affairs medical facilities make yoga available to their veterans (Avery et al., 2018).

Empirical Evidence of Effectiveness

Four cohort studies that analyzed yoga as a form of treatment for veterans with PTSD were evaluated (Avery et al., 2018; Cushing et al., 2018; McCarthy et al., 2017; Zalta et al., 2018).

Methods

The interventions used in these studies include hatha and vinyasa-style yoga with an approach that was based on military culture. All studies analyzed results quantitatively using scales, such as the PCL arousal score and the Patient Health Questionnaire.

Unique Features

The target populations in these studies included patients with combat-related PTSD, active service members, and veterans. The length of the yoga sessions ranged from 60-90 minutes for a period of 6-16 weeks.

Effectiveness

Overall, the research showed positive results for the use of yoga for veterans with PTSD. Conducting a three-week intensive outpatient treatment program, Zalta et al. (2018) found that yoga resulted in a “meaningful reduction of PTSD and depression symptoms.” Their study showed that symptom reduction was slow in the first week of treatment and accelerated in weeks two and three. Since many patients were still symptomatic at the end of the program, the researchers concluded that ongoing outpatient treatment is needed to sustain positive results.

Similar results were found in additional studies where patients who did yoga that lasted between 6-16 weeks experienced a decrease in PTSD symptoms (Avery et al., 2018; Cushing et al., 2018; McCarthy et al., 2017). For example, Cushing et al. (2018) reported that for their entire sample the total PCL-M score decreased 17.6 points from the mean score of 47.7. However, the reduction in symptoms was greater for individuals who were new to yoga, suggesting that improvement may level out over time (Avery et. al, 2018).

In one study, a veteran led the intervention. In this case, the results of TIY were highly effective, leading to the hypothesis that tailored interventions are valuable for veterans (Cushing et al., 2018).

Youth

Population Overview

Youth can be subject to a multitude of traumatic experiences in their formative years, including but not limited to:

- physical, emotional, or sexual abuse,
- neglect,
- poverty, or,
- witnessing domestic violence or substance abuse.

Exposure to trauma as a child can have severe consequences, as it impacts:

- cognitive function and emotional control, and,
- increases the likelihood of depression, anxiety, substance abuse, or suicide (Cochrane et al., 2019; Ortiz & Sibinga, 2017; Razza et al., 2020).

Since youth express trauma symptoms differently than adults, they are often misdiagnosed as having behavioural problems or unrelated symptoms or conditions (e.g., eating disorder) (Cochrane et al., 2019; Spinazzola et al., 2011).

Theoretical Effectiveness of TIY in Treating Youth

Scholarship on youth and trauma has been focussed on the creation of accessible mindfulness-based interventions to help traumatized youth gain a better sense of their own bodies, develop emotional and behaviour controls, and cope with daily stressors (Spinazzola et al., 2011).

Scholarship on TIY interventions and youth are limited. The few studies that exist have attempted to see if successful yoga interventions with adults can be applied to youth and show similar results.

Empirical Evidence of Effectiveness

Four studies on the use of TIY with youth populations were reviewed for this report (Cochrane et al., 2019; Ortiz & Sibinga, 2017; Razza et al., 2020; Spinazzola et al., 2011).

Methods

All studies used a mixed-methods approach, including qualitative interviews, demographic questionnaires, and the use of pre- and post-testing Likert rating scales, such as the PCL, Child PTSD Symptom Checklist, Hospital Anxiety and Depression

Scale, and the Canadian Personal Recovery Outcome Measure. The findings of these studies were largely based on staff observations and participant responses.

The following interventions were used by all studies:

- breathwork,
- choice, and,
- gentle yoga poses (e.g., child and cat/cow).

Only one of the four programs reviewed specified the branch of yoga (hatha) used in their study (Spinazzola et al., 2011).

Unique Features

For these studies, the TIY intervention often had to be adjusted to meet the age and needs of child participants. For example:

- Teachers and/or support staff also took part to show support (Spinazzola et al., 2011).
- Classes were held at youth centres or at the youths' school in order to maintain their daily routines.
- Sample sizes were chosen based on the severity of youth trauma (e.g., one participant to full classrooms) (Cochrane et al., 2019; Razza et al., 2020; Spinazzola et al., 2011).

Effectiveness

All studies reported that youth who participated in TIY programs showed:

- improved emotional control,
- reduced feelings of depression and anxiety, and,
- increased focus in class.

However, Cochrane et al. (2019) noted that the cost of yoga classes could be a barrier for lower-income traumatized youth.

The consensus among these researchers was that further research, specifically long-term studies, need to be conducted. They concluded that TIY provides a useful coping tool for daily stressors and could be a good compliment to other youth therapy options (Cochrane et al., 2019; Houser, 2015; Razza et al., 2020; Spinazzola et al., 2011).

4.0. Conclusion

Although the research in this area is limited, preliminary findings for the effectiveness of TIY as a trauma therapy show positive outcomes. It has been demonstrated that TIY can improve sleep, increase concentration, decrease negative thinking, and regulate emotional arousal (Macy et al. 2018; West et al. 2017). Populations that might benefit from TIY include individuals with PTSD, such as veterans, sexual assault survivors, inmates, and youth, and individuals with depression, anxiety, and addictions and substance abuse.

However, scholars are hesitant to generalize these preliminary findings since studies measuring the effectiveness of TIY as a trauma therapy tend to lack a standardized methodology, with the parameters of their interventions (e.g., the style of yoga practiced by participants) varying between studies. Moreover, intervention periods are short and study sizes are small. Further, interventions of early studies on TIY tended to lack a control group, though more recent studies have begun to include them (Bilderbeck et al., 2013; Clarke et al., 2014; Duraiswamy et al., 2007; Reddy et al., 2014; Shaffer et al. 1997; Smith et al., 2007; Sumter et al., 2009; Van der Kolk et al., 2014; Visceglia & Lewis, 2011).

The current consensus is that while there is not enough data to generalize the effectiveness of TIY as a primary therapy, positive outcomes from past studies suggest that having yoga as a complementary treatment in addition to psychopharmaceuticals, trauma reduction exposure therapy, and/or psychotherapy could lead to greater effectiveness in symptom reduction (Murphy et al., 2019). For example, Visceglia and Lewis demonstrated in their 2011 study that yoga is most effective in conjunction with stand-of-care treatment in reducing TD symptoms of schizophrenic patients. Stevens and McLeod (2019) note that TIY is a beneficial adjunct to counselling for women who have experienced sexual violence. Additionally, Cochrane and colleagues (2019) have demonstrated that TIY is a good adjunct treatment for youth suffering from trauma. Conclusively, these findings suggest that TIY is an effective adjunct for various groups of trauma survivors, irrespective of age.

Despite the demonstrated effectiveness of TIY in various populations of trauma survivors, a growing concern mentioned in the literature is the accessibility of this service. Stevens and McLeod (2019) touch on the scarcity of registered TIY instructors and yoga studios in various urban and rural areas in Canada and the United States. This has led to generalizable areas of concern by the research team such as membership costs and geographical locations and distances between potential clients and a TIY studio. Due to the relatively high rates of trauma-related disorders amongst

the general population in Canada (Van Ameringen et al. 2008), increasing the accessibility of TIY programs and also reducing the stigma associated with accessing these services could help more individuals, irrespective of income level, age, or sex, experiment with using TIY to aid their wellness journey.

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