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Aida Smajic Date

Assess the use of mind-body interventions to treat PTSD symptoms and improve well-being and quality of life in adolescents exposed to war-related trauma in post-conflict communities in Bosnia & Hercegovina.

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Master of Science in Public Health

Prevention Science

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An abstract of

A thesis submitted to the Faculty of the

Rollins School of Public Health of Emory University in partial fulfillment of the requirements

for the degree of Master of Science in Public Health

in Prevention Science

2021

Abstract

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An exposure to unexpected extreme traumatic events can lead to Posttraumatic-stress disorder (PTSD) in up to 10 – 40% of war survivors (Sareen, 2014). Evidence suggests that PTSD symptoms and psychological distress can persist far beyond the years of experiencing the occurrence exposure (Hasanovic et al., 2008). During the war from 1992-1995 in Bosnia & Hercegovina, civilians experienced ongoing life-threatening events and trauma with a high risk of developing PTSD under such conditions. The war had an enormous mental health impact and psychological consequences on Bosnian civilians from exposure to long-term and multiple severe traumatic experiences (Ringdal & Ringdal, 2016). According to the World Health Organization, 10%-50% of Bosnia's population, or 400,000 people, have been diagnosed with PTSD (Milic, 2011). However, internal organizations supporting citizens with PTSD argue that number is closer to 1.7 million. Still, due to stigmatization, lack of awareness of symptoms, and education surrounding this mental illness, the prevalence may be higher than the 400,000 diagnosed, given the higher estimate of suspected cases.

Bosnia & Hercegovina (BiH) is still coming out of post-conflict conditions, driven by widespread political corruption and economic stagnation, which have a further negative impact on mental health beyond the influence of cumulative trauma exposure from the war (Comtesse et al., 2019). Untreated PTSD after exposure to severe trauma during the Bosnian war that lasted from 1992-1995, and post-war conditions, might perpetuate psychological consequences and high rates of Post-Traumatic Stress Disorder (PTSD) in Bosnian civilians (Ringdal & Ringdal, 2016). In a country where access to mental health care is limited and PTSD highly stigmatized, it is prudent and humane to seek innovative public health interventions to improve mental health outcomes and quality of life for Bosnian citizens by providing broader access to promising alternative treatment options. While the use of mind-body interventions to treat PTSD is receiving increasing attention in clinical trials involving war veterans in the US, to date, no research has been performed on Bosnian adolescents exposed to war trauma using alternative methods to treat PTSD symptoms (Hilton et al., 2017).

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Acknowledgments

As a child of war, the details behind the research became realizations of how the Bosnian war affected me so deeply. I found my own experiences written between these lines many times having fled war-torn Bosnia & Hercegovina and becoming a refugee.

What helped push me forward are the many voices of those that helped me get to this point. I arrived in America at ten years old with no knowledge of the English language. I want to thank the many teachers that believed in me along the way and gave me a hand until I could stand on my own.

To my incredibly loving family and partner.
Thank you for your unconditional love of me through this chapter of my life.

To a more hopeful Bosnia.

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Chapter I: Introduction

An exposure to unexpected extreme traumatic events can lead to Posttraumatic-Stress-Disorder (PTSD) in up to 10 – 40% of war survivors (Sareen, 2014). Evidence suggests that PTSD symptoms and psychological distress can persist far beyond the years of exposure to traumatic events (Hasanovic et al., 2008). During the war from 1992-1995, Bosnian civilians experienced ongoing life-threatening events and trauma with a high risk of developing PTSD under such conditions. With an estimated population of four million in 1992, two million people were either internally displaced or forced to flee their homes and become refugees. An estimated 200,000 were killed, with 90% of these civilians, as a result of the conflict (Lampe, 2020). The war had an enormous mental health impact and psychological consequences on Bosnian civilians from exposure to long-term and multiple severe traumatic experiences (Ringdal & Ringdal, 2016). Many suffered and witnessed the most heinous crimes against humanity, including witnessing persons killed and sexually abused, including systemic rape (Lampe, 2020). All of which are risk factors for developing PTSD.

Bosnia & Hercegovina (BiH) is still coming out of post-conflict conditions, driven by widespread political corruption and economic stagnation, including the world's largest youth unemployment rate, which further harms mental health beyond the influence of cumulative trauma exposure (Comtesse et al., 2019). According to the World Health Organization, 10%-50% of Bosnia's population, or 400,000 people, have been diagnosed with PTSD (Milic, 2011). However, internal organizations supporting citizens who have PTSD argue that the number is closer to 1.7 million, nearly half of the country's population. In a country where mental illness

and PTSD are highly stigmatized, it is imperative to investigate public health interventions to bring awareness and improve mental health outcomes and quality of life for Bosnian citizens by providing alternative treatment options. This thesis aims to assess the use of mind-body interventions, such as yoga and mindfulness meditation, to treat PTSD in adolescents exposed to war-related trauma. While mind-body interventions to treat PTSD are receiving increasing attention in clinical trials involving war veterans in the US, no research has been performed on Bosnian war survivors using alternative methods to treat PTSD (Hilton et al., 2017). There is a need to assess the effectiveness of mind-body interventions to treat PTSD symptoms and improve the well-being and quality of life in adolescents exposed to war-related trauma in post-conflict communities in Bosnia.

Problem Statement

Long-term exposure to severe trauma during the Bosnian war that lasted from 1992-1995, and post-war conditions, might perpetuate psychological consequences and high rates of Post-Traumatic Stress Disorder (PTSD) in Bosnian civilians (Ringdal & Ringdal, 2016).

Purpose Statement

To assess the use of mind-body interventions to improve PTSD symptoms, well-being, and quality of life of adolescents exposed to war-related trauma in post-conflict communities in Bosnia & Hercegovina.

Proposed Research Question or Project

The project includes these specific objectives:

Aim 1: To explore the experiences and perceptions of current treatments available to persons with PTSD in Bosnia and how this impacts their quality of life.

Aim 2: To pilot a mind-body intervention program for the target population who meet PTSD criteria designed to improve symptoms of PTSD, including stress, depression, and anxiety.

Aim 3: Evaluation of the pilot program to treat Post-Traumatic Stress Disorder in adults who may have experienced war trauma as adolescents. At the end of the program, participants will be reassessed using the PTSD Checklist for DSM-5 (PCL-5) to measure outcomes related to PTSD symptom changes.

Significance Statement

Untreated PTSD after exposure to severe trauma during the Bosnian war that lasted from 1992-1995, and post-war conditions, might perpetuate psychological consequences and high rates of Post-Traumatic Stress Disorder (PTSD) in Bosnian civilians (Ringdal & Ringdal, 2016). In a country where access to mental health care is limited, and PTSD is highly stigmatized, it is imperative to investigate public health interventions to improve Bosnian citizens' mental health outcomes and quality of life. While the use of mind-body interventions to treat PTSD is receiving increasing attention in clinical trials involving war veterans in the US, to date, no research has been performed on Bosnian war survivors using the alternative method to treat PTSD (Hilton et al., 2017). Despite the widespread popularity of complementary and alternative medicine for treating PTSD in the US, the exact extent of mind-body efficacy and potency in symptom reduction is not well evaluated. Mind-body interventions to treat PTSD in adolescents exposed to war trauma in Bosnia are an approach to healing many individuals suffering. A mind-

body intervention to treat mass trauma provides a gateway to improve PTSD symptoms while empowering individuals to take part in a holistic treatment that only uses their physical body and mind to get better. The imminent danger of the war is gone, and what remains now is the aftermath of PTSD, which deserves a closer look at helping current and future generations cope with mental health problems.

Definition of Terms

Adolescents: all individuals under the age of 18.

Alternative medicine: "If a non-mainstream approach is used in place of conventional medicine, it is considered alternative" (National Center for Integrative Health, 2021).

BiH: Bosnia and Herzegovina

Canton: is defined as a small territorial division established for political or administrative purposes (Merriam-Webster, 2021).

Complementary and Alternative Medicine (CAM): CAM is Complementary and Alternative medicine are medicines and health practices that are not usually part of conventional treatments or medicine. Complementary medicine is used in addition to standard treatments, while alternative medicine is used instead of standard treatments (National Center for Integrative Health, 2021). Examples of complementary and alternative medicine include acupuncture, tai chi, vitamins, herbs, meditation, yoga, and other mind-body therapies (CDC, 2021).

Complementary medicine: "If a non-mainstream approach is used together with conventional medicine, it is considered complementary" (National Center for Integrative Health, 2021).

Holistic: treatment of the whole person by considering mental and societal factors in the health outcome, rather than just the symptoms of the disease.

Mind-Body Medicine: Mind-body medicine uses the power of thoughts and emotions to influence physical, mental, and emotional health and is a term that demonstrates physical, chemical, mental, and spiritual interconnectedness to affect the state of health (Shealey, 2011).

Mind-Body intervention: is a term that encompasses a wide variety of stress-relieving techniques. These include biofeedback, relaxation training, yoga, meditation, guided imagery, spiritual healing, prayer, and many other short-term psychotherapeutic interventions (Shealey, 2011).

Mindfulness: is defined as "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of an experience, moment by moment" (Kabat-Zinn et al., 2003).

Mindfulness Meditation: is defined as a "nonelaborative, nonjudgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is" (Gethin, 2011; Bishop et al., 2004).

Quality of Life (QOL): is defined by the World Health Organization as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" (World Health Organization, 2021).

Post-Traumatic Stress Disorder (PTSD): is defined as "a psychiatric disorder that can occur in people who have experienced or witnessed a traumatic event such as a natural disaster, a serious accident, a terrorist act, war/combat, rape, or other violent personal assault" (American Psychiatric Association, 2020).

Chapter II: Review of the Literature

This section discusses the statistics of Bosnians exposed to war trauma during the war from 1992-1995 and the mental health repercussions, including a high prevalence of Post-Traumatic Stress Disorder. The review gives special attention to children exposed to war trauma and the consequences of unhealed trauma in post-war communities within this vulnerable population. An overview of PTSD for a mental health diagnosis and symptoms will be discussed; currently, clinically recommended treatment options and the justification for using mind-body interventions over the traditional modes of treatment for the mental health disorder are discussed. This section highlights the available research of PTSD patients utilizing a mind-body intervention, focusing on mindful meditation and yoga, and their efficacy in reducing common symptoms associated with the disorder. Motives for implementing mind-body interventions as a treatment modality among adolescents exposed to war trauma and PTSD are considered and discussed in detail in the context of Bosnia and Hercegovina.

A review of the available literature regarding mind-body practices in the treatment of PTSD patients will provide a body of evidence to support the vital role of how alternative and holistic treatments are gaining traction and contributing to the improvement of individuals who have a mental illness. The research provides a glimpse into looking for new ways to treat PTSD over the traditional treatments. While clinically effective, many patients continue to have residual symptoms and ask for various treatment options expressed from the patient's point of view. The literature selected has been from authors with considerable reputations and experience in studying mind-body interventions and PTSD. As mind-body intervention studies have not been performed under any capacity to treat PTSD in Bosnia & Hercegovina, the potential to explore

this area within this target group could bring exuberant potential benefits to improve the well-being and quality of life in adolescents exposed to war-related trauma in post-conflict communities in Bosnia.

Mental disorders impair cognition, emotion, and behavioral control and are on the rise around the globe. The high prevalence, early onset of disease, a chronic or remitting and relapsing clinical treatment, and impairment of critical brain functions make mental disorders a significant contributor to the global disease burden (Hyman et al., 2016). PTSD or Post-traumatic stress disorder is one such mental disorder. Evidence suggests that PTSD symptoms and psychological distress can persist far beyond the years of the traumatic events occurrence exposure, making it a particularly complex disease, yet one which can adversely affect normal functioning and quality of life when left untreated (Hasanovic et al., 2008). According to the American Psychiatric Association, 3.5% of the adult population will develop PTSD in their lifetime (American Psychiatric Association, 2020). While lifetime prevalence of the mental disorder is between 1.8 - 8.8%, this number is significantly higher for survivors of rape and war conflict at 50% (Bisson et al., 2015).

PTSD or Post-Traumatic disorder is a common and complex psychiatric disorder that may develop after experiencing a traumatic event such as a natural disaster, war, a terrorist attack, a life-threatening accident, rape, or being threatened with death, sexual violence, or injury. The complexity with diagnosing PTSD is that its clinical definition for diagnosis has varied over recent DSM-editions and shares comorbidity with other mental health disorders such as depression, panic disorder, and anxiety. Overlapping symptom criterion is common. DSM-5 lists

20 symptoms under four distinct groups to be diagnosed with PTSD. Each of the symptoms must be associated with the traumatic event. The four core features of PTSD include:

> (1) Intrusion symptoms: experiencing or witnessing a stressful event, re-experiencing symptoms of the event that include nightmares and (or) flashbacks.
>
> (2) Avoidance symptoms: efforts to avoid situations, places, and people that are reminders of the traumatic events.
>
> (3) Alterations in arousal and reactivity, or hyperarousal: irritable behavior and angry outbursts, hypervigilance, concentration problems, and sleep disturbances.
>
> (4) Negative alterations in cognition and mood: persistent and exaggerated negative beliefs or expectations about oneself, others, or the world, and feelings of detachment or estrangement from others (Bisson et al., 2015).

The difference between PTSD and other associated mental disorders is the re-experiencing of symptoms in relation to the traumatic event. Not every individual who experiences a traumatic event will develop PTSD. However, there is a dose-response relation between the severity and duration of a traumatic event and the risk for developing PTSD. Predicting who will develop PTSD is challenging, as symptoms can be delayed years after experiencing a traumatic event. It is also essential to consider that while an individual may not meet all PTSD criteria for diagnosis, an intervention is needed as studies demonstrate that mental impairment can be as significant as compared to those that meet full PTSD diagnosis criteria. Over the past thirty years, PTSD has become more widely researched in the scientific community as exposure to

traumatic events becomes more prevalent globally and more evidence-based data is becoming available for treatment interventions showing promising results.

An exposure to unexpected extreme traumatic events can lead to Posttraumatic-stress disorder (PTSD) in up to 10–40% of war survivors (Sareen, 2014). Evidence suggests that PTSD symptoms and psychological distress can persist far beyond the years of exposure to traumatic events. Symptoms can emerge months or even years after the traumatic event exposure and may persist indefinitely (Hasanovic et al., 2008).

During the Bosnian war from 1992-1995, civilians experienced ongoing life-threatening events and trauma with a high risk of developing PTSD under such conditions. The war had an enormous mental health impact and psychological consequences on Bosnian civilians from exposure to long-term and multiple severe traumatic experiences (Ringdal & Ringdal, 2016). Many suffered the most heinous crimes against humanity, including witnessing persons killed and sexually abused, including systemic rape (Lampe, 2020). At the same time, each of these events alone is a high-risk factor for developing PTSD, many experienced or witnessed multiple atrocities during the war.

According to the World Health Organization, an estimated 10%-50% of Bosnia's population, or 400,000 people, have been diagnosed with PTSD (Milic, 2011). However, internal organizations supporting citizens with PTSD argue that number is closer to 1.7 million. Still, due to stigmatization, lack of awareness of symptoms, and education surrounding this mental illness, the prevalence may be higher than the 400,000 diagnosed, given the higher estimate of suspected cases. Bosnia & Hercegovina (BiH) is still coming out of post-conflict conditions today, driven by widespread political corruption and economic stagnation, which have a further negative

impact on mental health beyond the influence of cumulative trauma exposure from the war (Comtesse et al., 2019). Given that long-term traumatic and stressful experiences like war take a long time to heal, it is prudent and humane to seek innovative public health interventions to improve Bosnian citizens' mental health outcomes and quality of life.

With an estimated population of four million in 1992, two million residents were either internally displaced or forced to flee their homes and become refugees, and an estimated 200,000 were killed (Lampe, 2020). Of the war's causalities, 90% of the victims were innocent civilians (Lampe, 2020). Of the overall death rate, 3.5% of the victims were children. Data from the Ministry of Human Rights and Refugees of Bosnia and Herzegovina reveals that an estimated 18,000 children became orphans, 15,757 children lost their fathers, and 3,751 children lost their mothers because of the conflict ("First Report," 2001). Of those impacted by the exposure to war, children were the most vulnerable population affected. Three prime indicators increase the likelihood of a child developing PTSD: the severity of the traumatic experience, how close the child is to the trauma, and how the parents react to the event. The traumatization of the child's caretakers (i.e., caretaker develops PTSD), or the loss of one or both parents, further increases the likelihood of the child developing PTSD. In a literature review of studies available on children exposed to trauma during the Bosnian war by Hasanovic, there are significant predictor variables for the development of PTSD symptoms. These include being female, children who lost one or both parents in the war, another close family member, and children living in rural areas (Hasanovic, 2011). The child's reaction to trauma and its extent on their psychological development and outcomes will vary depending on their age, family structure or other support systems, and resilience levels.

Additionally, it should be noted how difficult it is to access timely treatment in post-conflict countries. Untreated PTSD in children can lead to a higher risk of developing other mental health disorders later in life, such as depression, anxiety, substance abuse, and suicidal thinking when immediate intervention and treatment are not possible or available. For this reason, PTSD in children can carry long-term chronic problems into adulthood.

To better understand the multi-layers of lived experiences of children and adolescents impacted by war, testimonials in their narrative form, whether as life stories, or drawings would provide a complete picture and more insight into the depths of the trauma on their quality of life (Lustig & Tennakoon, 2008). In addition to facing cognitive impairments, long-term costs of untreated PTSD have been associated with other significant health risks such as chronic musculoskeletal pain, cardiovascular diseases, hypertension, and obesity (McFarlane, 2010).

Using a sheerly clinical approach to identify children with PTSD is insufficient and should only lay the grounds for intervention. More needs to be done. Each child's war experience manifests itself differently throughout adulthood. It is separated by years of other environmental influences working to influence the individual, such as their own beliefs and narrative of the event, family, community members, and how their surrounding communities recall the experience. An ecological viewpoint of a child exposed to trauma should be considered in public health interventions to address service gaps resulting from the clinical-psychosocial dichotomy (Betancourt et al., 2013). PTSD develops after experiencing a traumatic event, but its lingering effect on the mental psyche in the aftermath of years living in a post-war community whose citizens have not healed. Therefore, achieving mental health should be a priority for these children, as the simple absence of PTSD in children who experienced trauma is not the only

indicator of a healthy individual. WHO describes mental health as a state of "well-being in which the individual realizes his or her own abilities, can cope with the normal stressors of life, can work productively and is able to make a contribution to his or her community" (World Health Organization, 2018). One might consider how experiencing childhood war trauma, and the consequences of living in post-war communities might withhold a child from their ability to reach their highest potential. It might weaken their ability to trust others and cause relationship difficulties, and how it impacts their ability to function in daily life.

The challenge is two-fold. For adults with PTSD in Bosnia, there is a need for societal acceptance of the disorder without the fear of stigmatization. Likewise, in accepting that treatment exists that can be sought out and practiced, even now so far removed from the catalyst point (i.e., enduring the war). For children directly exposed to the war or influenced by their parents/ caretakers who were also traumatized from this time, there is a need to understand the role of generational trauma that might be inherited by future generations (Kravic, 2020). PTSD by indirect exposure to the war might also cause PTSD as trauma has the potential to impact across generations, causing subsequent psychological, social, and emotional difficulties in children (Christie et al., 2019; van Ee et al., 2016). In a study published in the Journal of Depression and Anxiety, 160 mothers of preschool children were interviewed about symptoms exhibited by their children following exposure to missile attacks fired into Israel from Gaza from December 2008 to 2009. While fewer than 10% of the mothers developed PTSD from these attacks, more than a fifth (21%) of their children showed symptoms of PTSD ("American Associates," 2013). The study, along with other similar research, identifies how parental response in times of high stress can result in children developing PTSD symptoms through their own mother's exposure to trauma.

Based on the available scientific research, the American Psychological Association provides a list of clinical practice guidelines and interventions recommended for treating PTSD after the trauma exposure occurrence. The first line of treatment recommended is cognitive-behavioral therapy (CBT), eye movement desensitization, and reprocessing (EMDR). They are equally effective psychological therapy methods in treating adults, children, and adolescents who have been diagnosed with PTSD (Gillies et al., 2013). The National Institute of Health and the World Health Organization recommends drug treatment second to trauma-focused therapy showing statistically significant evidence of a reduction in the severity of PTSD symptoms only for four drugs, including fluoxetine, paroxetine, sertraline, and venlafaxine (American Psychological Association, 2017). Although these interventions demonstrate clinical effectiveness for treating PTSD, a 50% incompletion rate, coupled with many patients showing residual PTSD symptoms and thus dissatisfaction with the treatment outcomes, provides a need for considering alternative treatment options. The traditional way of treating PTSD is not ideal. Patients with PTSD, more than ever, want more choice in approaching their well-being using a treatment model that is less intrusive and works for their lifestyle. One such approach is the use of complementary and alternative medicines. Dating back more than 25 centuries, the adaption of Buddhist mindfulness techniques and stress-and relaxation techniques sparked the scientific community after studies provided promising evidence for these therapeutic interventions for reducing symptoms of mental health disorders warranting further study (Baminiwatta & Solangaarachichi, 2021).

A review of primary mental health research areas from 1966-2015 shows that a significant cluster of available mindfulness research in relation to its distinct role in treating PTSD. Trends and development of most recent mindfulness research reveal that PTSD is the 13th most popular research area. Research linking PTSD and mindfulness is expanding, as evidenced by the

growing number of articles on mindfulness published in the scientific literature. Amongst the most cited mindfulness-based treatment approach in clinical settings is the Mindfulness-based Stress Reduction (MBSR) program in treating common mental disorders such as PTSD, depression, and anxiety. Jon Kabat-Zinn first introduced the Mindfulness-based Stress Reduction (MBSR) program in 1979 to treat chronic pain in patients by focusing on mindfulness-based practices through meditation. Since its introduction in the 1970s, more than 250 medical and clinical centers worldwide have used the MBSR model to help patients manage their physical and emotional pain. Created with an intentionally secular lens drawing from the Buddhist tradition, Kabat-Zinn defines mindfulness meditation as "the awareness that arises from paying attention, on purpose, in the present moment and nonjudgmentally" (Kabat-Zinn, 2003). In an interview, Kabat-Zinn explains that by focusing on our breathing, the idea is to cultivate attention on the body and mind as it is moment to moment to help with physical and emotional pain (Booth, 2017). The program consists of eight weeks of 2- 2.5-hour group sessions and a full-day silent meditation retreat towards the end of the intervention (Boyd et al., 2018). Over eight weeks, sessions cover multiple mind-body approaches, including mindfulness meditation, yoga, discussion about stress and coping, weekly homework, and daily mindfulness practice (Kabat-Zinn et al., 1992).

More recently, non-trauma-focused psychotherapy for treating PTSD symptoms, including mindfulness meditation and relaxation training like yoga practice, has similar efficacy to trauma-focused CBT and EMDR after treatment (Gallegos et al., 2017). Trauma-focused interventions such as Cognitive Based behavioral therapy have higher drop-out rates as compared to non-trauma-based focused therapies. A review of the available literature shows that mindful-based treatments or present-centered therapies for PTSD were equally efficacious compared with

trauma-focused treatments with significantly lower drop-out rates (Frost et al., 2014; Boyd et al., 2018). The differences may be attributed to the idea that non-trauma-focused interventions are more emotionally tolerable and more appealing to individuals with PTSD without the expectation to keep remunerating over, discussing, and re-experiencing the past trauma with a clinical provider. Poor completion rates and remission rates of existing standard PTSD interventions suggest that something new is warranted.

Thus, there is an appeal towards research in complementary and alternative approaches used as either stand-alone practices or integrated with current practices for reducing symptoms of mental health disorders. The National Center for Complementary and Integrative Health defines complementary approaches as non-mainstream practices typically used together with conventional medicine (National Center for Complementary & Integrative Health, 2021). The complete list of complementary approaches to treat PTSD includes meditation, yoga, acupuncture, mindfulness-based stress reduction, deep-breathing exercises, guided imagery, hypnotherapy, progressive relaxation, and tai chi (Clarke et al., 2015). Mind-body practices provide clinicians and patients the opportunity to explore an effective treatment plan as part of ongoing self-care in improving PTSD symptoms that have shown positive impacts on stress-induced illnesses such and PTSD (Kim et al., 2013).

In the United States, complementary approaches, or alternative interventions to treat PTSD are primarily supported by a body of clinical studies with US Veterans. Most of these studies primarily focus on using meditation and yoga to treat PTSD symptoms such as intrusive memories, avoidance, and increased emotional arousal. According to the Veterans Health Administration (VHA), 80% of VHA facilities offer meditation and stress management to

patients to treat PTSD symptoms (Strauss et al., 2014). In a systematic review of available studies examining the treatment of PTSD exclusively on patients exposed to combat-associated trauma, mindful intervention is associated with reducing PTSD, depression, and anxiety symptoms.

In a study performed by Rosenthal and colleagues on war veterans returning from Iraq, they report that meditation had a significant positive impact on alleviating PTSD symptoms (Kim et al., 2013; Rosenthal et al., 2011). Similarly, in a randomized control trial of adolescents in post-war Kosovo using mind-body skills to treat PTSD, the authors report significant reductions in the main PTSD symptom clusters, including re-experiencing, avoidance and numbing, and hyperarousal (Kim et al., 2013; Gordon et al., 2008). Furthermore, in a study, Kearney and colleagues found that 40% of veterans showed a clinically significant reduction in PTSD symptom severity at two months, with symptom improvements maintained at the 6-month follow-up post-intervention (Kim et al., 2013; Kearney et al., 2012).

While there are many forms of meditation as PTSD treatment, it primarily involves experiencing thoughts, feelings, sensations, and bodily awareness without judgment in the present moment. The focus with any meditation intervention is to focus attention on one's breath. Mindful meditation, for example, invites the participant to orient themselves in the present moment with curiosity, openness, and non-judgment of what arises during the time of reflection and stillness. The benefit of mindful meditation for those with PTSD is becoming aware of intrusive and distressing thoughts and approaching, rather than avoiding or suppressing distressing thoughts and feelings as they arise. Common symptoms of PTSD have been improved in this manner, as active awareness and intentional presence may reduce cognitive distortions

and avoidance behaviors associated with the trauma (Gallegos et al., 2017). Turning a patient's attention to the present moment with mindful meditation also alleviates the immediate response when triggered to slip into re-occurring and painful memories, which can alleviate excessive worry, rumination, and anxiety when recollecting the past events or imagining uncertainties future events. The power of meditative practices is that it has elements of exposure, cognitive change, attentional control, relaxation, acceptance, and self-management techniques built into the therapy (Baer, 2003).

Mindfulness training is only beginning to become recognized as a clinical intervention. Although the current empirical literature lacks rigorous and methodologically sound procedures, more studies warrant addressing these flaws with a more systematic approach in the studies conducted. For example, the exact dose-response, type of meditation used, and the exact duration a meditation intervention should take are difficult to determine at this stage for optimal results. However, even with the variance in approach, meditation has the potential to improve PTSD symptoms. Bringing gentle awareness to a patient's thought patterns and showing them how to control their breathing can alter the auto-responses experienced by the sympathetic nervous system, such as fear, anxiety, and increased heart rate in PTSD patients to improve symptoms. Each of these elements of meditation practice is important to the clusters of symptoms most typically experienced by persons with PTSD related to improvements in emotional regulation, which is impaired in someone with PTSD. Poor emotional regulation is the inability to sense whether a fight or flight response is warranted when confronted with a perceived threat from external triggering events. Since respiration (*breathing*) and emotion are tightly intertwined processes, meditation interventions target these biological process responses experienced by PTSD patients.

Like mindful meditation, yoga incorporates breathing techniques, meditation, and relaxation while adding in the experience of the movement of physical postures. Emotional awareness of thoughts, feelings, and the physical body helps to reduce the physiological arousal in PTSD patients. It can affect the pathology of PTSD by improving somatic regulation and body awareness, which are critical in emotional regulation (van der Kolk et al., 2014). In this way, mind-body practices address several symptoms of PTSD by teaching patients healthy coping strategies in practicing reflection rather than a reaction to complex physiological and emotional states over time.

While meditation and yoga-based approaches positively affected PTSD symptom reduction in a review of available studies, the variation in mind-body intervention types, follow-up times, and quality of studies limit analyses. With limited research and variability in the study design of mindful intervention types, more well-designed and rigorous randomized controlled trials are needed to provide greater efficacy measures of meditation interventions for the treatment of PTSD (Hilton et al., 2017).

Despite the recent popularity of mindful-based interventions in the US to treat PTSD, complementary and alternative medicine is a growing field not receiving the same attention in war-ridden communities from policymakers and funding agencies. In the case of adolescents impacted by war, little attention is paid to the longer-term mental health and psychosocial consequences emerging in conflict-affected children. It is a rarity for countries under conflict to emerge with a long-term strategy to help strengthen mental health services. While evidence-based studies for mind-body interventions to treat PTSD are gaining traction in the US, they have a much longer way to go in countries like Bosnia & Hercegovina. To date, no scientific research

is available for mind-body interventions to treat PTSD in Bosnian civilians. Complementary and alternative health approaches, such as yoga and meditation, might fill the gap of PTSD patients' needs in Bosnia & Hercegovina similarly to the existing studies performed on US war veterans.

To strengthen mental health infrastructure and services in post-war ridden communities requires immense government cooperation and an organized healthcare strategy across the country. In the case of Bosnia & Hercegovina, there are no trauma-focused mental health centers specifically treating PTSD. This shows a lack of effort and absence of will from authority and government to address post-war mental health consequences of war. Those diagnosed with PTSD in Bosnia must seek help from psychiatric clinics or mental health centers operating under limited capacity in selective regions. These mental health centers are only open during first shift hours and are largely inaccessible to those living outside of major cities. To address the inadequacies and problems of mental health services, a 2006 Mental Healthcare reform in Bosnia shifted the emphasis from primarily treating mental health disorders from hospitalization of persons to shifting the focus on rehabilitating the individual within the community. This resulted in community PTSD self-help support groups, where individuals can receive psychosocial support and openly speak about their experiences. While one of the critical elements of rehabilitation of people who have PTSD is employment, Bosnia's unfavorable economic situation and high unemployment rate make this goal difficult to achieve. This is particularly evident for Bosnia's vulnerable adolescent population with the highest youth unemployment rate in the world for ages 15-24 at 60% "due to corruption, nepotism in the workforce and overall economic stagnation" (Cline, 2018).

Furthermore, those diagnosed with PTSD are discriminated against and are often labeled unstable or 'crazy' and thus not employed or laid off from work if an employer learns about the diagnosis. Stigmatization is one of the worst problems faced by sufferers of PTSD in Bosnia. It poses a significant barrier to receiving treatment in fear of being excluded from society (Milic, 2011). This unfortunate aspect of those diagnosed is an unspoken truth within society.

The problem of PTSD in Bosnia & Hercegovina has been a severe public health problem since the end of the war, and a long-term, concentrated solution to help those suffering, is still underway. While many international partners and NGOs, such as Doctors Without Borders, the World Health Organization, and HealthNet International came to the aid of BH citizens to address PTSD post-war, such aid has since considerably tapered off, leaving the country's shaky political and decentralized healthcare system to provide a solution for the people, which it has not been able to do date ("Mental Health," 2014). Post-war attempts by internal and international organizations to provide psychosocial help to traumatized individuals have several shortcomings. Organizations tried to apply their rehabilitating approach without analyzing individual needs and cultural appropriateness, which is still symptomatic in today's treatment of traumatized people. In Bosnia & Hercegovina, there is no official systematic method for providing PTSD treatment and psychosocial help to high-risk populations, including war veterans, children with missing parents, and families with missing family members (Avdibegovic et al., 2008).

According to the data provided by the Ministry of Health for Bosnia and Hercegovina, there are only three centers designated for secondary and tertiary care for mental health services. They are in Sarajevo, Mostar, and Tuzla. Throughout the major cities are 69 mental health centers are responsible for the multidisciplinary intervention of certain mental disorders, including PTSD.

On average, only 1-3 psychologists and psychiatrists are available at each of these mental health centers, with the majority of these understaffed without an entire multidisciplinary team to address and meet the community's needs ("Mental Health," 2014). With a population of 3.5 million, the areas covered by the mental health centers account for a population of approximately 66,000 people ("Mental Health," 2014). Regarding the estimated 1.7 million people who have PTSD in Bosnia, only 61% of the mental health centers have the training to treat PTSD ("Mental Health," 2014). Additionally, 90% of the mental health centers only have experience treating PTSD with the veteran population, with other victimized populations, such as adolescents, not mentioned. Prevention and diagnosis of PTSD is a recognized weakness of the mental health centers. The employees express the need for specific staff education, including long-term and crisis intervention of war trauma treatment. Several areas require improvement to strengthen the capacity of mental health care in Bosnia. They include addressing the shortage of healthcare workforce available and improving the competencies of the existing mental healthcare professionals. Coordinating efforts with other mental health associations and nonprofits are suggested to provide more extensive access to mental healthcare services. Lastly, raising public awareness by educating the population about mental health is needed to prevent stigmatization and prejudice from strengthening the social inclusion of those diagnosed and seeking treatment ("Mental Health," 2014).

Bosnia & Hercegovina's pre-and post-war conditions need to be acknowledged as a predecessor to the inequalities and inadequate access to mental healthcare for today's citizens. Prior to the war that lasted from 1992-1995, nationwide health insurance was in place. After the conflict, the healthcare system was decentralized, creating significant challenges for healthcare provisions. To end the war and the ethnic conflict that created it, Bosnia & Hercegovina was

divided into three separate entities as part of a Dayton Peace Agreement and resulted in the formation of the regions Federation of Bosnia & Hercegovina, the Republic of Serbia, and the Brcko District. As divided as the land post-war, so was the functioning of the healthcare system.

The responsibility of healthcare funding and policy creation and execution are divided amongst these disjointed entities. To make matters more complex, the Federation of Bosnia & Hercegovina has ten cantons. Each canton delegates rules, regulations, and funds for how its healthcare system should serve its citizens. The complexity of this arrangement has hindered the effective functioning of the health care system in BiH, resulting in the development of a system that should provide health insurance to all residents, but which provides only nominal coverage for many residences of BiH. The central social inequity and results of this politically driven healthcare system are citizens who must pay high prices for treatment and medication, poor quality care, and general difficulty accessing health care (United Nations, 2001). To date, Bosnia & Hercegovina's healthcare resources and human resources capacity to treat PTSD is inadequate and underserving the population. The decentralized healthcare system and infrastructure, poor access to healthcare, and a general lack of government funds contribute to the social disparities grappling Bosnia's population to address mental healthcare needs adequately. The divided political landscape and deteriorating economic climate and recovery after the war are further to blame for a country not meeting its basic needs and worsening mental health problems. The extent of healthcare in Bosnia and Herzegovina (BiH) and the range of treatment available are insufficient to meet the needs of the country's residents and the worsening mental healthcare needs of the population since the ending of the war in 1995 (United Nations, 2001). Failure to resolve the issue of PTSD post-war, and current inadequacies in the healthcare system, demand

an immediate evidence-based solution that is cost-effective to improve the mental health outcomes of the population.

With these conditions in mind, introducing alternative treatment options for PTSD might hold a promising breakthrough for improving mental health outcomes in the country. Associated stigmatization, and limited knowledge and treatment options for PTSD, provide the basis to support evaluating mind-body programs to treat trauma in post-war communities in vulnerable populations in Bosnia, which are currently overlooked by the health system. PTSD can be debilitating if not dealt with, but it does not last a lifetime with accessible treatment. Bosnia & Hercegovina is still making strides with current policies that serve to improve the mental health outcomes of the country. With current policies targeting community-based mental health centers to treat PTSD patients, it is an opportune time to assess the use of mind-body interventions to improve PTSD symptoms, well-being, and quality of life of adolescents exposed to war-related trauma in post-conflict communities in Bosnia & Hercegovina.

Chapter III: Methodology

Chapter III includes a review of the grant description by The Office of Public Affairs (OPA) and the U.S. Embassy in Bosnia and Herzegovina, which announced a notice of funding opportunity for the BOLD (*BiH Omladinski Lideri*, Bosnia and Herzegovina Young Leaders) Initiatives Small Grant Program. This section will also include a summary of the grant announcement for this proposal, the grant review process, and a description of the grant proposal reviewers and their expertise.

Funding Agency: U.S. Embassy in Bosnia and Herzegovina BOLD Small Commission Grant

Funding Agency- U.S. Embassy in Bosnia and Herzegovina BOLD Small Commission Grant This grant provided by The Office of Public Affairs (OPA) United States Embassy in Sarajevo is established to fund projects that seek to empower young people (Ages 18-35) across Bosnia & Hercegovina to implement projects for positive change in their communities.

Through this project, the goal is for the grantee to develop their leadership skills and provide them with support in working across partnerships within the local community, government authorities, or educational institutions. The engagement should encourage more people in the economy or encourage more people to be involved in community development to address a specific problem that citizens can work on together to solve.

Grant Announcement

The grant announcement was chosen for the grant proposal as it directly aligns with the theme of addressing a significant problem in BiH communities. More explicitly addressing PTSD education, awareness, and statistics showcases the scope of the problem and the many dimensions contributing to its everlasting prevalence in the population since the end of the war. The purpose of the grant is in alignment with the aim of the thesis to bring a solution and light to a problem that has long plagued the country of Bosnia & Hercegovina. The idea is to inspire and empower young people to work together with the community to tackle a problem that deserves more positive attention than it has arguably received. More awareness and strategy for improving the lives of those who have PTSD also means that the next generation is better equipped to recognize symptoms so that the passing down of generational trauma can be curbed by preventative measures, awareness, and education around mental health and well-being. The leadership of the younger generation now, and the tone set when it comes to looking at mental illness in this country, can become a predecessor of dealing with more sensitive topics around mental health more openly and with less judgment than is currently the case. Building a healthy and approachable image around mental health and well-being should be instilled within Bosnian communities. The approximate amount to be funded is USD 86,859 provided by the grant to complete the proposal's aims during the federal fiscal year 2022-2023. The award amounts range from $1,000 to $15,000 for up to twelve months of the performance period. The work done by the aims identified by this proposal will engage the younger and older generations in addressing the need for healing PTSD using a more creative approach and the importance of mental health and well-being for individuals and communities in thriving better together. The complete document of the grant announcement is listed in Appendix A.

The Grant Review Process

A copy of the thesis chapter drafts was sent to each reviewer via email. They were asked for a two-week timeline to review the grant proposal and provide feedback on the written review process. The comments and edits were saved in separate word documents and addressed with each subsequent proposal review. The submittal process included providing the reviewer with the BOLD Initiatives Small Grant announcement and attached inclusion criteria instructions. The suggestions and editions received from the reviewers were each addressed and reviewed for consideration and analysis to make appropriate changes to the proposal using an iterative process via email. Chapter 4 includes all the comments that were edited and resolved according to the reviewer's suggestions. The final comments and edits were addressed to create the final version of the grant proposal and to complete Chapter 5. The final version of the grant proposal in Chapter 5 responds to the commentary for all the reviewer's feedback received in Chapter 4. Chapter 5 will be the final version of the grant proposal.

Grant Proposal Reviewers

Thesis Chair

Rebecca Upton, Ph.D., M.P.H. is a Professor of Sociology and Anthropology at DePauw University and affiliated faculty at the Rollins School of Public Health at Emory University in Atlanta, Georgia. Her research focused on infertility and HIV/AIDS in northern Botswana, on the construction of work and family among contemporary American families, and the intersections of qualitative and quantitative methodologies working as a medical anthropologist and doing research in southern Africa on issues of gender, reproductive health, and the HIV/AIDS epidemic. As a professor at Emory University, she teaches public health graduate-

level students on Qualitative Research Methods. Her educational background, and deep expertise in public health research in the context of other cultures, will be highly beneficial to the review process. She serves as the Thesis Chair in the thesis committee.

Thesis Field Advisor

Daniel C. Rutz, MPH, is a Global Health Strategist working as a Senior Communications Strategist with the Centers for Disease Control and Prevention and has worked with the World Health Organization and the President's Emergency Plan for AIDS Relief on public health coverage, including setting strategy on risk, behavior change, crisis management, and public health advancement. He is an adjunct professor in Emory University's Rollins School of Public Health teaching Integrated Communication Strategies as part of the Executive Master of Public Health (EMPH) to graduate-level public health professionals. Rutz served as a senior medical correspondent for CNN television and radio and CNN International before his public health career. His extensive communications background in the international public health domain serving as an advocate for a wide range of public health topics makes him an invaluable resource to the thesis review process as a Field Advisor and mentor.

Protection of Human Subjects

Each participant selected to participate in the mind-body intervention will be asked to sign a consent form. The consent form includes acknowledging that all information and data recorded, observed, and shared will be de-identified to protect the subject's privacy and ensure patient confidentiality to reduce any risk of harm in participating in the study. Before signing the consent form, the principal investigator will review the study, provide a detailed description of

the study, and provide possible risks and the purpose of the intervention. Participants will be assigned a unique identification number before any collection of data is performed. All de-identified data collected will be password protected in a database allowing access only to the research personnel and stored on computer devices, which offer encryption, and virus protection from potential data leaks, corruption of files, and theft. The proposal will need to be approved by Emory University's Institutional Review Board (IRB) to recruit adults with exposure to the Bosnian war as adolescents under the selection criteria outlined. Participants selected will be advised that participation is voluntary and that they have the option to withdraw from the study at any point.

Appendix A: Grant Call

US DEPARTMENT OF STATE

U.S. EMBASSY SARAJEVO, OFFICE OF PUBLIC AFFAIRS

NOTICE OF FUNDING OPPORTUNITY

Funding Opportunity Title: Bold Initiatives Small Grant Program
Funding Opportunity Number: 008-FY2021
Deadline for Application: June 11, 2021, by close of business, COB 17:00
CFDA Number: 19.900
Length of Performance Period: 12 months
Number of Awards Anticipated: At least ten depending on the amount for each grant.
Award Amounts: Awards may range from USD 1,000 to USD 15,000
Total Available Funding: USD 86,859
Type of Funding: FY20/2021 Assistance to Europe, Eurasia, and Central Asia (AEECA) under the Foreign Assistance Act
Anticipated Award Date: July 2021
Funding Instrument Type: Cooperative Agreement or Grant

The United States Embassy in Bosnia and Herzegovina, through the Office of Public Affairs (OPA), is pleased to announce a Notice of Funding Opportunity for the **BOLD (*BiH Omladinski Lideri*, Bosnia and Herzegovina Young Leaders) Small Grants Competition**.

Awards related to this notice are subject to availability of funding. The U.S. Embassy reserves the right to cancel this Notice of Funding Opportunity at any time without any commitment to any applicant. Awarding of non-competitive continuations in FY 2022 is contingent on the availability of funding and successful performance.

For more information, please contact us by phone: + 387 33 704-331, 704-345, fax: + 387 33 704-432 or e-mail at info@BOLD.ba.

BOLD Initiatives Small Grant Program

The BOLD network is a project of OPA that seeks to empower young people across BiH, ages 18-35, through leadership opportunities and training, to implement projects for positive change in their communities. The goal of these small grants is to empower young leaders to develop

their leadership skills by implementing projects in their communities that will contribute to economic development or encourage increased civic engagement.

Project performance period:

All activities should last for a maximum of 12 months and take place between July 2021 and July 2022.

ELIGIBILITY INFORMATION:

All members of BOLD are eligible to reply to this NOFO. To join BOLD, visit www.BOLD.ba.

APPLICATION AND SUBMISSION INFORMATION

D1. Mandatory application forms: Your application cannot be reviewed without all of the below elements.

- **SF-424 I (Application for Federal Assistance – Individual)**.
- **SF-424 A- (Budget Information for Non-Construction programs)**
- **SF-424B I- (Assurances for Non-Construction Programs-Individual)**
- **Project Proposal:** The proposal should be submitted exclusively in the appropriate application form and should contain sufficient information so that anyone not familiar with it would understand exactly what the applicant wants to do.

D2. General Guidelines: **Please read all instructions carefully – proposals that do not meet the requirements listed here will not be considered for funding.**

- All proposals must be written and submitted in English.
- One individual may submit only one proposal to this NOFO.
- Proposals may not exceed 6 pages in length (including budget and checklist) in Times New Roman size 12 font.
- All fields in the grant application form and checklist must be completed and sent via email as one document.
- Project duration may not exceed 16 months

The deadline for submission of proposals /supporting documentation is June 11, 2021, by 17:00 p.m. Please submit your filled-in application to the following e-mail address: info@BOLD.ba

D3. Budget Guidelines: **Any application not meeting the budget requirements below will not be considered for funding.**

- Detailed budget should be written in U.S. Dollars (USD) and not exceed the maximum allowable amount for the type of project.

- Budget should NOT include VAT expenses. Upon signing the award with successful Grantee, Embassy will explain in detail the procedure of VAT refund.
- Budget costs should be grouped into the following categories:
    - Personnel costs (salaries for staff who already work for your organization, fees for project manager, project coordinator/assistant, and or accountant)
    - Fringe (social and pension insurance contributions)
    - Travel (transportation costs, lodging, meals, and incidentals)
    - Supplies (office supplies and other materials for project implementation)
    - Contractual (fees for trainers, moderators, experts, and educators, who do NOT normally work for your organization but who are engaged to implement certain project activities, printing of promotional materials, renting of space/equipment, broadcasting of TV and radio shows, web site development, and other contractual services needed for project implementation.)
    - Other direct costs: (office rent, utilities, phone/fax/internet, office supplies, bank charges, etc.)
- Alcohol, entertainment, or "miscellaneous" expenses are not allowed.
- Costs incurred before the grant period start date will not be reimbursed.

Grant funds may not be used for the following:

- Long-term infrastructure needs
- Provision of direct social services to a population
- Partisan political activity. (Note: non-partisan election education and public information activities are allowable.)
- Funding of charitable activity and humanitarian aid, commercial projects, or fund-raising campaigns

D4. APPLICATION REVIEW INFORMATION:

All proposals will be evaluated by the review panel according to the below criteria:

- Quality and feasibility of the project idea. The proposal is well developed, innovative and offers creative solutions with all necessary details about how project activities will be carried out (location, number of participants, events to organize, media coverage etc.)
- Project clearly identifies goals and objectives of the project and is likely to provide maximum impact in achieving proposed results.
- Budget and narrative justification are completed and reasonable in relation to the proposed activities and anticipated results.
- Monitoring and evaluation. The proposal outlines how project success and impact will be determined. Grantee needs to send a report 6 or 12 months after project concludes to report any impact of project progress towards achieving the outcomes outlined in the proposal.
- Plan for engagement within the BOLD network. The proposal needs to contain information how you will engage with the BOLD network during the course of your

project. Project activities should continue to have a positive impact after the end of the project. Proposals should explain this future impact.

- How you will engage with the BOLD network during the course of your project. You may publicize your project to the network, from its development phase through its completion, and/or utilize the network for support of your project.

D5. Application Guidelines: **Please read carefully and complete each question as instructed. Omitting any of the requested information will delay the review of your proposal and may result in it being eliminated from consideration.**

1. **Applicant's Contact Information**

- **Applicant(s) Name(s):** Specify the name of the person(s) who apply.
- **Address/Postal Code and City**
- **Phone number**
- **E-mail:**

2. **Basic Information about the Proposal**

- **Project title:**
- **Amount requested (USD)/Amount of cost share (USD)/Total cost (USD):** Please list the amount of funding requested from the Embassy. If there is a cost share (another organization covering part of the total cost of the project), please list the amount here. Please list the total cost of the project.

3. **Elevator pitch:** In 50 words or less, describe what your project is designed to accomplish why it should receive support from the U.S. Embassy.
4. **Definition of the Situation:** Please describe the problem or challenge in your community that you are addressing and would like to change or improve. Please explain what causes the problem, and what aspect of this cause you are addressing.
5. **Project outcomes:** Please explain how you want to solve this problem by explaining the outcomes of your project. An outcome is defined as the impact or change in a participant's knowledge, skills and/or attitudes as well as the longer-term impact on their communities. For example, creation of new businesses started up by young entrepreneurs. A longer-term outcome might be a more favorable environment for entrepreneurship in a community.
6. **Description of project activities:** Please provide a detailed explanation of mandatory activities stated in the NOFO and how you plan to implement them as part of the project in order to reach the outcome.
7. **Anticipated outputs:** Outputs are defined as direct and tangible results of the project activities. For example, 30 participants trained in basic business skills and entrepreneurial training, and 20 businesses plans ready to start up.
8. **Plan for Engagement with the BOLD network:** Please present a plan for how you will engage with the BOLD network during the course of your project. You may publicize your project to the network, from its development phase through its completion, and/or utilize the network for support of your project.
9. **Project locations:** Please state project locations. Please consider backup options for virtual engagement as required by restrictions related to the coronavirus pandemic.

10. **Project beneficiaries:** Describe the anticipated beneficiaries of your project, including estimated number and age range, i.e., "approximately 50 young people in Capljina, ages 18-25" or "about 100 high school students in Rogatica."
11. **Project schedule and timeline:** Please submit a comprehensive timeline of major activities and give an overview of the schedule. If you have a specific timeframe, please list the dates, and explain why your project must take place within that timeframe.
12. **Monitoring and evaluation:** Please indicate how you plan to measure the success of the project. This could involve pre- and post-project surveys of participants; it could be evidence that your project changed/improved a situation or contributed to change in attitude/ behavior of participants.
13. **Previous U.S. Government funding:** Indicate whether the implementing organization has received previous funding from the U.S. Government. If so, please state the name of the project, the year and the amount of funding for each project
14. **Detailed budget:** Present the budget in the form of a spreadsheet, in USD amounts, dividing the budget into the categories delineated in the application. If the Recipient includes cost sharing in the project proposal, then the Recipient is accountable for providing additional funds and justifying the costs.
15. **Budget narrative:** Please explain your budget in narrative form and provide rationale for the items included.

Chapter IV: Incorporation of Reviewer Comments

I would like to thank to each member of my thesis committee for their dedication and effort in completing helping me write and complete the thesis. I am grateful for all the suggestions, comments, and guidance that I have received from them in starting, continuing, and finishing this endeavor to the best of my ability. Although a small team of reviewers, each brought vast writing, and technical expertise that each member of my thesis committee brought to this project added incredible value in improving my proposal. The iterative process of submitting the paper and receiving feedback and comments from the committee were analyzed and corrected in finalizing the proposal. All comments received by the reviewers are included in this chapter of the thesis.

Reviewer 1 Comments

Comment 1: Do you have an age range for the children who develop PTSD after experiencing a traumatic range included in the studies?

Response to Comment 1: After reviewing available studies mentioned in the thesis which mentioned adolescents. The studies captured all adolescent ages mentioned that were under the age of 18. Thus. I chose to define adolescents in this context as individuals under the age of 18. I also defined the term adolescents in the definition of terms for clarification.

Comment 2: Can you explain the graphic referring to meditation research a bit more? Is it from a particular research group? I would suggest explaining it in a bit more depth – why present these data in this way?

Response to Comment 2: I removed the graphic from the paper and explained the research article's significance in more depth as requested. It did not make sense to include the graphic, and a text description was a more straightforward way of communicating the same message.

Comment 3: Think about whether the budget needs to include a Clinician since the PTSD tool to measure symptoms can be self-administered. If you want an extra pair of eyes or data analysis, a clinician makes sense. Otherwise, think about taking it out.

Response to Comment 3: Removed Clinician out of the budget line and budget explanation.

Comment 4: Words like "mind-body" and "holistic" might have different meanings for different people. Imagine that a lay audience unfamiliar with the project, context, terms of the condition of PTSD is reading the document and choosing some of the key ideas that would bear explanation.

Response to Comment 4: Clarified terms in the definition of terms section of the thesis for reference.

Reviewer 2 Comments

Comment 1: The figure needs to be enlarged or clarified if included in the final paper. As it is, it cannot be read.

Response to Comment 1: The same comment was observed by Reviewer 1. I removed the graphic from the paper and explained the significance of the graphic and research article in more depth. I found using a text description to be a more straightforward way of communicating the same message without using the graphic.

Comment 2: They suggest that something new is needed. Now, if it is to be complementary and alternative approaches, we need to know why these might work any better.

Response to Comment 2: Re-worded to state that something new is needed before discussing the significance of complementary and alternative approaches. I included in the paragraph the reasons that alternative approaches might work better over traditional treatments for PTSD.

Comment 3: Show examples of complementary and alternative approaches. How are they used?

Response to Comment 3: Included a paragraph to address randomized control studies and mind-body intervention literature to show evidence for using these modalities over traditional treatments.

Comment 4: Show examples; what do you mean by “mainstream?”

Response to Comment 4: Included paragraph on available literature citing mind-body interventions to treat PTSD. Instead of using the word mainstream, I decided to replace the word with "gaining popularity." This is more reasonable given that mind-body intervention studies are not yet mainstream but instead gaining traction in providing more evidence-based studies in using this healing modality. The setback of this research or limitations is also further explained.

Comment 5: Is the solution to the PTSD problem underway or lacking?

Response to Comment 5: Improved the sentence for clarity to describe the progression of mind-body interventions in the U.S. The distinction needed to be made that although these alternative interventions are growing in popularity in the U.S., they have not even started to take roots in post-war Bosnia & Hercegovina. While the U.S. has made improvements in new research for PTSD, the solution in Bosnia is lacking considerably behind.

Comment 6: Please clarify the acronym BiH. I do not recall this acronym being used before. If this is the first time, spell out the country name first.

Response to Comment 6: Included the acronym in the definition of terms for clarification.

Comment 7: An elevator pitch needs to be short and direct; yours is but leaves unanswered the important question of what we mean by "mind-body intervention." It is jargon. Think of an easier way to say it. Same goes with PTSD. Lots of letters…but a mystery to many.

Response to Comment 7: Resolved with a new elevator pitch that is more personal and does not include jargon or words that are not clear.

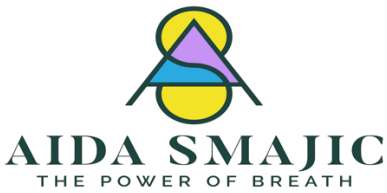
Comment 8: Do you mean currently available treatments or the alternatives you favor in your first aim?

Response to Comment 8: I clarified the sentence to read that I am interested in learning about currently available treatment for PTSD.

Comment 9: Please clarify your study sample.

Response to Comment 9: Since trauma and its psychological effects can be passed down from one generation to the next, the parent can also pass down PTSD to their children. This was confirmed in several studies. A short explanation of this effect is explained in the paragraph about generational trauma. For this reason, I include ages 18 - 35 for the study sample. Although they were not directly exposed to trauma (i.e., the war), their source of trauma might include indirect exposure through their caretakers and environment in post-war conditions.

Chapter V: Bold Initiatives Commission Small Grants Program Proposal



1. Basic information about the Grant Proposal

Project title: The Power of Breath: An intervention-based Grant Proposal Thesis to assess the use of mind-body interventions to treat PTSD symptoms and improve well-being and quality of life in adolescents exposed to war-related trauma in post-conflict communities in Bosnia & Hercegovina.
Amount requested (USD): $22,705
Applicant(s) Name(s): Aida Smajic
Address/ Postal Code and City: Safveta Bega Basagica - Slatina 6, Tuzla
Phone number: 387 62 170056
E-mail: aida.smajic@emory.edu

2. Elevator Pitch

Thirty years after the devastating Bosnian war, millions of people continue to suffer mental anguish from the atrocities of war. It is time to do something about it, and we believe we can help by gently gaining the trust and confidence of those who suffer in silence.

3. Definition of Situation

An exposure to unexpected extreme traumatic events can lead to Posttraumatic-stress disorder (PTSD) in up to 10 – 40% of war survivors (Sareen, 2014). Evidence suggests that PTSD symptoms and psychological distress can persist far beyond the years of experiencing the occurrence exposure (Hasanovic et al., 2008). During the war from 1992-1995 in Bosnia & Hercegovina, civilians experienced ongoing life-threatening events and trauma with a high risk of developing PTSD under such conditions. Two million residents were either internally displaced or forced to flee their homes and become refugees, and an estimated 200,000 were killed (Lampe, 2020). Of the war's causalities, 90% of the victims were innocent civilians (Lampe, 2020). The war had an enormous mental health impact and psychological consequences on Bosnian civilians from exposure to long-term and multiple severe traumatic experiences (Ringdal & Ringdal, 2016). Many suffered the most heinous crimes against humanity, including witnessing persons killed and sexually abused, including systemic rape (Lampe, 2020). At the same time, each of these events is a high-risk factor for developing PTSD, many experienced or witnessed multiple atrocities during the war.

According to the World Health Organization, 10%-50% of Bosnia's population, or 400,000 people, have been diagnosed with PTSD (Milic, 2011). However, internal organizations supporting citizens who have PTSD argue that the number is closer to 1.7 million, nearly half of the country's population. The city of Sarajevo is a particularly fitting pilot study location, given that its citizens experienced daily life-threatening events when the city was under siege for three and a half years (Comtesse et al., 2019). Bosnia & Hercegovina (BiH) is still emerging from post-conflict conditions, driven by widespread political corruption and economic stagnation, including the world's largest youth unemployment rate, which further harms mental health

beyond the influence of cumulative trauma exposure on adolescents (Comtesse et al., 2019). Untreated PTSD after exposure to severe trauma during the Bosnian war that lasted from 1992-1995, and post-war conditions, might perpetuate psychological consequences and high rates of Post-Traumatic Stress Disorder (PTSD) in Bosnian civilians (Ringdal & Ringdal). In a country where access to mental health care is limited, and PTSD is highly stigmatized, it is prudent and humane to seek innovative public health interventions to improve mental health outcomes and quality of life by providing broader access to promising alternative treatment options for Bosnian citizens. While the use of mind-body interventions to treat PTSD is receiving increasing attention in clinical trials involving war veterans in the U.S., no research has been performed on Bosnian war survivors using the alternative and holistic method to treat PTSD (Hilton et al., 2017).

Mind-body interventions might successfully treat PTSD in adolescents exposed to war trauma in Bosnia and improve symptoms, well-being, and quality of life. Meditation and yoga are stress-reducing techniques that show promising evidence in reducing PTSD symptoms by cultivating awareness that arises from paying attention, on purpose, in the present moment, and non-judgmentally (Kabat-Zinn, 2003). An intervention of this type provides a path for life-long impact to improving PTSD symptoms in those affected while enabling individuals to feel empowered in taking part in a holistic treatment that involves only their physical body and mind for getting better. The imminent danger of the war is gone, and what remains now is the aftermath of PTSD, which deserves a closer look in helping current and future generations cope with the trauma of the war. Due to high unemployment rates, the number of people with PTSD has increased, and if not treated adequately, it can lead to self-harm and aggression towards others (Milic, 2011). With limited mental health centers to treat PTSD where persons can receive

proper care, providing mind-body interventions as a treatment option might become an attractive, non-intrusive, and cost-effective avenue towards increasing greater access to mental healthcare. The intervention might also provide an additional nonpharmaceutical method for PTSD treatment. Implementing and executing a mind-body intervention problem in a country where PTSD is widespread but often stigmatized opens the door to expanding awareness and novel approaches. The purpose of this thesis is to assess the use of mind-body interventions, such as yoga and mindfulness meditation, to treat PTSD symptoms and improve the well-being and quality of life in adolescents exposed to war-related trauma in post-conflict communities in Bosnia.

4. Project Goals & Objectives

Under each of the objectives outlined below, the overall arching goal is to introduce persons, communities, and mental health centers in implementing mind-body intervention programs to treat PTSD.

The project includes these specific objectives:

Aim 1: To explore the experiences and perceptions of current treatments available to persons with PTSD in Bosnia and how this impacts their quality of life.

Aim 2: To pilot a mind-body intervention program for the target population who meet PTSD criteria designed to improve symptoms of PTSD, including stress, depression, and anxiety.

Aim 3: Evaluation of the pilot program to treat Post-Traumatic Stress Disorder in adults who may have experienced war trauma as adolescents. At the end of the program, participants will

be reassessed using the PTSD Checklist for DSM-5 (PCL-5) to measure outcomes related to PTSD symptom changes.

5. Description of Project Activities

Methods

The proposed study focuses on piloting mind-body interventions to treat and reduce PTSD symptoms within the target population. The target population includes adults between the ages of 18-35 years with exposure to trauma as adolescents during the Bosnian war. This includes individuals with direct and indirect exposure to war trauma. The study sample will be collected by partnering with the University of Sarajevo to engage eligible participants. Participants will also be recruited through community outreach by posting advertisements online of the proposed intervention to major social media platforms, including local Facebook groups in Sarajevo. Inclusion criteria for eligibility include (1) exposure to traumatic war experiences during the Bosnian war as adolescents (2) between the ages of 18-35 (3) meeting criteria for a current PTSD diagnosis determined by the PTSD Checklist for DSM-5 (PCL-5), and (4) fluency in English. Exclusion criteria include (1) the presence of any other neuropsychological or psychiatric condition and (2) previous meditation experience. The PTSD Checklist for DSM-5 (PCL-5) will be used to assess PTSD symptoms at baseline and reassessed to determine any symptom changes post-intervention (Veterans Affairs, 2021). The aim is to recruit 15 adults in the study to participate in an 8-week mind-body intervention program that includes attending a weekly one-hour mindful meditation and yoga class and participating in weekly assigned journaling prompts. Before starting the 8-week mind-body intervention, each participant will be asked to participate in a one-on-one semi-structured interview to determine any emerging themes during the

qualitative analysis of responses. Data will be collected on demographics, exposure to trauma-related events, general attitudes towards mental health, previous medical treatment for the condition, coping skills, access to health care, and assessing their quality of life with a PTSD diagnosis. Responses to the interview questions will be de-identified and analyzed using MAXQDA software. See Figure Table 1 for the Interview Guide.

Yoga & Mindfulness Meditation

Each eligible participant will be signed up to attend a combination of mindful meditation and yoga instruction classes weekly led by a certified professional in the areas specified. Participants will be asked to participate for an hour each week, combining 30 minutes of beginner-level yoga practice with 20 minutes of mindful meditation within a facilitator-led group course format. Each participant will be encouraged to practice daily meditation as homework outside of the facilitated sessions. Throughout the intervention, participants will be asked to complete weekly journal prompts to document any key takeaways or breakthroughs. Before the close of each session, participants will have ten minutes for reflective journaling. Reflective journaling is an evidence-based practice to help focus on tuning into the emotional expression of those suffering from PSTD. Journaling is a creative way to engage participants in a therapeutic activity that can lead to greater self-awareness and growth and is considered an effective modality with both emotional and psychological benefits for mental health disorders, such as PTSD (Utley & Garza, 2011).

Meditation Tracker

Used widely within academic research, a muse headband is an easy-to-use digital electroencephalography (EEG) system that uses dry sensor technology and cellular technology to collect brainwave data (Bhayee et al., 2016). It is a personalized view of one's meditation

practice, along with a data-tracking bonus to capture improvements in heartbeat rate, mood, and stress levels. By using neurofeedback technology, data throughout the intervention period will be collected to analyze any changes to heartbeat, mood, and stress levels to assess the effects of meditation therapy over the eight weeks, in addition to other data collected. The goal is for the participants to continue their meditation practice beyond the weeks of the intervention by incorporating the practice into their daily lifestyle for maximum benefit. All participants will be provided a Muse Headband to continue tracking their meditation progress post-intervention, hoping that they continue their mindful practices beyond the intervention period for long-term benefits.

The responses from the one-on-one interviews and journal entries will be analyzed as qualitative data using MAXQDA statistical software to identify any common themes or areas for program improvement based on participant responses. Any comments about current symptoms or changes in symptoms will also be identified and considered for any health changes or safety concerns in participating in the study.

At the end of the intervention, participants will be reassessed using the PTSD Checklist for DSM-5 (PCL-5). Data will be analyzed and collected for any significant changes in PTSD symptoms and outcomes. At the end of the intervention, participants will be followed up at 3-months to assess the extent to which they have benefited from the experience.

6. Anticipated Outputs

Due to poverty, stigmatization, and inadequate treatment centers for PTSD in Bosnia & Hercegovina, individuals who want specialized care often go untreated. Since untreated PTSD from any trauma can lead to chronic pain, depression, self-harm, aggression, substance abuse disorders, sleep problems, and suicide, it is imperative that new approaches to treating the psychological disorder be provided to those suffering.

Since current research regarding PTSD outcomes and the recovery rate among patients treated in specialized centers for war-related PTSD in BiH show poor, and low efficacy in reducing symptoms, other options should be implemented (Priebe et al., 2010). As more research becomes available linking the positive mental health outcomes of mind-body interventions in improving PTSD symptoms, the proposal could increase the number of people who receive treatment for PTSD in Bosnia & Hercegovina. This might improve mental health outcomes and well-being across future generations in building healthy individuals, families, and communities.

7. Plan for Engagement

The plan calls for collaboration with PTSD treatment centers in Sarajevo & Tuzla and civil organizations working directly to treat PTSD patients in Bosnia & Hercegovina. Partnerships and recruitment for the study will be under the supervision of the University of Sarajevo Clinical Center and the local Stecak organization in Tuzla to obtain participants who qualify for the intervention. These institutions are pivotal contributors helping to improve the well-being of PTSD patients after exposure to the war in their communities and will be the primary partners in supporting and formulating the project to other organizations who can benefit from the intervention outcomes and findings.

8. Activity Location

The following renowned clinical research organization, local yoga-meditation center in Sarajevo, and PTSD-support group organization in Tuzla have been identified to perform the project activities. They were chosen due to their extensive involvement with PTSD research and treatment of PTSD patients in Bosnia & Hercegovina.

1. University of Sarajevo Clinical Center (Research & Health University)

Address: Bolnička 25, Sarajevo 71000, Bosnia & Herzegovina

2. Ananda Yoga Center (Meditation & Yoga Studio)

Address: Valtera Perića 2, Sarajevo 71000, Bosnia & Herzegovina

3 Stecak- PTSD Organization Supporting the Healing of PTSD patients

Address: Filipa Kljajica 22, Tuzla, Bosnia & Herzegovina

9. Project Beneficiaries

The project could lead to a promising intervention for the estimated 1.7 million Bosnian citizens who have PTSD. If successful, the mind-body intervention could become a new approach to improve their well-being. A positive outcome would provide an alternative treatment option to medical and non-medical treatment centers. The study results will be shared with the partnering institutions to be disseminated through other major mental health organizations and research institutions whose primary goal is to improve the lives of those who have PTSD.

10. Project Schedule & Timeline

This proposal is requesting funding for one year from July 2022- July 2023. See Table 2 for the project schedule and timeline.

11. Monitoring & Evaluation

To monitor and evaluate the success of the mind-body intervention on the small population observed, the PTSD-Checklist will be used as a measurement tool by analyzing participant responses to the pre-and-post PTSD Checklist assessment. Since the PTSD Checklist for DSM-5 (PCL-5) is used to preliminarily screen individuals for PTSD symptoms, using the tool to assess symptoms at baseline and post-intervention will help quantify any symptom improvements and targeted outcome changes attributed to the mind-body intervention. A short survey at the end of the intervention to rate participant satisfaction with the proposed intervention will also be provided. It will include an open-ended question to address any areas for improvement or concerns not addressed for further research.

12. Previous U.S. Government Funding

The implementing individual does not report receiving any previous funding from the U.S. Government with nothing to disclose in this section.

13. Detailed Budget

Please see Table 3 for a detailed budget.

14. Budget Narrative

The proposal requests $22,705.00 to cover the activities outlined in the proposed during the 12-month required period. The combined expertise of personnel needed to carry out the intervention, including the Principal Investigator ($7,000), Graduate Research Assistant ($2,000), and the Mind-Body Instructor ($2,500), will be covered under the proposal. The main supplies and equipment needed to carry out the intervention will be low-cost, including purchasing yoga mats ($1,500) and journals ($225) for participants. The cost of Muse headbands is not included in the budget, as these will be donated by the Muse Inc. organization free of charge. Other costs include materials needed for printing flyers, posters, and related advertisements, including software and equipment needed and bulletin board materials, project equipment supplies, and distribution of posters and flyers. Additionally, transcription services will aid in the transcription of the 15 interviews conducted in the proposal. Travel and lodging costs are estimated for local meetings of personnel if accommodation is necessary.

Table 1: Interview Guide

Mind-Body Intervention Explorative Interview Questions
1. How old are you today, and where were you born?
2. Describe your memories, or way of life, before the Bosnian war started.
3. What were your experiences, or memories during the war?
4. When you think of that time, what feelings arise (emotions, sentiments)?
5. What impact did the exposure of war have on you then? What about presently?
6. How would you describe your physical, and emotional health today?
7. Describe any professional treatment you have sought. If none, why not?
8. How are you managing (faced, handled, addressed, confronted) your past traumas from the war?
9. Having lived through the war, what has been most difficult to accept?
10. Having been diagnosed with PTSD, can you recall being stigmatized, or misunderstood due to your diagnosis?
11. Of your struggles, what outcome(s) do you desire with treatment for improving your quality of life?
12. Looking forward, what are your aspirations for yourself, and others that share your diagnosis?

Table 2: Project Schedule & Timeline

Project Timeline 2022 - 2023													
Activities	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Submit to IRB													
Meeting with Partner Organizations													
Recruitment of Participants													
PTSD Assessment & Interviews													
Mind-Body Intervention Pilot													
Data Collection & Analysis													
Patient Follow Up													
Results Report & Dissemination													

Table 3: Detailed Budget

Budget Item	Quantity	Cost Per Unit	Total Cost
Personnel			
Principal Investigator	**1**	**$7,000**	**$7,000**
Graduate Research Assistant	**1**	**$2,000**	**$2,000**
Mind-Body Instructor	**1**	**$2,500**	**$2,500**
Project Equipment & Supplies			
Yoga Mats Journals Print Materials, Brochures, Flyers	**15** **15**	**$100** **$15**	**$1,500** **$225** **$2,400**
Hardware & Software			
(Laptops, Tablets, printers, MAXQDA) Transcription Services			**$3,000** **$1,080**
Miscellaneous Expenses			
Travel, Lodging, Meetings			**$3,000**
		Total Cost:	**$22, 705**

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