EMDR AND EXERCISE: TREATING PTSD IN FEMALE VETERANS

Ericka Day

Department of Community Care and Counseling, Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

School of Behavioral Sciences

Liberty University

2022

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Approved by:

Stephany Pracht, EdD., Committee Chair

Dr. Brandon Simmons., Committee Member

Abstract

The problem was that there was a gap in the literature on providing female-specific interest in EMDR and exercise as treatments for PTSD. The purpose of this study was to describe the severity of PTSD symptoms, mental health stigma, and quality of life in female veterans, and furthermore, to understand the level of desire among these women to engage in exercise and EMDR for PTSD treatment. The study was conducted utilizing a correlational quantitative research design. A sample size of 173 female veterans completed self-report assessments including the PTSD Check List Military Version (PCL-M), the Internalized Stigma of Mental Illness Inventory (ISMI-9), the Quality of Life (QoL) scale and interest questions. The population was purposefully sampled from social media platforms across the United States' veteran population. The results were assessed utilizing parametric statistics to identify significant differences among variables. Conclusions of the study identified the prevalence of PTSD, negative mental health stigma, the quality of life, and interest for utilizing EMDR and exercise as PTSD treatments by female veterans, adding gender specific data to the existing literature.

Keywords: PTSD, female veterans, EMDR, exercise, stigma, quality of life

Acknowledgment

I want to thank Stephany Pracht EdD., my assigned chair for all of her guidance and support during this process. She provided spiritual encouragement randomly, just when I needed the reminder that God has it all planned. I want to thank my editor for being so prompt and available every time I needed an edit. She has been so kind and very skilled at meeting my editing needs. I want to thank my reader, Dr. Brandon Simmons; he provided incredible guidance and support in this process. I also want to thank my family for providing me with the support needed to spend hours and hours working on my manuscript. I am forever grateful for all the skills I have acquired throughout this process. God has graced me with the ability to accept and apply these skills, further preparing me for the purpose He has set for my life. I look forward to serving that purpose.

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List of Abbreviations

Adaptive Information Processing (AIP)

Eye Movement Desensitization Reprocessing (EMDR)

Institutional Review Board (IRB)

Internalized Stigma of Mental Illness Inventory (ISMI-9)

National Center for Veterans Analysis and Statistics (NCVAS)

PTSD Check List Military Version (PCL-M)

Post-Traumatic Stress Disorder (PTSD)

Statistical Package for Social Sciences (SPSS)

Transcranial Alternating Current Stimulation (TACS)

Quality of Life (QoL)

Quality of Life scale (QLS)

Veterans Association (VA)

Chapter One: Introduction

Overview

This chapter provides a historical background on female veterans. Furthermore, the social context that has evolved throughout history to the present is explored with the theoretical perspective of Maslow's hierarchy of needs (Chen, 2019; Desmet & Fokkinga, 2020). The problem statement is identified from the current literature and the purpose of this study, to positively impact the problem, is discussed. The significance of this study is evaluated with the development of research questions to be asked and answered. The chapter concludes with this writer defining the terms relevant to this study and a summary of the contents of this chapter.

Background

Historical Overview

According to the *Past, Present and Future of Women Veterans* report created by the Department of Veterans Affairs National Center for Veterans Analysis and Statistics (NCVAS, 2017), female veterans are expected to increase by 18,000 each year. The top three reasons women currently access VA treatment are for PTSD, depression, and migraines (NCVAS, 2017). Women have been informally part of the US armed forces since America began, serving as nurses, water maids, and in battle disguised as men (NCVAS, 2017). In 1901, women were formally acknowledged as a part of the US Army Nurse Corps and in the 1940's as part of the Reserve Army Forces (NCVAS, 2017). In 1980, women were granted veteran status (NCVAS, 2017). Female veterans have been recognized as not receiving equal access to VA benefits in comparison to male veterans since 1982 (NCVAS, 2017). The VA Advisory Committee passed the Veterans' Health Care Amendments of 1983, allowing the Advisory Committee on Women Veterans to assess the needs of female veterans in accordance with the existing VA programs,

including the ability to make recommendations for modifications of these programs (NCVAS, 2017). The Veterans Health Care Act of 1992 recognized PTSD as having origins in military sexual trauma exposure (NCVAS, 2017). The Veterans Benefits Improvements Act of 1994 provided funding for research projects focused on understanding women veterans (NCVAS, 2017). In 2000, government funding from the VA was allocated for women's veteran programs for the first time (NCVAS, 2017). Beginning in 2010, research specific to learning about the female veteran experience of health care services at the VA was initiated (NCVAS, 2017). The results of these research initiatives have provided the base for this study's significance (NCVAS, 2011; 2015; 2016; 2017).

Common demographics of women veterans according to the *America's Women Veterans* report in 2011, are noteworthy. Female veterans are more likely to be single, divorced, widowed, or separated as compared to nonveteran women (NCVAS, 2011). They are more likely to have an education higher than a high school diploma when compared to nonveteran women and are more likely to be employed and working than nonveteran women (NCVAS, 2011). Women veterans are less likely to be living in poverty and more likely to be making more money and have health insurance than nonveteran women (NCVAS, 2011). Veteran women who are not in the work force are more likely than nonveteran women to be raising children, struggling with disabilities, or going to college (NCVAS, 2011; Strong et al., 2018).

According to the National Center for Veterans Analysis and Statistics (NCVAS) 2016 report, women veterans are different than male veterans in the following ways. Female veterans are younger and more racially diverse than male veterans (NCVAS, 2016). Male veterans have lower education than female veterans, but on average, make more money than female veterans (NCVAS, 2016). Veteran women have more service-connected disabilities than male veterans,

but on average use less VA health care than male veterans (NCVAS, 2016). Women veterans are more likely than male veterans to have no personal income, no health insurance, and to live in poverty (NCVAS, 2016). Female veterans seem to be faring better than nonveteran women in terms of education, income, and health care access but still encounter social inequality when compared to males, just as nonveteran women do (NCVAS, 2016; Williston et al., 2020).

The *Study of Barriers for Women Veterans to VA Health Care Final Report* in April of 2015 sought to address the needs of female veterans for health care use, preferences for treatment, and barriers for accessing care. The common barriers identified were negative mental health stigma, childcare issues, inequality of care, non-gender specific treatment, and issues with accessibility of care (NCVAS, 2015). Over half of women surveyed identified with experiencing a negative mental health stigma, most commonly due to fear treatment would negatively impact their family relationships (NCVAS, 2015; Schneider & Ling, 2019). About 50% of female veterans surveyed accessed mental health services through the VA (NCVAS, 2015). Of the women who accessed VA care, 75% of them identified a need for female clinicians to address comprehensive care and sexual trauma concerns (NCVAS, 2015).

According to the *Sourcebook Vol 3* for the Veteran Administration in 2014, women spend less money on healthcare costs than men, yet utilize more outpatient care than men. Women also accessed and attended more mental health and substance use disorder services than men (NCVAS, 2014). The top five medical conditions for women VA patients are in the following categories: musculoskeletal, endocrine/metabolic/nutritional, mental health/substance use disorder, and cardiovascular and reproductive health (NCVAS, 2014). Female veterans have been assessed for physical and mental health care needed by the VA and have been found to

have a greater need to access services than men, but they have not been assessed on the quality of services since the 2014 report (NCVAS, 2014, Schneider & Ling, 2019; Strong et al., 2018).

Theoretical Background

Understanding a population as large as the female veteran population requires a narrow lens to address specific concerns (Elliott et al., 2018). This study focused on Maslow's hierarchy of needs as its theoretical orientation (Chen, 2019). Maslow's hierarchy of needs prioritizes cultural diversity, individualism, and natural driving forces in the view of humanity (Chen, 2019; Lawson, 2018; Winston et al., 2017). Unlike other theoretical concepts such as Behaviorism and Psychoanalysis, which focus on the individual as the source of the problem and the solution, Maslow's hierarchy of needs incorporates not only the individual but also the social environment as a source of the problem and the solution (Desmet & Fokkinga, 2020). For the purposes of evaluating this population, focus on social norms were applied to gender roles in society, prompting perspectives of female veterans (Bryant-Davis, 2019; Mansager & Bluvshtein, 2020).

Female veterans' needs have been acknowledged by the VA and funding has been allocated toward understanding the population better; however, there is still a gender specific gap in the literature on veterans (NCVAS, 2017; Strong et al., 2018). Women have made outstanding contributions in active duty and as veterans advocating for their needs, but social norms including a minimization of female focus in veteran treatment have been noted for decades (NCVAS, 2015). The current literature on veterans shows more advocacy is needed to further develop strategies for treating the unique needs of female veterans (NCVAS, 2016; Washington et al., 2015).

Problem Statement

The problem was that there was a gap in the current literature on addressing female veteran PTSD symptom severity, mental health stigma, quality of life, and likelihood of utilizing EMDR and exercise for PTSD treatment (LaCroxix et al., 2016; Lundberg et al., 2016; Washington et al., 2015). The current literature shares women have historically higher rates of PTSD severity as opposed to males, yet there is not a focus on PTSD treatment for female veterans (Di Leone et al., 2013; Wiblin et al., 2021; Williams et al., 2018). Furthermore. the current stigma associated with veterans' deterrence of PTSD treatment is male-dominated, with the majority of studies evaluating the presence of and reduction in negative mental health stigma being completed with mostly male samples (Nichter et al., 2020; Schneider & Ling, 2019; Williams et al., 2018). This is alarming because veterans with untreated mental illness are deteriorating physically and mentally and have unhealthy lifestyles (Bochicchio et al., 2019; Kokubun et al., 2021). Literature focused on improving treatment engagement with veterans has identified a preference by veterans for exercise and EMDR as PTSD treatments (Adams et al., 2020; Hall et al., 2020; Pebole & Hall, 2019). However, studies involving attempts to re-engage veterans in PTSD treatment through EMDR and exercise programs have been mostly male with female veterans being a part of these studies only as a minority, and therefore the female preference for exercise and EMDR is not well known (Kern et al., 2020; Mehling et al., 2018; Pebole & Hall, 2019). The lack of specific focus on female veterans' engagement in treatment for PTSD and needs for future treatment may create segregation in the culture of veteran outcomes (Schneider & Ling, 2019; Washington et al., 2015; Williston et al., 2020). This present study addressed female veterans' needs.

Purpose Statement

The purpose of this study was to describe the severity of PTSD symptoms, mental health stigma, and quality of life in female veterans, and furthermore to understand the desire among these women to engage in exercise and EMDR for PTSD treatment. (NCVAS, 2017; Washington et al., 2015). The female veterans were provided the opportunity to share their responses to the following surveys: PTSD Check List Military Version (PCL-M), the Internalized Stigma of Mental Illness Inventory (ISMI-9), the Quality of Life (QoL) scale and interest questions. Variables evaluated in this study included PTSD symptom severity, stigma, quality of life, and interest in EMDR and exercise for PTSD treatment. The results of this study added to gender-specific research on female veterans.

Significance of the Study

Trauma disorders affect individuals on a cultural level and current evidence-based treatments may not be addressing cultural aspects of trauma (Schnyder et al., 2016). Although evidence-based practices for trauma treatment have been proven effective, there is a vast majority of people who do not access treatment due to cultural factors (Schnyder et al., 2016; Strong et al., 2018). Schnyder found that cultural barriers to seeking treatment include a negative stigma of mental health treatment, a lack of resources available, a lack of education about how traumatic experiences increase avoidance of treatment, and limited variability in treatment modalities (Schnyder et al., 2016). The current literature supports the adaptability of exercise and EMDR as PTSD treatments and specifically states the effectiveness they may have on the veteran population (Hase, 2021; Schnyder et al., 2016; Wilson et al., 2018). Results of this study identified the prevalence of PTSD, negative mental health stigma, the quality of life, and the desire as EMDR and exercise for PTSD treatment by female veterans. (NCVAS, 2017; Strong et

al., 2018). This study added to the existing desire to understand the female veteran population (NCVAS, 2017; Schneider & Ling, 2019). Further research on PTSD treatment via exercise and EMDR for female veterans is encouraged in other agencies including the VA as a result of this study.

Research Questions

RQ1: To what extent, if any, is there a significant relationship among symptom severity of PTSD, negative mental health stigma, and quality of life in female veterans?

Definitions

Post-Traumatic Stress Disorder (PTSD) - A disorder characterized by dissociation, avoidance, intrusive thoughts, and excessive arousal symptoms; in this study a diagnosis was met through the scoring of 45 or higher on the PTSD Check List Military Version assessment tool (Newins et al., 2018).

Stigma - The negative belief associated with seeking mental health treatment (Montieth et al., 2021).

Quality of life - The individual perception of one's satisfaction with physical/social/mental health and ability to meet one's needs (Mehling et al., 2018).

Eye Movement Desensitization Reprocessing (EMDR) - Therapeutic modality involving bilateral stimulation, minimal trauma discussion, and focus on activation of Adaptive Information Processing (AIP) (Hase, 2021).

Exercise - The movement of the body required to increase cardiovascular fitness (Escarfulleri et al., 2021).

Correlational research - A qualitative form of research that assesses differences between variables within a population (Heppner et al., 2016).

Parametric statistics - Data analysis consisting of the mean, mode, median, variance, and standard deviation to complete independent t-test, chi square tests, and multiple regressions within a normal distribution (Heppner et al., 2016).

Variable - The scores within the two defined groups of an assessment to be evaluated for significant differences (Heppner et al., 2016).

Anonymous survey - The lack of identifying information in individual research data collection (Heppner et al., 2016).

Demographic information - The general information regarding age, ethnicity, education, marital status, number of children, and employment status of research participants (Strong et al., 2018).

PTSD Check List Military Version (PCL-M) - The 17-item screening for PTSD in military veterans, where a scoring of 45 or higher indicates a PTSD diagnosis (Newins et al., 2019).

Internalized Stigma of Mental Illness Inventory (ISMI-9) - The 9-item screening for perception of internalized stigma and discrimination of mental illness by those with mental illness (Hammer & Toland, 2017).

Quality of Life (QoL) scale - The 16-item screening for quality of life across the domains of wellbeing including physical health, psychological health, social relationships, and environmental health (Burckhardt & Anderson, 2003).

Interest Questions - The concluding interest questions on the survey assessing the likelihood of female veterans accessing exercise and/or EMDR for PTSD treatment (Escarfulleri et al., 2021; Hurley, 2018; Newins et al., 2018).

Summary

This research study addressed the problem in the current literature of lacking information on female veterans' specific PTSD symptom severity, stigma, quality of life, and desire for EMDR

and exercise as PTSD treatment (Schneider & Ling, 2019; Strong et al., 2018; Washington et al., 2015). Utilizing Maslow's hierarchy of needs as a lens through which to view the female population sheds light on how social norms impact gender-specific veteran PTSD treatment (Bryant-Davis, 2019; Chen, 2019). The purpose of this study was to better understand female veterans and encourage the focus of future PTSD treatment on female veterans (Bryant-Davis, 2019; NCVAS, 2017; Schneider & Ling, 2019; Strong et al., 2018; Williston et al., 2020).

Chapter Two: Literature Review

Overview

This chapter serves to review the current literature on veterans' needs and what has been helpful in meeting those needs thus far (Allen et al., 2018; Church et al., 2018; Freytes et al., 2017; LaMotte et al., 2021; Parsons et al., 2018; Romero et al., 2015; Segal, 2013). Discussion and explanation of how Maslow's hierarchy of needs provides the theoretical orientation for this research and lays the foundation for viewing the related literature (Bryant-Davis, 2019; Chen, 2019; Lawson, 2018; Mansager & Bluvshtein, 2020). The concerns and struggles of veterans are highlighted including mental, physical, social, and treatment-seeking issues (Brehm et al., 2019; Edmond et al., 2018; Hall et al., 2020; Ilyas et al., 2017; Myers et al., 2018). The specific differences between male and female veterans are explored to identify how female veterans' needs differ from males' (NCVAS, 2014; 2015; Strong et al., 2018). The overview of how EMDR and exercise can meet the needs of female veterans is examined to promote use of these modalities for PTSD treatment (Brehm et al., 2019; Shapiro, 2019). The chapter concludes with this writer's evaluation of the factors involved in prompting the need to fill the research gap by evaluating female veterans (Strong et al., 2018; Washington et al., 2015).

Theoretical Framework

Maslow's hierarchy of needs is based on five fundamental needs shared by all of humanity (Desmet & Fokkinga, 2020; Winston et al., 2017). The theory is culturally diverse and promotes purpose and meaning (Bryant-Davis, 2019; Mansager & Bluvshtein, 2020). The theory also advocates for societal change through creativity, autonomy, and authenticity (Chen, 2019; Whitehead et al., 2020). Maslow's hierarchy is suited for this study due to the risk of lower

mental and physical functioning associated with being a minority population in a dominant culture when minority population needs are not met (Lawson et al., 2018).

Maslow's hierarchy of needs was created by Abraham Maslow, a psychologist of the 20th century and one of the founders of humanistic psychology (Desmet & Fokkinga, 2020). Desmet and Fokkinga (2020) shared that humanistic approaches view humanity as naturally good and striving for personal growth and fulfillment. Humanism was a positive addition to the leading perspectives of the time, Behaviorism and Psychoanalysis (Desmet & Fokkinga, 2020). Behaviorism views humanity as prone to act out of learned patterns of behavior and only able to grow if taught new patterns of behavior (Desmet & Fokkinga, 2020). Psychoanalysis views humanity as a product of abnormal psychological processes due to subconscious internal drives (Desmet & Fokkinga, 2020). Maslow's hierarchy of needs views humanity as progressing through five fundamental stages to attain personal growth and fulfillment; the stages consist of five innate needs including physiological, safety, social, self-esteem, and self-actualization (Desmet & Fokkinga, 2020; Winston et al., 2017).

Physiological needs are the minimal basics of survival such as eating, drinking, warmth, and shelter (Desmet & Fokkinga, 2020). Safety needs are the perception of an individual's protection from the elements in the environment (Winston et al., 2017). These needs may fluctuate based on societal norms and cultural perspectives (Winston et al., 2017). For instance, a person living in an urban city may feel a safety need is met by having a lock on the door (Winston et al., 2017). For a person in a rural farming area, safety may be met by knowing supplies are available (Winston et al., 2017). For indigenous populations, a safety need may be met through living in a community or having knowledge of survival skills (Winston et al., 2017). Social needs are the perception of an individual's connection to the environment, as mentioned (Winston et al.,

2017). This may vary depending on culture, social structures, and personal preference (Winston et al., 2017). Self-esteem needs are also met through an individual's perceived value to the environment (Winston et al., 2017). This can greatly be impacted by social norms and cultures (Winston et al., 2017). This need is often considered the highest need met by most of humanity due to its complexity and ever-evolving nature (Winston et al., 2017). Self-actualization is defined by one's perceived pursuit of purpose and fulfillment to better one's environment (Winston et al., 2017). Maslow explained that due to lack of self-driven purpose, this need is often not fully addressed by humanity (Winston et al., 2017).

The strength of the hierarchy is that needs are universal, and they contribute directly to well-being (Desmet & Fokkinga, 2020). A limitation of the hierarchy is the hierarchical structure, suggesting that a lower need must be satisfied if working on a higher need (Desmet & Fokkinga, 2020). Maslow addressed the limitation of hierarchy and asserted that those living in poverty may actively work on self-esteem without addressing poverty (Desmet & Fokkinga, 2020).

Another limitation is that self-actualization is not well-defined (Desmet & Fokkinga, 2020). This criticism is based on the knowledge and values of the time period and may have been driven by social norms of the time, and in the 20th century female perspectives were rarely voiced (Desmet & Fokkinga, 2020; Bryant-Davis, 2019). Maslow's critics cautioned self-actualization was based on an individual's sense of meaning or purpose and was too ambiguous to be considered a theoretical orientation (Desmet & Fokkinga, 2020). Winston (2017) identified that even Maslow's hierarchy of needs was predominantly based on a Caucasian male perspective, which was prevalent during the 20th century (Winston et al., 2017). In a world view based on one gender and one ethnicity, a broad sense of meaning and purpose was foreign (Winston et al., 2017). The theory also shares that youth cannot be considered to attain self-actualization until

they have reached adulthood due to lack of ability to fulfill the lower-level needs until that time (Winston et al., 2017).

Dominant cultures are often full of racism, sexism, and classism (Bryant-Davis, 2019). These prejudices define how an individual fits into a society (Bryant-Davis, 2019). Maslow's hierarchy of needs was primarily based on the Caucasian male's perception when it was created (Winston et al., 2017). The hierarchy is now viewed as culturally diverse and no longer widely criticized for being too ambiguous (Bryant-Davis, 2019).

Trauma treatment may have a negative stigma because it was built upon the ideas of Behaviorism and Psychoanalysis, where people are prone to repeat patterns of dysfunction and be victims of internal subconscious urges (Bryant-Davis, 2019; Mansager & Bluvshtein, 2020). Trauma treatment, seen through the lens of Maslow's hierarchy of needs, encourages people to make their lives what they want and advocates for the promotion of post-traumatic growth (Bryant-Davis, 2019; Chen, 2019).

Self-actualization may also be defined as acceptance of one's environment as it is, with the ambition to improve it through fulfillment of self (Mansager & Bluvshtein, 2020). The creativity required to flow with one's environment while developing an internal sense of self is key to attaining self-actualization (Mansager & Bluvshtein, 2020). Maslow shares that identifying the self through values and beliefs, transforms the self-esteem stage from fitting into an environment into incorporating oneself into an environment as a unique and independent individual (Mansager & Bluvshtein, 2020). Processing the ability to separate oneself from one's environment, yet still operate in it, shows incredible adaptability and sets the stage for environmental growth (Mansager & Bluvshtein, 2020). Essentially, those who attain self-actualization are able to teach their environment or society how to be adaptable while still

holding strong to individual values and beliefs (Mansager & Bluvshtein, 2020; Whitehead et al., 2020).

Whitehead and colleagues (2020) described being self-actualized as being selfless. The esteem stage is focused primarily on how one fits into one's environment as it is while remaining an independent being (Mansager & Bluvshtein, 2020). Whitehead and fellow researchers argue that one can be creative and have the adaptability to be both an individual and part of a whole, but it takes maturity to be a leader as an individual to the whole (Whitehead et al., 2020). This may be why Maslow considered children unable to be self-actualized, since children often lack the ability to transcend the self (Whitehead et al., 2020). Maslow cautioned that the ability to be an independent, selfless, leader for a whole requires a deep understanding of the self (Whitehead et al., 2020). Whitehead and colleagues advocated this can be attained through mindfulness (2020). Mindfulness focuses on one moment at a time (Whitehead et al., 2020). Keeping the focus on moments decreases the negative pull society has on the long-term consequences of choices and minimizes overthinking (Whitehead et al., 2020). Mindfulness may be the solution to rumination, something to which women are so prone to submit (Arditte et al., 2019).

Chen (2019) asserts that to attain self-actualization, authenticity is required. Chen (2019) defines authenticity as being true to one's values and beliefs separate from the dominant society's values and beliefs (Chen, 2019). Chen agrees with Whitehead and colleagues in saying that mindfulness produces and enhances authenticity (Chen, 2019; Whitehead et al., 2020). While being mindful one identifies values and beliefs that are core to the self and separates the values and beliefs of the whole (Chen, 2019).

Lawson and fellow researchers (2018) emphasize the need of safety in society. Feeling safe to express individual values and beliefs amongst a society with various values and beliefs greatly

impacts self-actualization (Lawson et al., 2018). For instance, if a society is oppressive or dismissive to minority populations, expressions of self-actualization may be viewed negatively by the dominant culture and therefore punished (Lawson et al., 2018). In a review of the literature there are themes of sexual abuse among women, and Lawson and colleagues' assertions allude to explanations of this theme (Bryant-Davis, 2019; Lawson et al., 2018; Mansager & Bluvshtein, 2020). Due to the focus on male cultural perspectives, there is also a theme of women having a unique stigma associated with participating in treatment at the VA (Lawson et al., 2018). Anxiety and depression stem from unmet safety needs, and the theme of higher susceptibility to mental illness in veteran women may be due to these unmet needs (Lawson et al., 2018).

Related Literature

Concerns and Struggles of Veterans

Veterans are vital to a nation's day-to-day freedoms, but many return home with a loss of spiritual, psychological, and/or physical freedom (Church et al., 2018; Fleming, 2020; Forbes et al., 2019). Veterans suffer from a wide range of traumatic experiences, resulting in trauma disorders requiring specific care to treat (Church et al., 2018; Fleming, 2020; Forbes et al., 2020). Unmanaged symptoms of these trauma disorders jeopardize family relationships, marriages, and even the resilience to mental/physical illness in their children (Allen et al., 2018; Church et al., 2018; Parsons et al., 2018). The physical health of veterans is also impacted by unmanaged symptoms resulting in chronic pain, cardiovascular disease, and compensated resiliency to physical illness (Edmond et al., 2018; Escarfulleri et al., 2021; Torero-Aguilera et al., 2017). Poor mental and physical health increase the likelihood of unhealthy patterns of behavior (Allen et al., 2018; Church et al., 2018; Edmond et al., 2018; Escarfulleri et al., 2021;

Parsons et al., 2018; Torero-Aguilera et al., 2017). Veterans also struggle with substance use, poverty, isolation, and homelessness (Bochicchio et al., 2019; Druss, 2017). These struggles are consequences of lifestyle choices due to having serious mental illness (Bochicchio et al., 2019; Druss, 2017). Untreated mental illness develops naturally into serious mental illness, for which veterans unfortunately often meet criteria (Druss, 2017). A study by Fleming (2020) shares about a unique wound veterans experience, offering insight into their susceptibility to spiritual, psychological, and/or physical illness.

Mental Health Concerns and Struggles

Major mental health illnesses associated with veterans are PTSD, depression, anxiety, and substance use disorders (Church et al., 2018; Fleming, 2020; Forbes et al., 2020). Fleming (2020) explains that veterans encounter a mortal wound during service, which defies the natural tendency to do good to one's fellow man and replaces man's good nature with a division of humanity. This is a division in which certain men, women, and children are killed to protect the lives of a favored nation (Church et al., 2018; Fleming, 2020). This division of humanity has the ability to divide the veteran's mind, body, and spirit into separate parts, requiring unique treatment to heal each part individually and integrate them back together as a whole identity (Church et al., 2018; Fleming, 2020).

Church and colleagues (2018) expressed how these wounds impact veterans on a cellular level. Multiple traumas increase the risk of developing a trauma-related disorder such as PTSD, depression, anxiety, and substance use disorders (Church et al., 2018). Trauma disorders modify how neural networks process future traumatic experiences and may identify non-traumatic day-to-day experiences as dangerous (Church et al., 2018). The most common dysfunctions are emotional suppression and the behavioral patterns developed to keep emotions suppressed

(Church et al., 2018). Medication management is a favored modality to cope with the symptoms of trauma disorders, but it may not be addressing the underlying issues of emotional regulation (Church et al., 2018; Edmond et al., 2018; Parsons et al., 2018). Long term suppression of emotions changes the gene expression within an individual and can be passed on to the next generation (Church et al., 2018; Parsons et al., 2018). A similar study on the generational impact of PTSD expounded on this phenomenon (Parsons et al., 2018).

Relationship and Family Concerns and Struggles

A veteran's intimate relationships and childrearing skills are negatively impacted by suppressed emotions, inhibiting the desire to treat his or her mental illness (Allen et al., 2018; Church et al., 2018; Freytes et al., 2017; Parsons et al., 2018; Romero et al., 2015; Segal, 2013). Parsons and fellow researchers (2018) identified that children of veterans struggle with dysregulated and impulsive behavior. They compared children of veteran parents managing their PTSD symptoms to children of veteran parents avoiding management of PTSD symptoms (Parsons et al., 2018). The parents who avoided treatment, had children with less emotional regulation and coping strategies to manage day-to-day stress (Parsons et al., 2018). Results concluded that a predisposition to fear is passed on through gene expression (Parsons et al., 2018).

A similar study by Segal (2013) shared treatment-seeking veterans had higher functioning family dynamics (Segal, 2013). Freytes and colleagues (2017) found that veterans struggle the most with PTSD symptoms within the first few years of returning home. Romero and peers (2015) shared higher levels of family support and coping skills improved family functioning after veterans returned home.

Another study by Allen and colleagues (2018) on the association between symptom management among veterans and the quality of marital functioning adds insight into the experiences of veterans. Hyperarousal and avoidance symptoms impact marital relationships by adding more conflict or by avoiding conflict; avoidance symptoms are more damaging than hyperarousal symptoms to marital quality (Allen et al., 2018). PTSD increases conflict and/or disconnection in relationships which in turn increases the risk of unhealthy lifestyle choices with physical health consequences (Allen et al., 2018; Edmond et al., 2018). Edmond and fellow researchers (2018) explored the physical stressors that veterans experience due to their unmanaged PTSD symptoms; this is discussed in the next section on physical concerns and struggles.

LeMotte and colleagues (2021) evaluated the communication patterns of veteran couples and found veterans with higher PTSD symptoms had poorer communication patterns. A similar study by Siegel and peers (2021) identified veterans with higher levels of empathy for themselves were less likely to seek treatment and more likely to have lower relationship functioning than veterans with higher empathy for others. Treatment-seeking veterans are more likely to seek treatment for the wellbeing of their family rather than their own wellbeing (LeMontte et al., 2021; Siegel et al., 2021). A lack of positive family functioning may also be the consequence of poor physical health (Edmond et al., 2018; Escarfulleri et al., 2021; LaCroix et al., 2016; Pendse et al., 2021; Torero-Aguilera et al., 2017).

Physical Health Concerns and Struggles

Veterans often cope with chronic pain, cardiovascular disease, and a higher susceptibility to other physical illness due to untreated trauma disorders (Edmond et al., 2018; Escarfulleri et al., 2021; LaCroix et al., 2016; Pendse et al., 2021; Torero-Aguilera et al., 2017). The chronic pain

commonly limits veterans' mobility, which is often managed via pharmaceutical modalities (Edmond et al., 2018). These pharmaceutical methods routinely create side effects that prompt the use of more pharmaceuticals, which increases overall healthcare costs (Edmond et al., 2018; Myers et al., 2018). Veterans who choose to access services through the VA have voiced accessing services to attain medication management for their pain (Edmond et al., 2018). The chronic pain leads to a fear of movement resulting in a sedentary lifestyle (Edmond et al., 2018; Myers et al., 2018). Myers (2018) identified those with chronic health issues are more susceptible to worsening mental health issues such as PTSD, depression, anxiety, and other degenerative brain diseases. Escarfulleri and fellow researchers (2021) shared how lack of emotional regulation skills also leads to poor diet and exercise choices among veterans.

Veterans have been noted as choosing diets low in nutritional value, which in turn leads to lower cardiovascular fitness (Escarfulleri et al., 2021). Lowered levels of cardiovascular fitness again increase the risk of developing serious mental illness such as PTSD, depression, anxiety, and degenerative brain diseases (Escarfulleri et al., 2021; Ilyas et al., 2017; Kokkinos et al., 2017; LaCroix et al., 2016). They also increase the risk of chronic pain, obesity, cardiovascular disease, and respiratory issues (Escarfulleri et al., 2021; Ilyas et al., 2017; Kokkinos et al., 2017; LaCroix et al., 2016; Muller et al., 2017). Veterans with untreated trauma disorders regularly fall under the category of severely mentally ill (Ilyas et al., 2017). In addition, individuals with serious mental illness are much more likely to participate in other unhealthy lifestyle choices such as smoking, illicit drug use, alcohol use, and high caloric food intake (Ilyas et al., 2017; Muller et al., 2017; Stefanovics et al., 2020). Druss (2017) shares the disheartening consequences of living an unhealthy lifestyle.

Lifestyle Concerns and Struggles

Those with serious mental illness are often living in poverty and unable to afford a better life due to the need of their income to support addictions to food, drugs, alcohol, and cigarettes (Druss, 2017; Stefanovics et al., 2020). There is a lack of hope, personal sense of power, and ability to access resources to change unhealthy behaviors in those with serious mental illness (Bochicchio et al., 2019; Druss, 2017). Bochicchio and colleagues (2019) explain that feelings of hopelessness drive a negative stigma to seek help for healthier lifestyle choices. Combining a specific mental health stigma of seeking treatment for being mentally unhealthy and a negative stigma of seeking treatment for being physically unhealthy, creates a generational cycle of despair (Bochicchio et al., 2019).

This cycle has been identified by Parsons and fellow researchers (2018) as children of veterans often share the dysregulated gene expression of their parents. The cycle of hopelessness is identified by Bochicchio and peers (2019), showing that beliefs about oneself can create resistance to positive change. Veterans also have the added moral wound, further separating their mind, body, and spirit from hope, empowerment, and resilience (Church et al., 2018; Fleming, 2020). A need for social change is required to be met for generational impact (Chen, 2019).

Gender Differences Among Veterans

The general overview of the concerns and struggles of veterans identified veterans struggle with physical and mental health issues, with symptoms that negatively impact relationships and resilience to future traumatic events (Allen et al., 2018; Edmond et al., 2018; Escarfulleri et al., 2021; Forbes et al., 2020; Parsons et al., 2018; Torero-Aguilera et a., 2017). However, prevalence for physical and mental illness are different based on gender (Arditte et al., 2019; Monteith et al., 2021; Sidossis et al., 2021; Williams et al., 2018). Female veterans have health

issues related to cardiovascular disease and obesity at a higher rate than male veterans (Flatt et al., 2021; LaCroix et al., 2016; Sidossis et al., 2021). They have a higher susceptibility than male veterans to trauma disorders such as PTSD, depression, and anxiety (Arditte et al., 2019). Women veterans also struggle with more trauma experiences specifically related to sexual trauma as compared to male veterans (Calhoun et al., 2018; Monteith et al., 2021). Gender differences are difficult to locate in relationship studies due to a majority of studies in marital and family dynamics being predominantly male-focused (Allen et al., 2018; Church et al., 2018; Freytes et al., 2017; Parsons et al., 2018; Romero et al., 2015; Segal, 2013). Differences in the stigma associated with seeking treatment for women, as opposed to men, are based on perceived belonging and access to services at the VA (Blais et al., 2018; Blais & Renshaw, 2013; Bonfils et al., 2018; Boyd et al., 2016; Currier et al., 2017; Elliott et al., 2018; Fox et al., 2018; Mittal et al., 2013; Nichter et al., 2020; Wastler et al., 2020; Williamson et al., 2019; Williston et al., 2020). Lastly, differences in focus of future treatments are present between male and female veterans, including gaps in access to treatment, EMDR treatment, exercise treatment, and delivery of desired treatment (Schwarz et al., 2020; Shivakumar et al., 2017; Van Minnen et al., 2020; Newins et al., 2019). To begin, Sidossis and colleagues examine the physical health of female veterans (Sidossis et al., 2021).

Physical Health Differences for Female Veterans

Female veterans struggle with obesity and lower cardiorespiratory fitness (Flatt et al., 2021; Sidossis et al., 2021). Sidossis and peers (2021) examined a sample of 39,556 female veterans, of which 28,681 were determined to be obese. Mortality rates increase as cardiovascular fitness decreases (Sidossis et al., 2021). The healthiest women utilized exercise to lower body weight and increase cardiovascular fitness, overall increasing their resilience to death by physical

disease (Sidossis et al., 2021). A similar study by LaCroix and colleagues (2016) found the same results in an evaluation of 161,808 women over the age of 50 years old. William and fellow researchers (2018) shared female veterans prefer treatments that advocate for improved physical health. Strong and peers (2018) further explored chronic pain and sleep health in female veterans.

Female veterans are noted as placing less focus on self-care in comparison to male veterans, which leads to dysregulated sleep (Strong et al., 2018). Sleep is the body's way of restoring muscles, repairing injury, and strengthening bone density (Petel et al., 2016; Strong et al., 2018). It is logical that female veterans would also struggle with chronic pain in addition to chronic sleep disturbance (Petel et al., 2016; Strong et al., 2018). As mentioned before, Edmond and colleagues (2018) shared pharmaceuticals are the preferred treatment for chronic pain in veterans; however, they were careful to over-sample female veterans in data collection to acknowledge gender differences for chronic pain treatment preference (Edmond et al., 2018). Results found that females are more likely to utilize exercise, as opposed to pharmaceuticals, to alleviate chronic pain symptoms (Edmond et al., 2018). It was also noted that female veterans had higher rates of participation in comparison to males throughout the duration of data collection (Edmond et al., 2018). Other studies have replicated this trend of participation in exercise by women (Adams et al., 2020; Brehm et al., 2019).

Eating disorders, a physical behavior pattern due to mental distortions, are more prevalent in women than in men (Flatt et al., 2021). Flatt and peers (2021) identified eating disorders are more common in female veterans than non-veterans due to various factors including exposure to military sexual trauma, the demands of military training, and history of childhood abuse. Moreover, women who experience domestic violence or sexual assault are more likely to suffer

from eating disorders and substance use to cope with the symptoms (Barlett et al., 2018). Binge eating disorders have been noted as the most common disorder for women (Rodgers et al., 2020). The risk factors of sexual trauma, domestic violence, and oppression have negative effects on mental health as well (Arditte et al., 2019; Masheb et al., 2021; Monteith et al., 2021; Strong et al., 2018).

Mental Health Differences for Female Veterans

Female veterans have a higher prevalence of PTSD, depression, anxiety, and suicidality (Adams et al., 2021; Arditte et al., 2019; Church et al., 2018; Masheb et al., 2021; Monteith et al., 2021; Nazarov et al., 2015; Nichter et al., 2020; Nui et al., 2018; Spinola et al., 2019; Schneider et al., 2019; Williams et al., 2018; Yaffe et al., 2019). Arditte and fellow researchers (2019) identified that female veterans are more susceptible to mental illness due to mental rumination, which is defined as repeating events mentally with feelings of shame, guilt, and regret. This rumination increases the risk of suicidality (Arditte et al., 2019). Adams and peers (2021) also identified women veterans as having a predisposition to suicidality at a higher rate than male veterans. Monteith and colleagues (2021) cautioned suicidality is much more likely to be acted on without treatment. A study by Nichter and peers (2020) on suicidal veterans identified that those with active suicidal ideation often avoid treatment; however, the study sample was mostly male.

Sexual abuse may be playing a role in increased suicidality of female veterans (Monteith et al., 2021). Women report higher rates of adverse childhood experiences including sexual, physical, emotional, and verbal abuse (Masheb et al., 2021; Spinola et al., 2019). Female veterans are also more likely to experience Traumatic Brain Injuries (TBI) and develop degenerative diseases such as Dementia and Parkinson’s (Schneider et al., 2019; Yaffe et al.,

2019). A study by Nazarov and colleagues (2015) examined the treatment efforts of veterans engaged in VA services with a TBI injury; results showed higher rates of treatment engagement for those with a TBI injury. It is noteworthy that the study sample was mostly male (Nazarov et al., 2015).

As mentioned, epigenetics may contribute to suppression of emotions, leading to expressions of physical and mental illness (Church et al., 2018). Church and colleagues (2018) examined 11 total veterans with 5 being female, alluding to an equal risk of emotional suppression developing into physical and mental illness over time. However, a study by Niu (2018) was not as equally descriptive. Niu (2018) examined gray matter levels in veterans diagnosed with PTSD to understand how those levels were impacted by PTSD. No significant gender differences in the data were found, but the study sample was mostly female (Niu et al., 2018). Reduction of gray matter deregulates one's memory and emotional functioning, and this may be why female veterans are more susceptible to degenerative diseases than male veterans (Niu et al., 2018).

Lifestyle choices such as chronic substance use are also shown to significantly decrease gray matter (Kokubun et al., 2021). Male veterans are more likely to have chronic substance use than female veterans (Banducci et al., 2019; Stefanovics et al., 2020). Female veterans are more likely to participate in substance use as a coping skill for other stressful life events not related to deployment (Banducci et al., 2019). Veteran women who identified with having substance use disorders related to deployment were often those who experienced sexual trauma while in the armed forces (Banducci et al., 2019; Tiet et al., 2015). Female veterans have lower levels of reported substance use disorders as compared to men but have higher levels of participation in substance use treatment (Livingston et al., 2020). The highest success rates of female substance

use treatment are with programs exclusively offered to women as opposed to mixed-gender groups (Stefanovics & Rosenheck, 2019).

Relationship and Family Differences for Female Veterans

Marital and relationship differences are non-existent in the current literature due to a focus on male veterans (Allen et al., 2018; Church et al., 2018; Freytes et al., 2017; Parsons et al., 2018; Romero et al., 2015; Segal, 2013). These studies focus on male veterans and civilian wives due to an idea in the current literature that female veterans and civilian husbands would have different relationship dynamics than the average household (Parsons et al., 2018). The current literature shares that divorce rates of veteran marriages are higher than those in civilian households (Allen et al., 2018). Female veterans are more likely than male veterans to be divorced (NCVAS, 2016). Within male veteran and civilian relationships there are high rates of substance abuse and intimate partner violence by the male partner (Nowlan et al., 2017). Women who experience intimate partner violence often have a history of sexual abuse (Barlett et al., 2018). In addition, women who experience intimate partner violence also cope through substance use and eating disorders (Barlett et al., 2018; Flatt et al., 2021). They also are more susceptible to mental illness and suicidality (Barlett et al., 2018). Female veterans are already identified as being more vulnerable to eating disorders, sexual trauma, PTSD, depression, anxiety, and suicidality (Flatt et al., 2021; Masheb et al., 2021; Monteith et al., 2021; Sidossis et al., 2021; Spinola et al., 2019; Yaffe et al., 2019). The quality of life and social functioning of female veterans is not well known in the current research due to male dominated studies (Allen et al., 2018; Church et al., 2018; Freytes et al., 2017; Parsons et al., 2018; Romero et al., 2015; Segal, 2013).

Differences in Stigma for Female Veterans

The general negative stigma hindering veterans from seeking mental health treatment relates to a moral wound separating the mind, body, and spirit of veterans (Fleming, 2020; Forbes et al., 2019). Veteran women have been a minority in studies assessing mental health stigma (Blais & Renshaw, 2013; Boyd et al., 2016; Elliott et al., 2018). Mittal and peers (2013) found that veterans of both genders hesitate to seek treatment for PTSD due to a fear of being perceived as dangerous, violent, or crazy.

Strong and colleagues (2018) evaluated an exclusively female sample of veterans and found a specific stigma of being a woman seeking services in a male-dominated system (Strong et al., 2018). As previously mentioned, female veterans are often younger, more racially diverse, and more likely to have strained relationships and lower socioeconomic status than male veterans (Strong et al., 2018). Williston and peers (2020) expressed that women hesitate to seek treatment at the VA due to a lack of knowledge about what is available to them. Williams and other researchers (2018) shared women that do engage in services do so to improve relationships or to engage in healthcare, employment, and/or educational opportunities (Williams et al., 2018).

Blais and colleagues (2018) reported other barriers to female veterans seeking treatment at the VA, including military sexual assault (Blais et al., 2018). Military sexual assault increases the existing mental health stigma and feelings of alienation (Blais et al., 2018). Wastler and other researchers (2020) found that an internalized stigma of not feeling deserving of healing is related to feelings of alienation in a larger social system. Higher levels of internal stigma correlate with higher levels of suicidality (Bonfils et al., 2018; Fox et al., 2018; Wastler et al., 2020; Williamson et al., 2019). The current direction of the VA is to make services more widely available and accessible to female veterans (NCVAS, 2016).

Gender Differences in Future Needs for Treatment

The general veteran population has identified a preference for EMDR due to the accelerated results attained with limited sessions (Hurley, 2018). EMDR is currently provided for active soldiers encountering multiple deployments to minimize panic attacks and PTSD symptoms; Hurley's study showed EMDR is effective after deployment as well (Hurley, 2018). Hurley (2018) found veterans who participated in accelerated EMDR treatment completed the study with significant reductions in PTSD symptoms that remained in remission after a one-year follow-up. Unfortunately, there were no gender differences or differentiation of sample by gender, identified in data collection (Hurley, 2018). Another similar study on the impact of combined EMDR and Prolonged Exposure Therapy shared positive results for a predominantly female sample (Van Minnen et al., 2020).

Female veterans have identified a desire to treat their sexual trauma wounds, something for which EMDR can also provide help (Schwarz et al., 2020). Schwarz and peers (2020) sought to examine relief from sexual trauma via EMDR in 25 female veterans. The results showed significant improvements in depression, anxiety, and PTSD, and produced significant increases in daily functioning, hope, and relationship functioning (Schwarz et al., 2020). EMDR was reported as less intrusive and was well-liked by participants (Schwarz et al., 2020). Finding a clear desire for PTSD treatment among female veterans however is difficult due to a limited number of EMDR treatment studies in the veteran population for both genders (Hurley, 2018; Schwarz et al., 2020; Van Minnen et al, 2020).

The male veteran population has shown a preference for mindfulness, and nature-based and active methods of PTSD treatment, to reduce the negative stigma (Bettmann et al., 2021; Mehling et al., 2018; Poulsen et al., 2018). Being in a nature-based setting lowered stress levels

and improved desire to participate in physical activity (Bettmann et al., 2021; Poulsen et al., 2018). Mindfulness through aerobic exercise significantly reduced PTSD symptoms (Mehling et al., 2018). There are studies that support female veterans can benefit from nature-based treatments and physical activity treatments also (Brehm et al., 2019; Edmond et al., 2018; Shivakumar et al., 2017; Sripada et al., 2019).

Female veterans have been shown to participate more often than men when exercise is a treatment option (Brehm et al., 2019; Edmond et al., 2018; Sripada et al., 2019). They have also specifically shared a desire for veteran services to offer treatments for weight loss, stress management, sleep hygiene, and pain management (Newins et al., 2019). Although what is known about female veterans suggests nature-based treatments would meet their needs, female veterans are not participating in nature-based studies in as high a quantity as male veterans (Bettmann et al., 2021; Mehling et al., 2018; Poulsen et al., 2018). One study by Shivakumar and fellow researchers (2017) evaluated the impact of exercise on female veterans PTSD symptoms. They found positive results utilizing yoga and meditation (Shivakumar et al., 2017). Strong and peers (2018) shared details about female veterans that may shed light on the lack of female participation in nature-based studies.

Female veterans struggle to find time to participate in treatment due to various caretaking responsibilities (Strong et al., 2018; Rodgers et al., 2020; Stefanovics & Rosenheck, 2019; Washington et al., 2015). Women are often the caretakers of children and the elderly (Strong et al., 2018). Women commonly fill positions in care taking fields such as health care, education, sanitation, and nutrition (Strong et al., 2018). Women in western society are empowered to work in professions equal to men, but still are expected to maintain the demands of the household and family care (Stefanovics & Rosenheck, 2019; Washington et al., 2015). This extra burden, not

shared by male counterparts, reduces the time available to devote to mental health treatment (Strong et al., 2018). Female veterans, as well as women in general, express a need for flexible schedules and non-traditional treatments rather than treatments that utilize traditional Monday-through-Friday office hours (Strong et al., 2018).

EMDR Overview

Veterans have expressed a preference for EMDR treatment (Poulsen et al., 2018; Shapiro, 2019; Strong et al., 2018). EMDR has been an effective treatment modality for PTSD, depression, and anxiety disorders (Del Felice et al., 2019; Faretta & Farra, 2019; Lenferink et al., 2020; Ostacoli et al., 2018; Pagani et al., 2018; Perlini et al., 2020; Proudlock & Paris, 2020; Rousseau et al., 2019; Santarnecchi et al., 2019; Sharpiro & Maxfield, 2019; Trentini et al., 2018; Van Minnen et al., 2020). The treatment modality is as effective in treating these disorders as the current evidence-based treatments of Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), Cognitive Behavioral Therapy (CBT) and Prolonged Exposure Therapy (Faretta & Farra, 2019; Lenferink et al., 2020; Ostacoli et al., 2018; Santarnecchi et al., 2019; Van Minnen et al., 2020). EMDR has been shown to effectively treat those with sexual trauma histories (Houben et al., 2021; Matthijssen et al., 2021; Schwarz et al., 2020; Struik et al., 2017). It has been described as the most cost-effective PTSD treatment due to the rapid reduction of symptoms and long-lasting results (Chamberlin, 2019; Matthijssen et al., 2020; Rousseau et al., 2020; Struik et al., 2017; Wilson et al., 2018). EMDR has also been identified as one of the most culturally sensitive PTSD treatments (Balbo et al., 2019; DiNardo & Marotta-Walters, 2019; Markus & Hornsveld, 2017; Poulsen et al., 2018; Shapiro, 2019).

The integrity of EMDR is found in its key components: Adaptive Information Processing (AIP), the eight phases of EMDR, protocols, procedures, bilateral stimulations, and clinical

interventions (Hase, 2021; Markus & Hornsveld, 2017; Sharpiro, 2019; Sharpiro & Maxfield, 2019). The therapeutic relationship is non-judgmental and open to understanding of culture, spirituality, gender, and the client's point of view (Hase, 2021). The treatment can also be easily accessed regardless of location or limitations of a client (Fisher, 2021; Maxfield, 2021).

EMDR changes memory storage in a positive way because sensory input is key to memory activation (Matthijssen et al., 2021). Bilateral movement or bilateral sensory stimulation activates AIP (Shapiro, 2019; Chamberlin, 2019). Bilateral stimulation is the cornerstone of AIP due to its ability to block the limbic system while processing a traumatic memory (Chamberlin, 2019). Chamberlin (2019) stresses that when the limbic system is active, fear stops the brain from learning from the experiences, which hinders resilience to stressful stimuli and encourages generalized fear response. Bilateral stimulation promotes acceptance of stressful stimuli as it is and not how traumatic memories perceive it (Balbo & Fernandez, 2019).

Various forms of bilateral movement and bilateral stimulation can expedite the AIP activation process (Mathjijssen et al., 2021). Mathjijssen and colleagues (2021) utilized an EMDR 2.0 version against traditional EMDR to measure sensory impact on memory. EMDR 2.0 was defined as having a focus on sensory information related to the trauma memory to increase the processing of the trauma during the bilateral movement (Matthijssen et al., 2021). Results showed that the treatment did not increase the uncomfortable feelings associated with a trauma memory; it did however reduce the number of bilateral movement sets needed to process a memory (Matthijssen et al., 2021).

AIP is activated with bilateral movement but can also be activated through sensory channels without movement (Pagani et al., 2018). Pagani and peers (2018) found that EMDR is effective even when clients cannot perform bilateral movements. EMDR's effect on comatose patients

was tested against a control group of healthy individuals (Pagani et al., 2018). Pagani found that both groups showed significant improvement in neurobiological functioning (Pagani et al., 2018). EMDR can even be a treatment for Parkinson's (Del Felice et al., 2019). Bilateral stimulation through Transcranial Alternating Current Stimulation (TACS) has been shown to alleviate Parkinson's symptoms (Del Felice et al., 2019). The ability for EMDR to be modified to fit any population's needs is widely accessible due to the ability for the main brain healing component, AIP, to be activated through bilateral movement or sensory stimulation (Shapiro, 2019).

How EMDR Meets the Needs of Female Veterans

Female veterans have unique needs in the areas of mental health disorder prevalence, physical health issues, quality of life, and mental health stigma (NCVAS, 2014; 2015; Strong et al., 2018). Mental disorders such as PTSD, depression, anxiety, degenerative diseases, and suicidality are more common in female veterans than in male veterans; EMDR has been shown to treat all of these disorders (Arditte et al., 2019; Flatt et al., 2021; Masheb et al., 2021; Monteith et al., 2021; Pitts et al., 2019; Schneider & Ling, 2019; Sidossis et al., 2021; Spinola et al., 2019; Strong et al., 2018; Yaffe et al., 2019). Physical health issues including sleep disorders, chronic pain, obesity, cardiovascular disease, and eating disorders are more common in female veterans, and EMDR can alleviate these symptoms (Flatt et al., 2021; Masheb et al., 2021; Monteith et al., 2021; Sidossis et al., 2021; Spinola et al., 2019; Strong et al., 2018; Yaffe et al., 2019). Quality of life concerns are having a lack of social support and greater vulnerability to abuse by social networks, and EMDR offers numerous formats to provide care for various situations (Allen et al., 2018; Barlett et al., 2018; Calhoun et al., 2018; Lucas et al., 2021; NCVAS, 2016; Nowlan et al., 2017; Rodgers et al., 2020; Strong et al., 2018; Walter et al.,

2014). Stigma concerns are associated with avoiding treatment due to specific traumas and social factors; EMDR can target and address these concerns (Bonfils et al., 2018; Boyd et al., 2016; Fox et al., 2018; Mittal et al., 2013; Na et al., 2021; Stefanovics & Rosenheck, 2019; Wiblin et al., 2021; Williams et al., 2018; Williamson et al., 2019; Williston et al., 2020; Vogt et al., 2020).

Mental Health Needs

The greatest risk factors for female veterans are ruminations of shame and guilt (Arditte et al., 2019; Monteith et al., 2021; Nazarov et al., 2015; Strong et al., 2018). EMDR reduces fear responses such as shame and guilt (Faretta & Farra, 2019; Markus & Hornsveld, 2017; Matthijssen et al., 2020; Perlini et al., 2018: Proudlock & Paris, 2020). In addition, female veterans are reported as having less gray matter than male veterans due to higher rates of mental illness (Niu et al., 2018). EMDR increases gray matter that has been deteriorated through mental illness by lowering activity in the limbic system, the center of autonomic reactions and fear responses (Rousseau et al., 2019). The activation of AIP fully processes a traumatic memory, relieving a client of dysfunctional beliefs and patterns of behaviors associated with unprocessed memories (Proudlock & Peris, 2020). The AIP process regenerates neural connections in the posterior cingulate cortex, which is the source of dysregulation in mental health diagnoses (Perlini et al., 2020). AIP also reduces the negative cognitive, somatic, and emotional autonomic reactions to traumatic stimuli (Faretta & Farra, 2019).

Sexual Trauma is also a risk factor for development of mental illness and suicidality (Di Leone et al., 2013; Khalifian et al., 2020; Masheb et a., 2021; Monteith et al., 2021; Strong et al., 2018; Nichter et al., 2020; Tiet et al., 2015; Yaffe et al., 2019). Schwarz and fellow researchers (2020) evaluated the impact EMDR had on a sample of 25 female survivors of sexual and domestic violence. They found that over eight sessions, the participants had a significant

reduction in PTSD, depression, and anxiety symptoms (Schwarz et al., 2020). Participants also found significant improvements in feelings of hope, personal empowerment, and relationship functioning (Schwarz et al., 2020). Struik and peers (2017) found similar results on a study of EMDR with child victims of sexual and domestic abuse. Results of this study also identified a reduction in symptoms in just eight sessions (Struik et al., 2017).

Sexual and domestic abuse victims often repress memories of abuse to survive (Houben et al., 2021). These repressed memories often surface when triggered by related events in the future, accompanied by consequences of diminished relationship and interpersonal functioning (Houben et al., 2021). Houben and colleagues (2021) stressed years of therapy and rehabilitation are needed to heal repressed memory traumas. Survivors of sexual and domestic abuse hesitate to seek treatment due to avoidance of verbally processing the trauma memories (Matthijssen et al., 2021). Furthermore, sexual abuse survivors feel more shame, guilt, and hopelessness than survivors of non-sexual abuse (Matthijssen et al., 2021). EMDR expedites the process of healing through bilateral stimulation without discussion of the trauma (Mattthijssen et al., 2021).

Proudlock and Peris (2020) sought to understand the impact EMDR has on suicidal clients. They evaluated a sample size of 72 suicidal clients, of which the gender distribution was even (Proudlock & Peris, 2020). PTSD and suicidal ideation were highly comorbid and having a history of childhood trauma and/or sexual assault increased comorbidity (Proudlock & Peris, 2020). Suicidal clients are often referred to treatment waiting lists due to a fear they will be at risk for increasing suicidal actions if retraumatized during treatment (Proudlock & Peris, 2020). EMDR is an effective, rapid treatment for PTSD with low rates of re-traumatization (Proudlock & Peris, 2020). Once AIP is activated, even without further sessions, the client may resolve the trauma unconsciously (Proudlock & Peris, 2020). Proudlock and Peris found that EMDR was

effective in reducing suicidal ideation in participants and those that had lowered suicidal ideation did not require follow-up outpatient services.

EMDR has been shown to be as effective as the prominent method of CBT for depression (Ostacoli et al., 2018). Ostacoli and colleagues (2018) explored the effectiveness of EMDR compared to CBT in depressed adults; the sample was predominantly female. Conclusions of the study showed that EMDR was just as effective in reducing depression symptoms as CBT, and a history of sexual abuse was common among those in the sample (Ostacoli et al., 2018).

EMDR has been tested against TF-CBT and CBT in post-disaster response (Satarnecchi et al., 2019; Trinitni et al., 2018). Trentini and peers (2018) compared EMDR with TF-CBT to evaluate post-disaster treatment for children. A group of 701 children were evaluated, but the gender division was not disclosed (Trintini et al., 2018). Results showed that female children presented with higher levels of distress, anxiety, and need for support than male children (Trintini et al., 2018). A similar reduction in symptoms was found between TF-CBT and EMDR (Trintini et al., 2018). Santarnecchi and colleagues (2019) compared the neurological improvements of adults' responses to post-disaster treatment with EMDR and CBT. Similar results were found in EMDR and CBT treatment on neurological improvement (Santarnecchi et al., 2019). EMDR can meet the needs of PTSD, depression, anxiety, sexual trauma, and suicidality in female veterans (Proudlock & Peris, 2020; Schwarz et al., 2020; Santarnecchi et al., 2019; Ostacoli et al., 2018; Monteith et al., 2021). EMDR's ability to manage fear responses can also alleviate physical pain and unhealthy habits (Markus & Hornsveld, 2017).

Physical Health Needs

EMDR can assist in relieving health issues of sleep, weight management, and cardiovascular functioning (Faretta & Farra, 2019; Strong et al., 2018; Van Minnen et al., 2020). PTSD is

accompanied by lowered cardiovascular fitness, chronic pain, and sleep disturbances (Flatt et al., 2021; Masheb et al., 2021; Monteith et al., 2021; Sidossis et al., 2021; Spinola et al., 2019; Strong et al., 2018; Yaffe et al., 2019). The presence of an overactive limbic system, which those with PTSD are prone to develop, increases the risk of cardiovascular illness, development of chronic pain, and loss of sleep quality (Edmond et al., 2018; Flatt et al., 2021; Fretta & Farra, 2019). EMDR lowers the activity of the limbic system, resulting in improved physical functioning and sleep quality (Hase, 2021; Fretta & Farra, 2019; Van Minnen et al., 2020).

Fear responses to perceived fearful stimuli are accompanied by patterns of dysfunction to avoid pain (Markus & Hornsveld, 2017). Female veterans have been identified as seeking comfort in food or substances to relieve emotional pain (Barlett et al., 2018; Blais, 2020; Flatt et al., 2020; Rodgers et al., 2020). Those with addiction suffer from repeated urges to use due to episodic memory; AIP relieves the urges by rewiring the brain (Markus & Hornsveld, 2017). EMDR can attain these results in just a few days depending on intensity of treatment (Hurley, 2018). Hurley (2018) evaluated the impact of intensive EMDR as opposed to traditional EMDR on PTSD symptom reductions (Hurley, 2018). Traditional EMDR was conducted over 20 weekly sessions and intensive EMDR was conducted over 10 days with two EMDR sessions a day (2018). Intensive EMDR was as effective as traditional EMDR even after a one year follow up (Hurley, 2018).

Sleep quality can greatly be improved with EMDR over current PTSD treatments such as Prolonged Exposure Therapy (Van Minnen et al., 2020). Van Minnen and colleagues (2020) combined an intensive version of EMDR with Prolonged Exposure Therapy for a predominantly female sample. The participants received either Prolonged Exposure in the morning and EMDR in the evening or EMDR in the morning and Prolonged Exposure in the evening (Van Minnen et

al., 2020). Study conclusions revealed that those with EMDR in the evening showed more significant improvement than those with EMDR in the morning (Van Minnen et al., 2020). Participants also identified they felt they slept better when EMDR was presented in the evening (Van Minnen et al., 2020). EMDR can meet the needs for better sleep quality, cardiovascular health, and healthy behavior management (Faretta & Farra, 2019; Markus & Hornsveld, 2017; Van Minnen et al., 2020). EMDR is also culturally sensitive, applicable to populations with various belief systems, and supportive of minority cultures' sense of purpose and power (Shapiro, 2019).

Social Needs

Female veterans struggle with vulnerability to dominant social culture, for instance, being a minority in research studies and commonly assumed to care for the needs of the children and the home (Allen et al., 2018; Barlett et al., 2018; Calhoun et al., 2018; Lucas et al., 2021; NCVAS, 2016; Nowlan et al., 2017; Rodgers et al., 2020; Strong et al., 2018; Walter et al., 2014). Female veterans are often the care takers of the family, both when married and single; they take the main role in caring for the children and elderly (Strong et al., 2018). This responsibility to the home and family limits the time women have to care for themselves, specifically time for PTSD treatment (Maxfield, 2021; Strong et al., 2018). They have expressed a need for non-traditional and flexible treatment formats to accommodate the lack of availability for traditional office hours (Strong et al., 2018). EMDR is available in a wide array of settings and has the ability to meet various populations' needs through modification (Maxfield, 2021).

Women, needing flexibility in treatment due to caring for the responsibilities of the home and family, can access EMDR treatment both virtually and through psychoeducational formats at a time that meets their scheduling needs (Maxfield, 2021). EMDR is available in low intensity

formats for veterans who prefer to access counseling in their own environment (Maxfield, 2021). Maxfield (2021) describes low intensity EMDR sessions as delivered in psychoeducational formats and guided programs including books, videos, phone apps, lectures, and guided online treatments. EMDR has remote applications as well to meet female veterans' treatment needs without them even leaving their home (Maxfield, 2021). Remote EMDR has been shown to be just as effective as face-to-face EMDR via phone and online delivery (Lenferink et al., 2020). EMDR can meet the needs of female veterans for non-traditional treatment methods (Lenferink et al., 2020; Maxfield, 2021; Strong et al., 2018). The adaptability of EMDR also reduces the stigma of VA services (Shapiro, 2019).

Stigma Needs

A significant barrier to seeking treatment for PTSD by female veterans is feeling a lack of belonging in a male-dominated VA system (Bonfils et al., 2018; Elliott et al., 2018; Stefanovics & Rosenheck, 2019; Washington et al., 2015; Wastler et al., 2020; Wiblin et al., 2021; Williams et al., 2018; Williston et al., 2020). Women also express an increased internalized stigma due to high levels of shame, guilt, and sexual trauma history (Andersen et al., 2019; Blais et al., 2018; Boyd et al., 2016; Mittal et al., 2013; Na et al., 2021; Vogt et al., 2020). A need for culturally sensitive PTSD treatment in the VA to engage more female veterans is a current desire of the veteran association (NCVAS, 2016; Washington et al., 2015).

EMDR is shown to be effective in treating sexual trauma (Struik et al., 2017; Schwarz et al., 2020). Sexual trauma increases internalized stigma and feelings of alienation (Wiblin et al., 2021; Westler et al., 2020). Developing trust in a therapist is often one of the most difficult parts of participating in treatment (Hase, 2021; Shapiro, 2019). EMDR has been utilized to engage populations reluctant to seek treatment or that have shown lack of progress in previous

treatments (Draper et al., 2020). Draper and peers (2020) used a modified version of EMDR to engage at risk youth; the sample was exclusively male. The research found that excluding discussion of traumatic content and focusing on instilling positive beliefs improved mental health functioning in the participants (Draper et al., 2020). Results expressed the limitation of the study was the lack of female participants (Draper et al., 2020).

EMDR may be the solution to resolving the fear of being vulnerable in populations struggling with sexual trauma histories (Draper et al., 2020; Schwarz et al., 2020; Struik et al., 2017). EMDR is acknowledged as being culturally sensitive and non-invasive (Hase, 2021; Shapiro, 2019). EMDR is also specifically, effective for minority populations such as women due to the person-centered structure and individualized treatment approach (Hase, 2021; Shapiro, 2019). The VA already has EMDR as an available option for PTSD treatment; additional education and promotion may assist female veterans in accessing it (Strong et al., 2018).

Exercise Overview

Exercise is effective in treating PTSD, depression, anxiety, chronic pain, and dementia (Baranowski et al., 2020; Brehm et al., 2019; Gordon et al., 2017; Hall et al., 2020; Hall et al., 2019; Hautasaari et al., 2017; Heinbach et al., 2020; Kern et al., 2020; Lapmanee et al., 2017; Ley et al., 2018; Linke et al., 2019; Mul, 2018; Muller et al., 2017; Pebole & Hall, 2019; Rendeiro & Rohodes, 2018; Wang et al., 2016; Zhao et al., 2020). In addition, regular exercise routines change the brain on a molecular level, reducing dysregulation of neurotransmitters present in mental illness (Heinback et al., 2020; Matura et al., 2017; Mul, 2018; Niu et al., 2018; Pascoe et al., 2021; Raichlen & Alexander, 2017; Sun et al., 2020; Szulc-Lunch et al., 2018; Tharmaratnam et al., 2017; Vivar & Praag, 2017). Exercise also improves physical health, resilience to disease, improves sleep, and encourages positive behavior change (Allen et al.,

2021; Baranowski et al., 2020; Bosch et al., 2017; Faselis et al., 2016; Hoerster et al., 2015; Ilyas et al., 2017; Kokkinos et al., 2016; Lundberg et al., 2016; Patel et al., 2016; Schmutte et al., 2017). Furthermore, active lifestyles improve overall quality of life, happiness, and feelings of self-worth (Escarfulleri et al., 2021; Klingaman et al., 2015; Kokubun et al., 2021; LaCroix et al., 2016; Laferrier et al., 2015; Myers et al., 2018; Pendse et al., 2021; Vejen et al., 2017). This section explains how utilizing exercise as a mental health treatment modality reduces the mental health stigma by re-engaging the severely mentally ill in treatment (Bochicchio et al., 2018; Druss, 2017; Fibbins et al., 2019; Mehling et al., 2018; Romain et al., 2020; Vancampfort et al., 2016; Walburg et al., 2019).

Female veterans have shown an interest in exercise for PTSD treatment (Adams et al., 2020; Escarfulleri et al., 2021). This may be due to exercise having healing capacity in the brain (Matura et al., 2017; Niu et al., 2018; Pascoe et al., 2021; Raichlen & Alexander, 2017; Sun et al., 2020; Szulc-Lerch et al., 2018; Tharmaratnam et al., 2017; Vivar & Van Praag, 2017). Both resistance training and aerobic exercise have the ability to activate brain healing (Gordon et al., 2017; Raichlen & Alexander, 2017; Tharmaratnam et al., 2017). Regular fitness routines promote emotional control of negative sensations of trauma such as rapid heart rate, shortness of breath, muscle tension, and sweating (Ley et al., 2018). In addition, daily movement combined with a diet low in simple carbohydrates and saturated fatty acids naturally reduces dementia risk, depression, and anxiety disorders, to which female veterans are more susceptible than male veterans (Baranowski et al., 2020; Rendeiro & Rhodes, 2018; Tharmaratnam et al., 2017).

How Exercise Meets the Needs of Female Veterans

Female veterans have been shown to participate in exercise more often than men (Adams et al., 2020; Escarfulleri et al., 2021). Female veterans are known to have a higher likelihood of

sexual trauma than male veterans; similarly, female athletes have higher rates of sexual trauma than male athletes (Arditte et al., 2019; Aron et al., 2019; Flatt et al., 2021; Monteith et al., 2021). Elite athletic performance is known to provide higher resilience to stressors than lower levels of physical fitness (Conidi, 2020; Hashimoto et al., 2018; Pitts et al., 2019; Tornero-Aguilera et al., 2017). Women also have higher levels of social connections when engaged in physical exercise (Lum & Simpson, 2021). Exercise may increase the physical and mental health of veterans as well as improve the quality of life and decrease the stigma of seeking PTSD treatment (Arditte et al., 2019; Conidi, 2020; Escarfulleri et al., 2021; Flatt et al., 2021; Hashimoto et al., 2018; Lum & Simpson, 2021; Montieth et al., 2021; Torero-Aguilera et al., 2017).

Mental Health Needs

Exercise is an effective treatment for depression, anxiety, and PTSD, to which women are highly susceptible (Arditte et al., 2019; Brehm et al., 2019; Flatt et al., 2021; Gordon et al., 2017; Hall et al., 2019; Hall et al., 2020; Heinbach et al., 2020; Lapmanee et al., 2017; Ley et al., 2018; Masheb et al., 2021; Monteith et al., 2021; Mul, 2018; Pebole & Hall, 2019; Pitts et al., 2019; Schneider & Ling, 2019; Sidossis et al., 2021; Spinola et al., 2019; Strong et al., 2018; Yaffe et al., 2019; Zhao et al., 2020). Active movement and exercise routines have been added to other evidence-based trauma treatments and been found compatible in treatment (Hall et al., 2020). Routine physical activity promotes resilience to mental illness (Matura et al., 2017; Niu et al., 2018; Pascoe et al., 2021; Raichlen & Alexander, 2017; Sun et al., 2020; Szulc-Lerch et al., 2018; Tharmaratnam et al., 2017; Vivar & Van Praag, 2017).

Exercise improves the hippocampal functions, learning, and memory (Rendeiro & Rhodes, 2018; Tharmaratnam et al., 2017). Running specifically has been shown to be particularly

effective in healing damaged hippocampal and lower brain stem areas (Lapmanee et al., 2017; Sun et al., 2020; Vivar & Van Pragg, 2017). Vivar and Van Pragg (2017) found that running regenerates neural connections and increases synaptic plasticity in the basal forebrain, entorhinal cortex, and the mammillary nuclei, which are vital to resistance of age-related degenerative diseases. Lapmanee and colleagues (2017) found that running regulates hormones such as serotonin, which stress dysregulates, increasing the risk of developing mental illness. Running activates insulin-like growth factor in the neural stem cells, which is the specific reason exercise promotes neurogenesis of the hippocampus; other non-active modalities may not stimulate insulin-like growth factor (Sun et al., 2020).

Mental illness negatively impacts the frontal lobe, cingulate gyrus, and the hippocampus (Matura et al., 2017; Szulc-Lerch et al., 2018; Vejen et al., 2017; Zhao et al., 2020). Brain tumors, that deteriorate the hippocampus regions, have been treated with exercise (Szulc-Lerch et al., 2018). Mortality rates of those with long term illness, continue to increase, despite the existence of treatment to improve mental and physical wellbeing (Vejen et al., 2017). Exercise may benefit female veterans' resilience to mental/physical illness (Heinback et al., 2020; Matura et al., 2017; Mul, 2018; Niu et al., 2018; Pascoe et al., 2021; Raichlen & Alexander, 2017; Sun et al., 2020; Szulc-Lunch et al., 2018; Tharmaratnam et al., 2017; Vivar & Praag, 2017).

Exercise has already been utilized to treat PTSD in veterans (Hall et al., 2019; Hall et al., 2020; Ley et al., 2018; Pebole & Hall, 2019; Shivakumar et al., 2017). Shivakuma and peers (2017) evaluated the impact of exercise on premenopausal female veterans' treatment independent of counseling and identified lowered PTSD symptoms. Physical activities used were yoga and meditation (Shivakumar et al., 2017). Ley and fellow researchers (2018) completed an exercise program with war torture survivors and found a reduction in PTSD symptoms. The

following exercise programs have been male-dominated in sample size (Hall et al., 2019; Hall et al., 2020; Ley et al., 2018; Pebole & Hall, 2019). Ley and colleagues identified that exercise had the potential to re-traumatize participants due to the physical sensations of exercise being similar to the physical sensations of trauma reactions; having a counselor available to process through these sensations was helpful for participants (Ley et al., 2018). Pebole and Hall (2019) conducted a study involving older veterans in group exercise for PTSD treatment. Results showed reduction in PTSD symptoms and higher levels of engagement than counseling with interventions in the past (Pebole & Hall, 2019). Another study by Hall and fellow researchers (2019) showed similar results. Another study by Hall's team of researchers (2020) combining exercise with Prolonged Exposure and Cognitive processing theory found promising results for exercise as an adjunct therapy.

Exercise has been used to treat depression (Brehm et al., 2019; Heinbach et al., 2020; Mul, 2018). Mul and peers (2018) explored how exercise impacts stress response on a molecular level in a rodent study. Results identified rodents that participated in voluntary exercise had less overall stress and more molecular regeneration than sedentary rodents (Mul, 2018). Brehm and colleagues (2019) conducted an exercise program in an inpatient facility for the severely mentally ill. The sample was half female in proportion, and results showed participants with depression were most likely to benefit from the program (Brehm et al., 2019). Heinbach and peers (2020) identified similar results on a study involving exercise games in treatment for older adults with severe depression.

Exercise is also effective with anxiety, substance use disorders, and schizophrenia (Kern et al., 2020; Gordon et al., 2017; Lapmanee et al., 2017; Linke et al., 2019). Gordon and fellow researchers (2017) found that resistance training reduces anxiety. The sample was 68% female

(Gordon et al., 2017). Lapmanee and peers (2017) studied the anxiety levels in rodents participating in a running program and found that running increased serotonin and decreased stress response in the rodents. Linke and colleagues (2019) evaluated the impact exercise has on substance use veteran treatment outcomes. The study was mostly male, and results showed exercise significantly improved treatment outcomes (Linke et al., 2019). Kern and other researchers (2020) conducted a study evaluating the effectiveness of an exercise program for veterans with schizophrenia, and the sample was mostly male. Conclusions of the study found that exercise decreased schizophrenic symptoms and increased social engagement (Kern et al., 2020).

Exercise is shown to be effective in treating disorders that female veterans specifically suffer from and improving overall brain health in women (Brehm et al., 2019; Gordon et al., 2017; Shivakumar et al., 2017). Women athletes and female veterans have been shown to have similar backgrounds in sexual trauma and involvement in male dominated fields (Conidi, 2020; Hashimoto et al., 2018; Pitts et al., 2019; Tornero-Aguilera et al., 2017). The ability to thrive in these environments may be due to frequent exercise (Conidi, 2020; Hoerster et al., 2015; Hashimoto et al., 2018; Pitts et al., 2019; Tornero-Aguilera et al., 2017).

Physical Health Needs

Female veterans struggle with physical disabilities, sleep quality, eating disorders, and cardiovascular illness at higher rates than male veterans (Flatt et al., 2021; Masheb et al., 2021; Monteith et al., 2021; Patel et al., 2016; Sidossis et al., 2021; Spinola et al., 2019; Strong et al., 2018; Yaffe et al., 2019). Risk factors for all of the above are sexual, physical, and verbal abuse (Flatt et al., 2021; Masheb et al., 2021; Monteith et al., 2021; Sidossis et al., 2021; Spinola et al., 2019; Yaffe et al., 2019; Muller et al., 2017). Exercise is known to be a safe approach to chronic

pain and physical rehabilitation (Allen et al., 2021; Fraselis et al., 2016; Hautasaari et al., 2016; Kokkinos et al., 2016; Lundberg et al., 2016). Exercise is shown to improve sleep quality (Bosch et al., 2017; Patel et al., 2016; Schmutte et al., 2017). In contrast, sedentary lifestyles increase the risk of developing poor nutritional habits (Baranowski et al., 2020; Blais, 2020; Flatts et al., Ilyas et al., 2017; Muller et al., 2017; Scioli et al., 2020; Vogt et al., 2020; Wiblin et al., 2021).

Veterans with untreated mental illness have higher rates of cardiovascular disease (Escarfulleri et al., 2021; Vancampfort et al., 2017). Exercise reduces the risk of cardiovascular disease (Kokkinos et al., 2016; Hautasaari et al., 2016). Kokkinos and peers (2016) evaluated the cardiovascular fitness of a mostly male sample of veterans and found those with higher levels of physical activity had lower risk of cardiovascular illness. Hautasaari and colleagues (2016) evaluated the effect exercise had on physical and mental health in a monozygotic male twin sample and found that exercise reduced pain receptor activation and improved resilience to chronic physical and mental illness.

Exercise is a safe program for those with physical disabilities and higher risk of physical illness (Allen et al., 2021; Faselis et al., 2016; Lundberg et al., 2016). The current research shares that older veterans with PTSD are more likely to be sedentary and struggle with mobility and chronic pain (Edmond et al., 2018). Exercise programs with older veterans alleviated symptoms of chronic pain and other chronic medical conditions (Hall et al., 2019; Hall et al., 2020). Women with higher levels of physical activity have lower health risks and less chronic pain (LaCroix et al., 2016; Laferrier et al., 2015; Sidossis et al., 2021).

Allen and fellow researchers (2021) completed an exercise program with veterans with knee osteoarthritis, and the majority of the sample were male. Results showed reduction in pain and improvement in treatment participation (Allen et al., 2011). Faselis and colleagues (2016)

evaluated the risk of atrial fibrillation for veterans participating in an exercise program, and results showed a decrease in atrial fibrillation risk; the sample was majority male. Lundberg and peers (2016) conducted a study on the impact of outdoor sports and recreation on female veterans with physical disabilities. Results showed that participation in outdoor sports and recreation increased social skills, personal independence, physical and emotional wellbeing, and the ability to find a sense of identity (Lundberg et al., 2016). A similar study by Laferrier and fellow colleagues (2015) found exercise improved self-esteem and quality of life in veterans with disabilities.

Female veterans struggle with sleep quality (Monteith et al., 2021; Strong et al., 2018; Patel et al., 2016). Sleep quality can be improved with exercise programs (Bosch et al., 2017; Patel et al., 2016; Schmutte et al., 2018). Bosch and colleagues (2017) found exercise programs improve sleep quality in veterans specifically. Schmutte and fellow researchers (2017) conducted a study on the impact of exercise on sleep hygiene in a severely mentally ill population. The sample was 67% female and results showed 62% improvement in sleep quality (Schmutte et al., 2017).

Female veterans are at a higher risk of obesity and eating disorders than male veterans (Flatt et al., 2021; LaCroix et al., 2016; Sidossis et al., 2021). Additionally, sedentary lifestyles are a risk factor for chest pain, cardiovascular disease, smoking, substance use, and obesity (Muller et al., 2017). Furthermore, sexual trauma increases the risk of eating disorders in female veterans (Blais, 2020; Flatt et al., 2021; Scioli et al., 2020; Vogt et al., 2020; Wiblin et al., 2021). Due to this research, the VA has implemented an exercise program called MOVE! due to the need for weight management programs for veterans (Klingaman et al., 2015; Pendse et al., 2021).

Social Needs

Female veterans are more likely to have strained social relationships than male veterans (Allen et al., 2018; NCVAS, 2016; Strong et al., 2018). Research on females shows a higher risk of being the victim of intimate partner violence with a risk factor of sexual trauma (Barlett et al., 2018; Calhoun et al., 2018; Lucas et al., 2021; Nowlan et al., 2017; Rodgers et al., 2020; Walter et al., 2014). Female veteran research also shows that eating disorders and sexual trauma are highly comorbid (Barlett et al., 2018; Blais, 2020; Flatt et al., 2021; Rodgers et al., 2020). Research suggests that female veterans utilize eating disorders and substance use as coping skills (Barlett et al., 2018; Flatt et al., 2021; Rodgers et al., 2020).

Exercise is proven to increase social engagement (Kern et al., 2020; Hall et al., 2019; Hall et al., 2020; Hall et Pebole & Hall, 2019; Sripada et al., 2019). Research studies on veterans show that healthier social dynamics are correlated with seeking treatment for PTSD (Freytes et al., 2017; LaMotte et al., 2021; Romero et al., 2015; Segal, 2013; Siegel et al., 2021). As mentioned previously, when women do engage in treatment it is for improvements in mental health, relationships, personal growth, or physical health (Blais & Renshaw, 2013; Currier et al., 2017; Flatt et al., 2021; Miles et al., 2017; Stefanovics & Rosenheck, 2019; Williams et al., 2018; Williston et al., 2020). Exercise is also associated with higher levels of self-esteem and overall quality of life (Bosch et al., 2017; Lundberg et al., 2016; Laferrier et al., 2015; Monteith et al., 2021; Patel et al., 2016; Schmutte et al., 2018; Strong et al., 2018).

Stigma Needs

Veterans as a whole have been resistant to treatment due to a negative stigma associated with seeking PTSD treatment, but exercise has been shown to be effective in reducing this stigma (Bettmann et al., 2021; Mehling et al., 2018; Poulsen et al., 2018). The studies conducted on

veterans involving exercise such as nature-based exercise treatment and forms of mindfulness-based exercise have included veteran women but as a minority (Druss, 2017; Fibbins et al., 2019; Ilyas et al., 2017; Mehling et al., 2018; Walburg et al., 2019). This is alarming due to a specific stigma already existing for female veterans feeling ignored, minimized, or clumped into male-dominated treatment programs; lack of female-specific treatment increases this stigma (Bonfils et al., 2018; Elliott et al., 2018; Stefanovics & Rosenheck, 2019; Washington et al., 2015; Wastler et al., 2020; Wiblin et al., 2021; Williams et al., 2018; Williston et al., 2020).

Fitness programs have been shown to engage individuals refusing to participate in treatment previously, including those with severe mental illness (Druss, 2017; Fibbins et al., 2019; Ilyas et al., 2017; Mehling et al., 2018; Walburg et al., 2019). Studies on women veterans specifically express a desire for treatment designed with fitness programs to assist in weight and stress management (Newins et al., 2019; Strong et al., 2018; Williams et al., 2018). In the studies with female veterans that included fitness programs, they were more engaged than their male peers (Adams et al., 2020; Edmond et al., 2018; Escarfulleri et al., 2021).

Poulsen and colleagues (2018) evaluated the impact participation in natural settings during treatment sessions, such as gardens or parks, had on veteran engagement and PTSD symptoms. The sample was exclusively male, but results revealed that treatment engagement significantly increased, and PTSD symptoms significantly decreased (Poulsen et al., 2018). Bettmann and fellow researchers (2021) also explored how nature reduces PTSD symptoms in veterans with a sample that was predominantly male. Nature exposure reduced blood pressure and overall stress response in veterans and unexpectedly increased voluntary physical activity (Bettmann et al., 2021). Mehling and peers (2018) explored how modern veterans responded to mindful exercise as a treatment for PTSD, and the sample was again predominantly male. Results showed that

younger veterans preferred mindful aerobic exercise because it reminded them of combat training and comradery between fellow soldiers (Mehling et al., 2018). Fitness programs offered in indoor settings have also increased engagement in treatment and reduction in mental health symptoms, specifically depression, to which women are more prone (Fibbins et al., 2019).

Summary

The current literature shows that veterans of both genders struggle with mental/physical health, social functioning, and quality of life due to resisting treatment, and exercise and EMDR have been utilized to re-engage veterans in treatment (Allen et al., 2018; Church et al., 2018; Edmond et al., 2018; Escarfulleri et al., 2021; Fleming, 2020; Forbes et al., 2020; Parsons et al., 2018; Torero-Aguilera et al., 2017). The problem is that female veterans uniquely struggle with increased risk of mental/physical disorders, decreased social support, and feeling unwelcome in veteran PTSD treatment programs but have not been specifically evaluated for treatment engagement utilizing exercise or EMDR (NCVAS, 2014; 2015; Strong et al., 2018). The literature review did not answer the research questions; however, the purpose of this study was add to the existing literature on female veterans and provide information on PTSD severity, quality of life, mental health stigma, and the likelihood of female veterans accessing EMDR and exercise as treatments for PTSD (NCVAS, 2017; Washington et al., 2015).

Chapter Three: Methods

Overview

The methods chapter serves to help the reader understand how this study aimed to answer the research questions (Heppner et al., 2016; Warner, 2013). The study was conducted via a correlational quantitative design in which the population was surveyed to understand their current symptoms and interest in EMDR and exercise as PTSD treatment options (Warner, 2013). The research design, questions, hypothesis, participants, instrumentation, procedures, and data analysis are discussed in this chapter. The consent forms, recruitment documents, debriefing documents, and instrumentation measures are attached to this paper in the appendices.

Design

The research design was a non-experimental, quantitative, correlational analysis of a purposeful sample of the female veteran population (Warner, 2013). Correlations identify if a relationship exists between variables without the need to manipulate the variables (Cozby, 2004; Warner, 2013). The relationships found by a correlation are either positive, negative, or zero correlation (Cozby, 2004; Warner, 2013). A positive correlation means that as one variable increase so does the other (Cozby, 2004; Warner, 2013). A negative correlation indicates that as one variable decreases the other increases (Cozby, 2004; Warner, 2013). A zero correlation defines no relationship between the variables (Cozby, 2004; Warner, 2013). A correlational design was ideal for this study due to the need to understand the relationships between PTSD symptoms and the interest in EMDR and exercise as PTSD interventions (Warner, 2013).

Using a correlational research design increased the external validity of the study due to limited control of variables, and therefore allowed for a higher ability to generalize results (Heppner et al., 2016; Warner, 2013). The study had a decrease in internal validity due to using

purposeful sampling creating a selective sample to provide the variables, limiting the ability to generalize the results outside the sampled population (Heppner et al., 2016). The results of this study would generalize the relationships between variables across the population of female veterans engaged in VA services (Heppner et al., 2016). To control bias, self-report anonymous surveys were used to diversify the responses of the population (Warner, 2013). Providing the population with as much variability as possible ensures lowering the stigma of labeling the population and further encouraging participants to engage in the research study (Williston et al., 2020).

Research Questions

RQ1: To what extent, if any, is there a significant relationship between symptom severity of PTSD, negative mental health stigma, and quality of life in female veterans?

Hypothesis

The hypotheses for RQ1, "to what extent, if any, is there a significant relationship between symptom severity of PTSD, negative mental health stigma, and quality of life in female veterans?" are as follows:

H_0: There is not a statistically significant relationship between is the symptom severity of PTSD, negative mental health stigma, and quality of life in female veterans.

H_1: There is a statistically significant relationship between the symptom severity of PTSD, negative mental health stigma, and quality of life in female veterans.

Participants

Participants for this study were female veterans in the United States. The information gathered for veterans was from the Department of Veterans Affairs website (Department of

Veteran Affairs, 2016). The United States has over 1,920,965 female veterans within the overall population (Department of Veteran Affairs, 2016).

Purposeful sampling is ideal in correlational research designs to capture the preferred variables for a specific population (Heppner et al., 2016). The sample size desired by this study was at least 164 participants to increase statistical power for this study (Cozby, 2004; Warner, 2013). The power analysis for this sample size was 0.8, identifying an 80% likelihood of the results being true of the population (Warner, 2013). The requirement for participation was being an adult female veteran; individuals' responses that did meet criteria were excluded from data analysis. The age range for participants was between 18 and 99 years old. The ethnicity and education level of participants were not predetermined despite the use of purposeful sampling due to the population demographics being limited prior to data collection (Warner, 2013).

Instrumentation

EMDR Informed Decision Screening Question

The survey began with a screening question regarding the basic understanding of EMDR to make an informed decision for treatment by participants. Participants were asked, "Can you make an informed decision regarding utilizing EMDR for PTSD treatment based on the following description?"

- Eye Movement Desensitization Reprocessing (EMDR) is a therapeutic modality involving bilateral stimulation and minimal trauma discussion.
- Bilateral stimulations consist of alternating eye or left/right body movements such as moving both eyes left and right, moving hands or feet in an alternating tapping motion, holding a handheld device that alternates vibration in one's hands, or through music alternating between one's right and left ears, all while focusing on a trauma memory.

- Trauma memories can be resolved within 3 to 6 sessions.
- EMDR has been an effective treatment for PTSD, depression, anxiety disorders, and sexual trauma comparable to Cognitive Behavioral Therapy and Prolonged Exposure therapy. EMDR has also been identified as one of the most culturally sensitive, cost-effective, and fastest PTSD treatments.

  Participants answered a "yes", "need more information" or a "no" response to this question. "Yes" responses correlated with 1, "need more information" responses correlated with 2 and "no" responses correlated with 3. Lower responses indicated informed decision making. The explanation of informed decision making is shared in the results.

EMDR and Exercise Interest Questions

Screening for the variable of interest in EMDR and exercise, was through two interest questions. The interest questions helped gain insight into the desire to use exercise and EMDR as treatments for PTSD. The first question was, "Do you want to use EMDR as a treatment for PTSD treatment?" The second question was, "Do you want to use exercise as a treatment for PTSD treatment?" Responses will be rated on a 3-point Likert scale ranging from 1 to 3, with 1 being "yes", 2 being "would like more information", and 3 being "no". The scoring range was between 1 and 3, with lower scores indicative of a higher level of desire to use exercise and EMDR for PTSD treatment.

Demographic Survey

Participant information regarding age, gender, ethnicity, education, marital status, number of children, and employment status were included (Warner, 2013). Age was important to know due to current literature expressing female veterans are younger than male veterans (Strong et al.,

2018). Gender was needed to screen for exclusion criteria. Ethnicity is important to note due to a lack of gender-specific ethnicity data segregation in the current literature (Strong et al., 2018). Education and employment demographics were important due to a need expressed by female veterans for employment and education resources and services (Strong et al., 2018). Marital status and number of children were needed due to a gap in the current literature capturing this (Strong et al., 2018). An example question from the Demographic Survey is as follows; "What is your marital status?" Possible answers to the question are, "single," "married/in a domestic partnership", or "widowed, divorced, or separated". Using demographic questions helped describe the population (Aron & Aron, 2002).

PTSD Checklist Military Version

Screening for the variable of PTSD symptoms was conducted with the PTSD Checklist-Military Version (PCL-M), a self-report screening tool for military veterans (Weathers et al., 1993). Permission to utilize this screening was granted by the authors (Weathers et al., 1993). The PCL-M is a 17-item self-report symptom questionnaire that measures the diagnostic criteria for PTSD based on the Statistical Manual of Mental Disorders (Newins et al., 2018). The severity rating scale is a 5-point Likert ranging from 1, being "none" to 5, being "extremely" (Newins et al., 2018). The scoring measure ranges from 17 to 85 of symptom severity, with 85 being the highest symptom severity, and a score of 45 indicative of a PTSD diagnosis (Newins et al., 2018). The PCL-M has statistically good validity at .97 and reliability at .96 (Norris & Hamblen, 2003).

Internalized Stigma of Mental Illness Inventory

Screening for the variable of negative mental health stigma was measured by the Internalized Stigma of Mental Illness Inventory-9 item version (ISMI-9) (Hammer & Toland, 2017).

Permission to utilize the questionnaire was granted by the creators (Hammer & Toland, 2017). The ISMI-9 is a self-report scale for individuals with mental illness concerns to report an internalized stigma associated with mental illness (Hammer & Toland, 2017). The ISMI is a 9-item screening with a 4-point Likert scale ranging from 1 to 4 with 1 being "Strongly disagree" and 4 being "Strongly agree" (Hammer & Toland, 2017). Scores can range from 9 to 36, with higher scores indicative of higher internalized stigma (Hammer & Toland, 2017). The internal consistency and test-retest reliability are statistically adequate (Hammer & Toland, 2017).

Quality of Life Scale

Screening for the variable of quality of life was measured by the Quality of Life (QoL) scale (Burckhardt & Anderson, 2003). Permission to utilize the questionnaire was granted by the authors (Burckhardt & Anderson, 2003). The QoL is a 15-item screening with a 7-point Likert scale ranging from 1 to 7 with 1 being "terrible" and 7 being "delighted" (Burckhardt & Anderson, 2003). The questionnaire assesses five domains of wellbeing including, material and physical wellbeing, relationships, community, and personal fulfillment (Burckhardt & Anderson, 2003). Scores range from 15 to 105, with higher scores indicative of higher quality of life (Burckhardt & Anderson, 2003). The reliability and validity of the QoL are statistically stable (Burckhardt & Anderson, 2003).

Procedure

Upon IRB approval, this writer worked with social media platforms to disperse invitations to participate in the research survey per their regulations and guidelines. The instruments of this study included an anonymous survey created via Centiment (Centiment, 2024). The survey included the EMDR-informed decision screening question, the EMDR and exercise interest questions, the Demographic Survey, the PTSD Check List-Military Version (PCL-M), the

Internalized Stigma of Mental Illness Inventory (ISMI-9), and the Quality of Life (QoL) scale (Centiment, 2024). The link to the survey is in the appendix (Centiment, 2024). The anticipated time to complete this survey was about 9 minutes (Centiment, 2024). Survey responses were sent directly to this researcher (Centiment, 2024).

Consent for participation in the study was presented on the Centiment survey, and the debriefing statement was at the end (Centiment, 2024). Participation is completely voluntary; if a participant wanted to withdraw from the study the survey could be exited, and the browser closed, to resign from the study (Centiment, 2024). Consent was required for access to the survey and was the first question on the Centiment survey (Centiment, 2024). All participants' entries were anonymous with no identifying information being added to the research data (Centiment, 2024). The identity of participants was further safe guarded by no requirement to enter any identifying information into the survey (Centiment, 2024). The individuals' email addresses were not known by the researcher due to social media distribution of the survey. The study had minimal risk, in that the risk was no more than the risk of everyday life (Warner, 2013

Once all data was collected, analysis of the data began by utilizing the Statistical Package for Social Sciences (SPSS) to conduct parametric statistics for testing the hypothesis (Warner, 2013). Data screening confirmed the data were appropriate for testing (Cozby, 2004). The next section details the data analysis process.

Data Analysis

The survey data was collected via Centiment data collection, where participants' responses to the survey were provided to the Centiment website for this researcher to view (Centiment, 2024). The data was analyzed via parametric statistics to measure significant differences between variables (Warner, 2013). Data screening and violations of parametric statistics was defined once

data collection was complete (Warner, 2013). Identification of type one and type two errors was explored. Lastly, the results of the study showed the demographic makeup of the population, the desires of women who wanted to use EMDR and exercise as PTSD treatment, and the results of the hypothesis testing (Warner, 2013).

The survey responses available on Centiment were safe guarded by a personal login, security encryption of transmitted data and further secured with firewalls (Centiment, 2024). The data included scores from the three survey instruments, the demographic data, and the desire to use EMDR and exercise as PTSD treatments (Centiment, 2024). It was important for the data to be safe guarded to ensure manipulation of the data by this researcher was minimized (Cozby, 2004). The data was then be screened for eligibility by excluding participants that are not female veterans and excluding participants that provided mostly neutral answers (Cozby, 2004). Once these exclusions were made, the remaining data was randomly selected for data analysis (Warner, 2013).

Data analysis was be conducted utilizing the Statistical Package for Social Sciences (SPSS), a reliable method of data collection for statistical research (Warner, 2013). Data analysis for this correlational study included descriptive statistics for distribution, central tendency of mean, mode and range of variance. A multiple regression test was utilized to identify significant relationships in the variables of hypothesis testing (Cozby, 2004; Warner, 2013). The multiple regression test evaluated the impact PTSD symptoms, mental health stigma scores, and quality of life scores had on predicting the severity of symptoms in the female veteran population (Shaughnessy et al., 2003; Warner, 2013). The Alpha levels were set to 0.05 and Confidence Levels were set to 95% (Warner, 2013).

Data was presented via figures and tables addressing violations to parametric statistics (Warner, 2013). Parametric statistics included evaluation of continuous variables, linearity, homoscedasticity, multicollinearity, outliers and normal distribution for hypothesis testing (Warner, 2013). Violations to parametric statistics were utilizing non quantitative data, having unrelated variables, excessive data outliers and non-normal distribution of the bell curve (Kline, 2004). Risk of outliers was reduced with the survey responses only being sent if all survey items were completed by participants (Warner, 2013). Risk of outliers were also reduced by excluding data that were majority neutral in response or from participants who do not meet the requirements of being a female veteran. Normal distribution was anticipated due to utilizing valid screening tools (Warner, 2013). To protect against non-quantitative data, hypothesis testing data consisted of all nominal answers being converted to interval scales (Kline, 2004). This data screening ensured that parametric testing was appropriate for the data set.

Type-one errors are incurred when the researcher incorrectly decides to reject the null hypothesis when no actual significant differences exist between variable means (Heppner et al., 2016). To protect against a type-one error, this study set a $p < .05$ where the likelihood of incurring a type-one error was less than 5% (Heppner et al., 2016). Other threats to type-one errors are unreliability of treatment implementation, error-rate issues, and violated assumptions of statistical tests (Heppner et al., 2016). Error rate issues were increased by the use of three surveys with various rating scales (Heppner et al., 2016). Attempts to reduce this error were made through specific hypothesis criteria being stated (Warner, 2013). For instance, the rating scales for each hypothesis test were from the same diagnostic measuring tool rather than utilizing various measures within the same hypothesis test. Lastly, violated assumptions of statistical tests were a threat due to the assessment having a Likert scale, which can be defined as ordinal or

interval data depending on the intent of the research design (Heppner et al., 2016). This research design was parametric; therefore, the Likert data may violate assumptions of parametric tests including normal distribution (Heppner et al., 2016).

Type-two errors occur when a researcher incorrectly accepts the null hypothesis when a significant difference between variable means does exist (Heppner et al., 2016). Threats of type-two error are low power and unreliability of measures (Warner, 2013). To protect against unreliable measures, screening tools were selected with good validity (Norris & Hamblen, 2003; Reba et al., 2019; Wilson et al., 2005). The screening questions, the identification of informed decision making for EMDR as a PTSD treatment based on a description of EMDR, the Exercise interest question and the EMDR interest question were not statistically tested for validity, due to the questions being created by this researcher (Warner, 2013). This researcher attempted to minimize type two errors by excluding data in which an informed decision is not being made; however, there was still a higher risk of a type-two error due to use of a non-valid screening question (Warner, 2013). These responses are included in the limitations of the study (Warner, 2013).

Summary

The summarized data analysis helped to describe the female veteran population and identify if significant differences in PTSD severity, mental health stigma, and quality of life were present (Warner, 2013). Data screening addressed limitations of data and violations of parametric statistics (Kline, 2004). Statistical significance of hypothesis testing was evaluated with multiple regression tests (Warner, 2013). Limitations and evaluation of data results are reviewed in the next chapter (Warner, 2013).

Chapter Four: Findings

Overview

This chapter includes information about the population and detail the findings of statistical analysis. The population demographics of age, ethnicity, education, relationship status, number of children of each participant and employment status are discussed. The evaluation of the population's ability to make an informed decision about EMDR processing for PTSD treatment is also explained. The interest in using EMDR and exercise for PTSD treatment are reviewed. Lastly, the results of hypothesis testing will be explained including the violations of the data screening.

Descriptive Statistics

The total number of participants was 279; however there were only 175 complete survey responses. All 175 participants were adult female veterans who consented to the survey and acknowledged debriefing from the survey. The exclusion of outliers lowered the participant data evaluation to 173. Table 1 below represents the distribution of the total 279 survey responses and the qualifying 173 survey collections were utilized for demographics and hypothesis testing.

Table 1

Survey Collection Summary

Total collections	279
Total complete collections	175
Excluded collections	3

The mean age of the 173 participants was between 55 and above 65 years old. The range of ages was between 18 and 99 years old. The ages were blocked in groups for selection. The

groups included 18-24, 25-34, 35-44, 45-54, 55-64, and 65 and above. The most common age was the group of 65 years old and above. Table 2 below shows a visual of the distribution of age among the sampled population.

Table 2

Age Demographics

Age Range	Frequency	Percentage
18-24	0	0%
25-34	24	14%
35-44	37	21%
45-54	29	17%
55-64	31	18%
65+	52	30%

Ethnicity selections included White, Black/African American, Hispanic/Latino, Asian/Asian American, American Indian/Alaska Native, and Native Hawaiian/Pacific Islander. The average and most common ethnicity of the 173 participants was White. Table 3 below shows the distribution of ethnicity in the sample.

Table 3

Ethnicity Demographics

	Frequency	Percentage
White	119	79%
Black/African American	11	6%
Hispanic/Latino	33	19%
Asian/Asian American	3	2%
American Indian/Alaska Native	2	1%
Native Hawaiian/Pacific Islander	5	3%

The average education of the 173 participants was an associate degree. The range of education included a minimum of a high school diploma/GED, some college, associate's degree, bachelor's degree, master's degree, and doctoral degree. The most common education level was some college. Table 4 represents the education levels of the sample.

Table 4

Education Demographics

	Frequency	Percentage
No schooling completed	0	0%
Nursery school to 8th grade	0	0%
Some high school, no diploma	0	0%
High school graduate, diploma or the equivalent (for example GED)	24	14%
Some college credit, no degree	41	24%
Trade/technical/vocational training	0	0%
Associate's degree	40	23%
Bachelor's degree	34	20%
Master's degree	31	18%
Professional degree	0	0%
Doctoral degree	3	2%

Relationship status for female veterans included single, married/domestic partnership, widowed, divorced and separated. The average and most common relationship status of the 173 participants was married or in a domestic partnership. Table 5 expresses the range of relationship status in the sample population.

Table 5

Relationship Demographics

	Frequency	Percentage
Single	26	15%
Married/domestic partnership	84	49%
Widowed	15	9%
Divorced	38	22%
Separated	10	6%

The average number of children each of the 173 participants had was between 1 and 2 children. The most common number of children a female veteran had was 2. The ranges of children were between 0, 1, 2, 3 and 4 or more. Table 6 displays the number of children for the sampled women.

Table 6

Number of Children Demographics

	Frequency	Percentage
No children	35	20%
One child	41	24%
Two children	49	28%
Three children	31	18%
Four or more children	17	10%

The average employment status of the 173 participants was retired or employed. The most common employment status was employed. The range of employment status were employed, unemployed, homemaker, student, retired and unable to work. Table 7 shows the distribution of employment status of the participants.

Table 7

Employment Demographics

	Frequency	Percentage
Employed	74	43%
Unemployed	10	7%
Homemaker	13	8%
Student	2	1%
Retired	62	36%
Unable to work	12	7%

EMDR Informed Decision-Making Question Results

The EMDR informed decision-making question included three responses for participants to choose from including 1-yes, 2-need more information and 3-no. A total of 63% of participants were able to make an informed decision based on the explanation of EMDR. A total of 23% of participants needed more information to make an informed decision and 14% of participants were not able to make an informed decision based on the explanation of EMDR. Table 8 shows the variation of informed decision making among participants.

Table 8

EMDR Informed Decision Making Demographics

	Frequency	Percentage
Yes	109	63%
No	24	14%
Need more information	40	23%

EMDR Interest Question Results

The survey requested participants answer the question, "Do you want to use EMDR as a treatment for PTSD treatment?" Responses for this interest question included 1-yes, 2-need more information and 3-no with lower scores indicating higher interest in treatment. Table 9 below indicates the frequency of each response. The percentage of participants that were interested in EMDR as PTSD treatment was 24%. The percentage of participants wanting more information about EMDR was 40%. The percentage of participants not interested in EMDR was 36%. This creates a combined interest of 24% + 40% = 64% in EMDR as PTSD treatment.

Table 9

EMDR Interest Question Demographic

	Frequency	Percentage
Yes	41	24%
No	63	36%
Need more information	69	40%

Exercise Interest Question Results

Participants were also asked to answer the question, “Do you want to use exercise as a treatment for PTSD treatment?” Responses for this interest question included 1-yes, 2-need more information and 3-no with lower scores indicating higher interest in treatment. Table 10 below indicates the frequency of each response. The percentage of veterans interested in exercise for treatment was 44%. The percentage of veterans who wanted more information on exercise was 23%. The percentage of participants not interested in exercise for PTSD treatment was 33%. There was a combined interest of 44% + 23% = 67% interest for exercise at PTSD treatment.

Table 10

Exercise Interest Question

	Frequency	Percentage
Yes	76	44%
No	57	33%
Need more information	40	23%

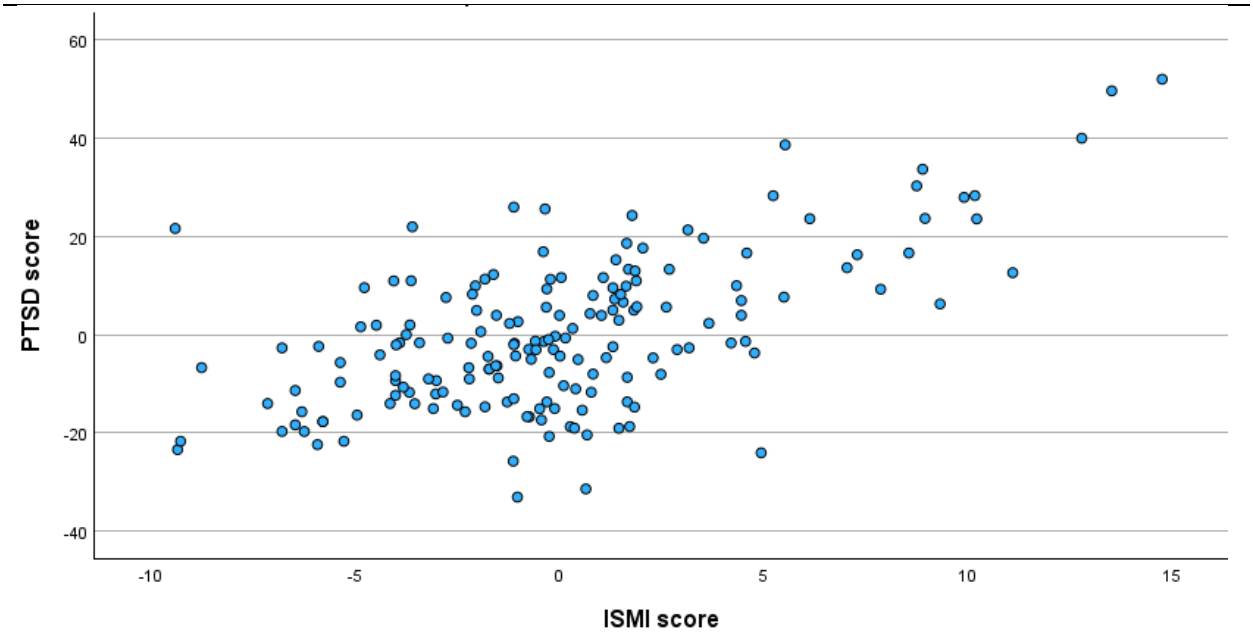
Assumption Tests

The assumptions of a multiple regression test are presented in this section. Assumptions include having independent and dependent variables in the form of a continuous scale, having independence of variables, having a linear relationship between the independent and dependent variables, having homoscedasticity of variables, not having multicollinearity, not having outliers present and the distribution of residuals be normally distributed (Laerd Statistics, 2015). Graphs will are presented to visually represent the assumptions as needed.

All variables were measured on continuous scales, meeting the first assumption. Independence of residuals was accomplished by a Durbin-Watson statistic of 1.652 (Leard Statistics, 2015). The dependent variable, PTSD scores and the independent variable, ISMI scores have a linear relationship as shown in Figure 1 by the partial regression plots of studentized residuals against the predicted values. (Leard Statistics, 2015).

Figure 1

Partial Regression Plot- PTSD and Mental Health Stigma

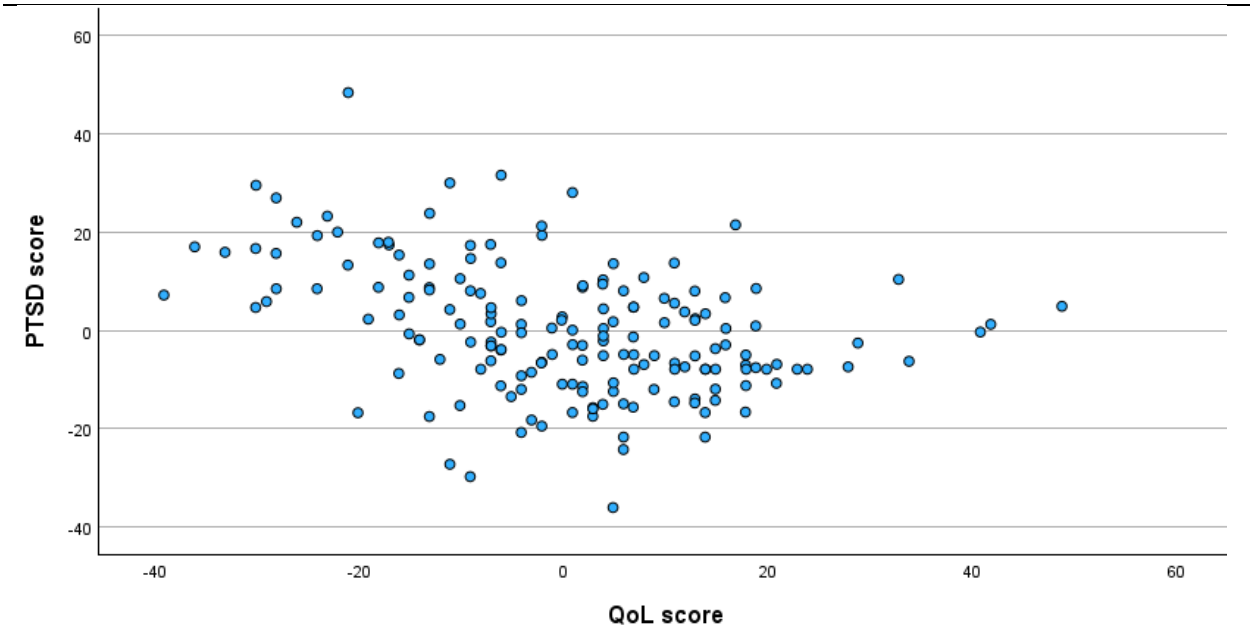


Note. Dependent variable = PTSD; Predictor variable = ISMI

The dependent variable, PTSD scores and the independent variable, QoL scores, have a linear relationship, shown in Figure 2 by the partial regression plots of studentized residuals against the predicted values (Leard Statistics, 2015).

Figure 2

Partial Regression Plot- PTSD and Quality of Life

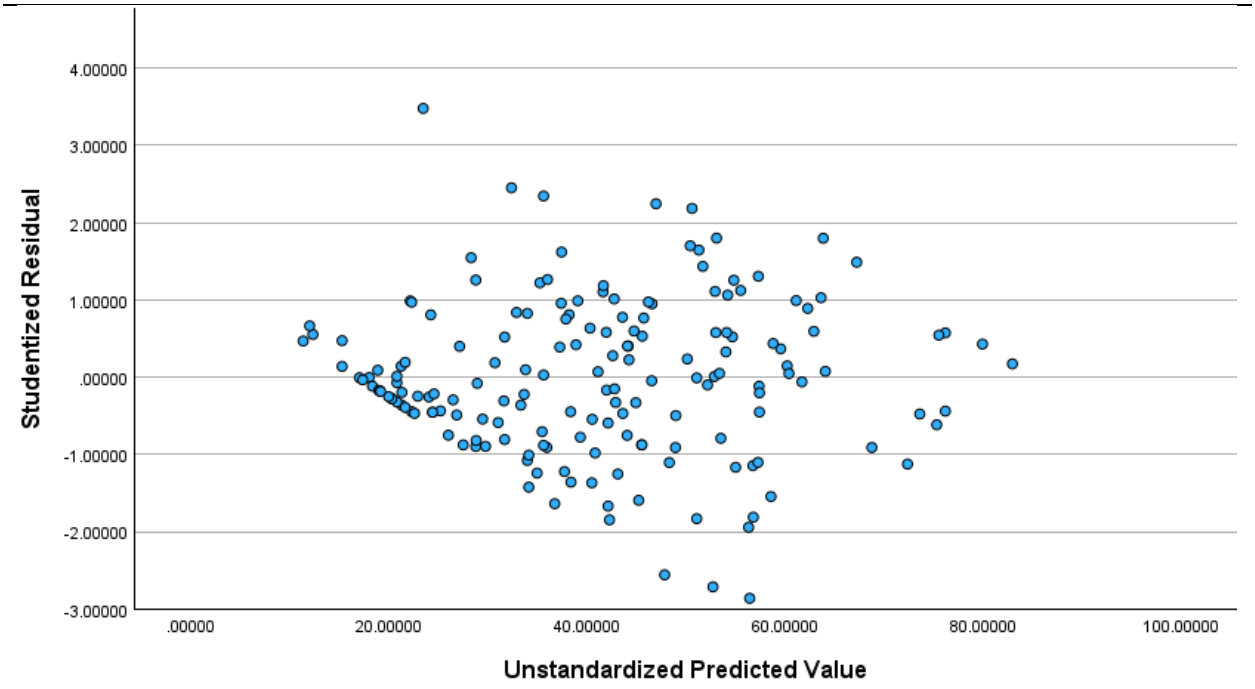


Note. Dependent variable = PTSD; Predictor variable = QoL

There was homoscedasticity, as assessed by visual inspection of a scatter plot of studentized residuals versus unstandardized predicted values and depicted by Figure 3 below (Leard Statistics, 2015).

Figure 3

Scatter Plot of Studentized Residual by Unstandardized Predicted Value



There should be no multicollinearity (Leard Statistics, 2015). Table 11 below depicts the correlations. There was no collinearity between predictor variables QoL and ISMI due to the values of both being < .7 (Warner, 2013).

Table 11

Correlations

		PTSD	QoL	ISMI
Pearson Correlation	PTSD	1.00	-.64	.75
	QoL	-.64	1.00	-.57
	ISMI	.75	-.57	1.00

Note. PTSD = Post-Traumatic Stress Disorder; QoL = Quality of Life; ISMI = Internalized Stigma of Mental Illness

Table 12 summarizes the collinearity statistics. The tolerance of ISMI and QoL scores were > 0.1 indicating there is no concern for collinearity (Leard Statistics, 2015). The values of VIF for both ISMI and QoL scores are < 10 which further confirms no collinearity between variables (Leard Statistics, 2015).

Table 12

Collinearity Statistics

	Tolerance	VIF
QoL	.68	1.48
ISMI	.68	1.48

Note. QoL = Quality of Life; ISMI = Internalized Stigma of Mental Illness; VIF = variance inflation factor

Detection of outliers was conducted utilizing the casewise diagnostics evaluation depicted below in Table 13 (Leard Statistics, 2015). The table indicates case number 81 is an outlier. Case number 81 has a standardized residual value of 3.476 which is >3 indicating it is outside the standard three deviations of the mean.

Table 13

Casewise Diagnostics

Case number	Std. Residual	PTSD score	Predicted Value	Residual
81	3.42	65	23.52	41.49

Note: Std.= standardized

Table 14 below shows the values of standardized residual, leverage value, and cook's distance ranges. The standardized range shows values exceeding 3 deviations from the mean (Warner,

2013). Leverage values < .2 are considered safe, values between .2 and .5 are considered risky and values > .5 are considered dangerous to output results (Leard Statistics, 2015). There are no cases > .2 indicating the data is safe from problematic leverage values (Leard Statistics, 2015). The last test of outliers was the Cook's Distance indicating the measure of influence of each individual case on the overall output (Leard Statistics, 2015). The Cook's Distance values are all < 1 indicating no concern for any case creating dangerous influence on the data output (Leard Statistics, 2015). Due to case 81 being outside 3 deviations from the mean, it was removed from the data. Participant 81 had a PTSD score of 65 with the highest score possible of 85, a ISMI score of 12 with the highest score of 36 possible and her QoL score was 66 with the highest score of 112 possible.

Table 14

Residuals Statistics

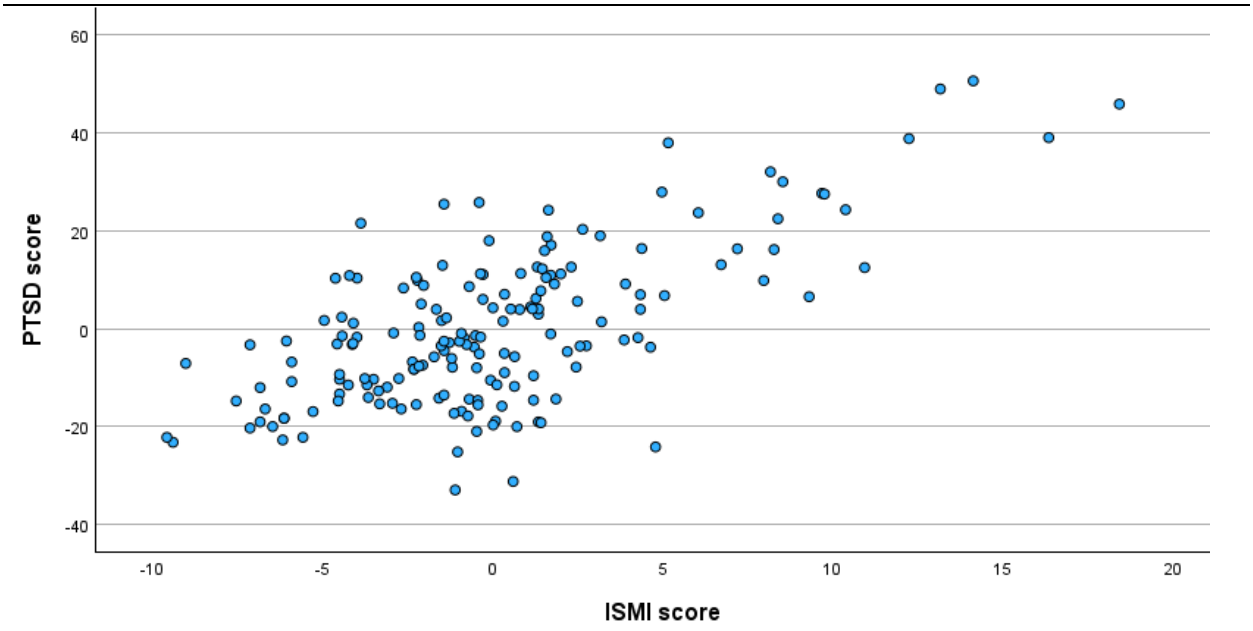
	Minimum	Maximum
Standardized residual	-2.84	3.42
Cook's distance	.00	.14
Centered leverage value	.00	.08

The assumptions were re-evaluated after removal of case 81 from the data analysis. The first two assumptions remained met with the dependent and independent variables being analyzed as continuous variables (Leard Statistics, 2015). The assumption of independence of residuals remained met, as assessed by a Durbin-Watson statistic of 1.681 (Leard Statistics, 2015).

The assumption of a linear relationship between the predictors and the dependent variable, PTSD scores and ISMI scores, remained met, as depicted in Figure 4 below.

Figure 4

Partial Regression Plot- PTSD and Mental Health Stigma

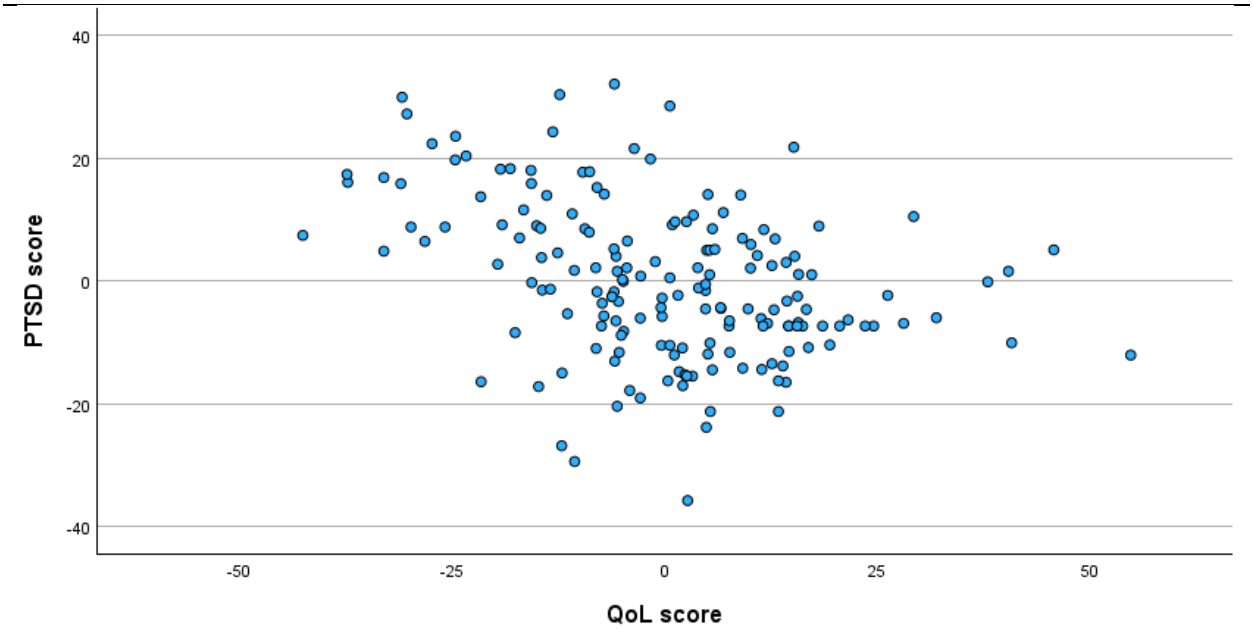


Note. Dependent variable = PTSD; Predictor variable = ISMI

The assumption of a linear relationship between the predictors and the dependent variable, PTSD scores and QoL scores, remained met, as depicted in Figure 5 below.

Figure 5

Partial Regression Plot- PTSD and Quality of Life

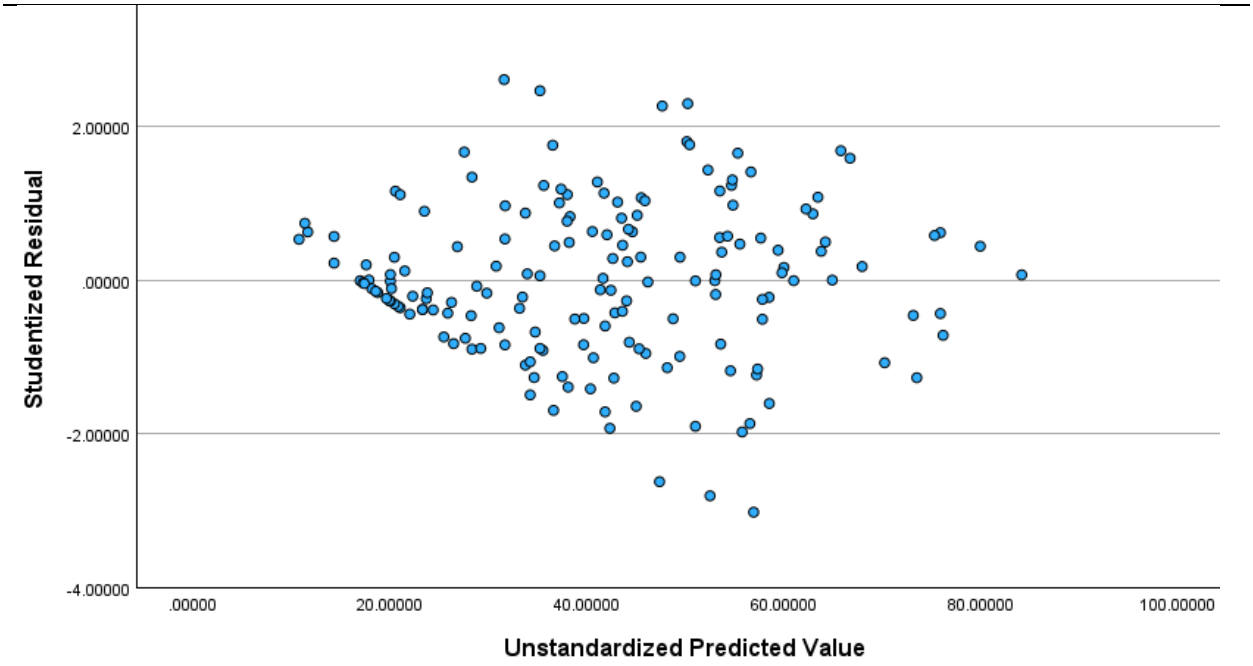


Note. Dependent variable = PTSD; Predictor variable = QoL

The assumption of homoscedasticity remained met, as assessed by visual inspection of the plot of studentized residuals versus unstandardized predicted values as depicted by Figure 6 below (Leard Statistics, 2015).

Figure 6

Scatter Plot of Studentized Residual by Unstandardized Predicted Value



The assumption of no multicollinearity remained met (Leard Statistics, 2015). Table 15 shows there remained no collinearity between predictor variables QoL and ISMI due to values < .7 (Warner, 2013).

Table 15

Correlations

		PTSD	QoL	ISMI
Pearson Correlation	PTSD	1.00	-.61	.78
	QoL	-.61	1.00	-.51
	ISMI	.78	-.51	1.00

Note. Note. PTSD = Post-Traumatic Stress Disorder; QoL = Quality of Life; ISMI = Internalized Stigma of Mental Illness

Table 16 verifies the tolerance of ISMI and QoL scores remained > .1 indicating there was no concern for collinearity (Leard Statistics, 2015). The values of VIF for both ISMI and QoL scores remained < 10 which further confirmed no collinearity between variables (Leard Statistics, 2015).

Table 16

Collinearity Statistics

	Tolerance	VIF
QoL	.74	1.35
ISMI	.74	1.35

Note. QoL = Quality of Life; ISMI = Internalized Stigma of Mental Illness; VIF = variance inflation factor

Detection of outliers was conducted utilizing casewise diagnostics and residual statistics (Leard Statistics, 2015). Table 17 below indicates case number 3 is an outlier. Case number 3 has a standardized residual value of -3.001 which is >3 indicating it is outside the standard three deviations of the mean.

Table 17

Casewise Diagnostics

Case Number	Std. Residual	PTSD score	Predicted Value	Residual
3	-3.001	22	56.97	-34.97

Table 18 shows standardized residual values exceed 3 deviations again (Warner, 2013). Leverage values remained > .2 for all cases (Leard Statistics, 2015). The Cook's Distance values are all < 1 (Leard Statistics, 2015). Due to case 3 being outside of 3 deviations from the mean, it

was removed from the data. Participant 3 had a PTSD score of 22 with the highest score possible of 85, an ISMI score of 27 with the highest score of 36 possible, and her QoL score was 62 with the highest score of 112 possible.

Table 18

Residuals Statistics

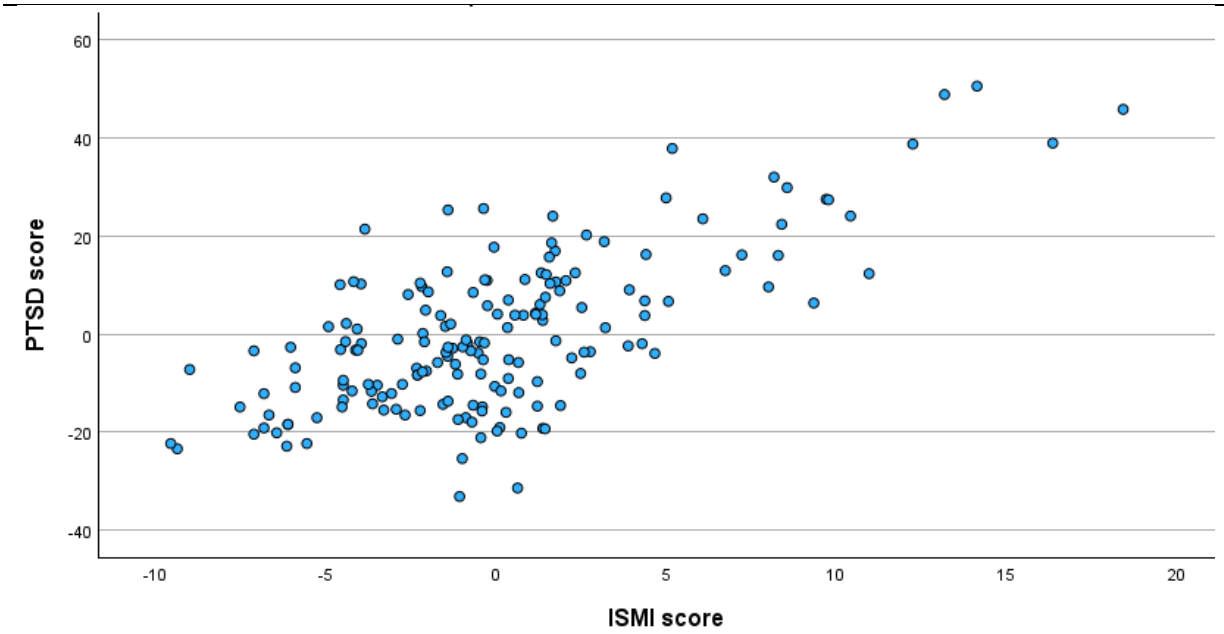
	Minimum	Maximum
Standardized Residual	-3.00	2.60
Cook's Distance	.00	.07
Centered Leverage Value	.00	.10

The assumptions were re-evaluated after removal of case 3 from the data analysis. The first two assumptions remained met with the dependent and independent variables being analyzed as continuous variables (Leard Statistics, 2015). The assumption of independence of residuals remained met, as assessed by a Durbin-Watson statistic of 1.679 (Leard Statistics, 2015).

The assumption of a linear relationship between the predictors and the dependent variable, PTSD scores and ISMI scores, remained met, as depicted in Figure 7 below.

Figure 7

Partial Regression Plot- PTSD and Mental Health Stigma

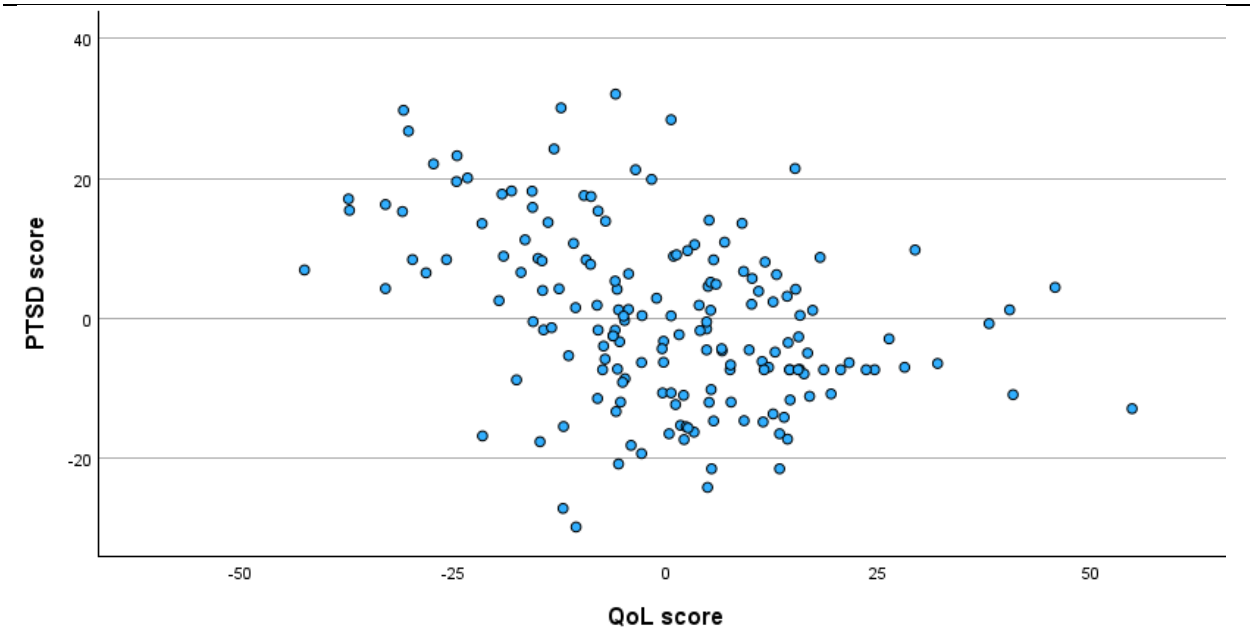


Note. Dependent variable = PTSD; Predictor = ISMI

The assumption of a linear relationship between the predictors and the dependent variable, PTSD scores and QoL scores remained met, as depicted in figure 8 below.

Figure 8

Partial Regression Plot- PTSD and Quality of Life

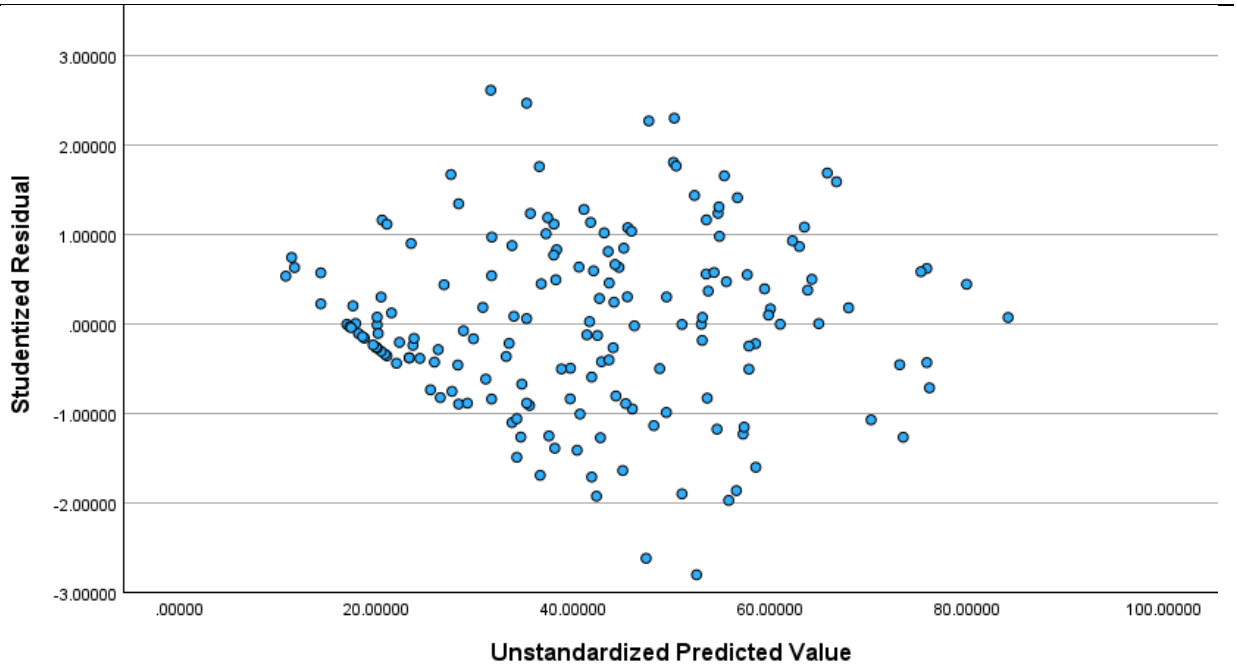


Note. Dependent variable = PTSD; Predictor = QoL

The assumption of homoscedasticity remained met, as depicted by Figure 9 below (Leard Statistics, 2015).

Figure 9

Scatter Plot of Studentized Residual by Unstandardized Predicted Value



The assumption of no multicollinearity remained met (Leard Statistics, 2015). Table 19 below showed there remained no collinearity between predictor variables QoL and ISMI due to values < .7 (Warner, 2013).

Table 19

Correlations

		PTSD	QoL	ISMI
Pearson Correlation	PTSD	1.00	-.61	.79
	QoL	-.61	1.00	-.51
	ISMI	.79	-.51	1.00

Note. PTSD = Post-Traumatic Stress Disorder; QoL = Quality of Life; ISMI = Internalized Stigma of Mental Illness

Table 20 shows the tolerance of ISMI and QoL scores remained > .2 (Leard Statistics, 2015). The values of VIF for both ISMI and QoL scores remained < 10 (Leard Statistics, 2015).

Table 20

Collinearity Statistics

	Tolerance	VIF
QoL	.74	1.35
ISMI	.74	1.35

Note. QoL = Quality of Life; ISMI = Internalized Stigma of Mental Illness; VIF = variance inflation factor

Outliers were evaluated again utilizing the standardized residual, leverage values, and cook's distance ranges shown on table 21 below (Leard Statistics, 2015). There were no cases outside 3 deviations of the mean, leverage values remained > .2 for all cases and Cook's Distance values all remained < 1 indicating no outliers in the data set (Leard Statistics, 2015).

Table 21

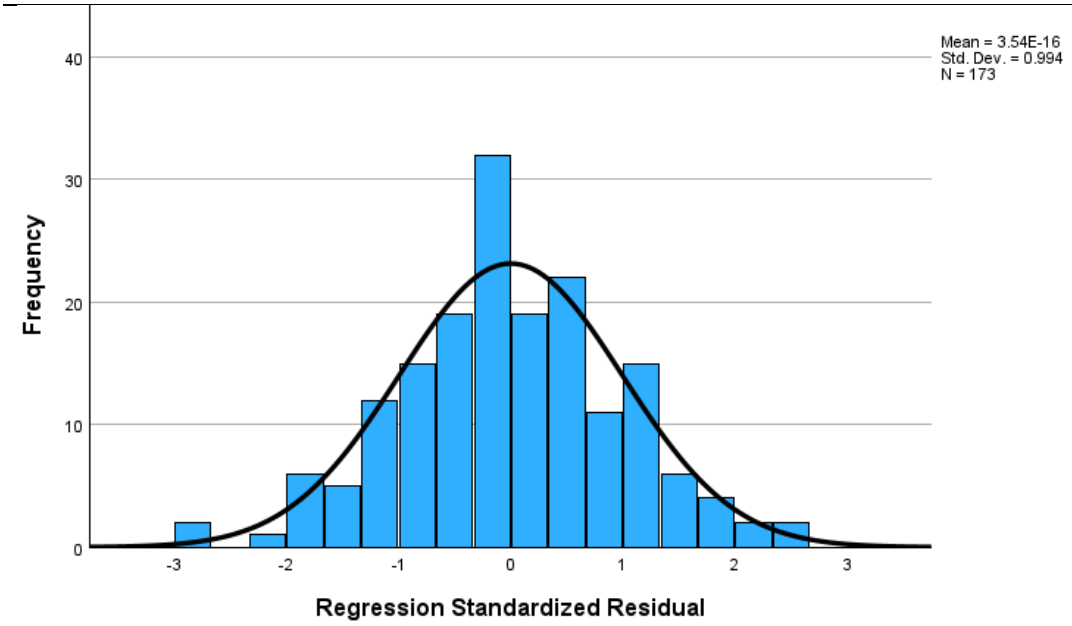
Residuals Statistics

	Minimum	Maximum
Standardized residual	-2.88	2.67
Cook's distance	.00	.07
Centered leverage value	.00	.10

The assumption of normal distribution was met as depicted by Figure 10 below showing the distribution of residuals (Leard Statistics, 2015).

Figure 10

Histogram of Normal Distribution

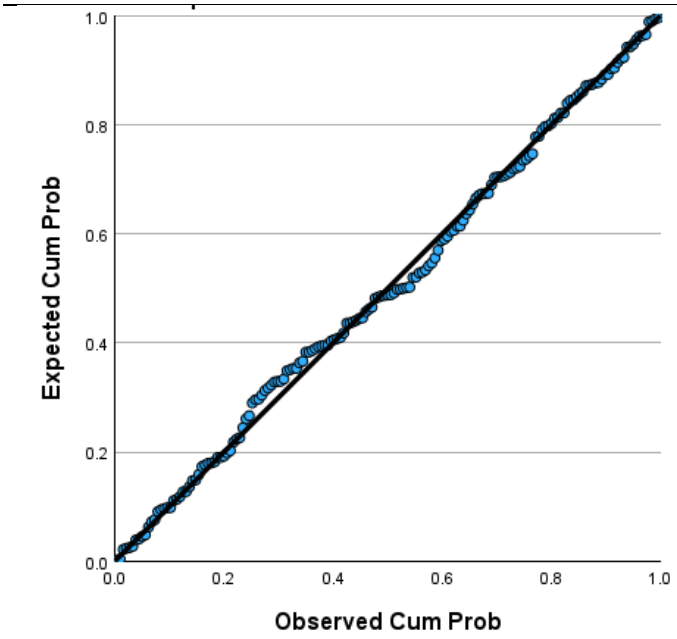


Note. Dependent variable = PTSD; Predictor variables = ISMI and QoL

The assumption of normal distribution was further tested with the analysis of the prediction of expected values and observed values as shown in the Figure 11 below (Leard Statistics, 2015).

Figure 11

Normal P-Plot of Regression Standardized Residual



Note. Dependent variable = PTSD; Predictor variables = ISMI and QoL

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Hypothesis One Results

Hypothesis testing was utilized to answer RQ1: to what extent, if any, is there a significant relationship between symptom severity of PTSD, negative mental health stigma, and quality of life in female veterans? A multiple regression was run to predict PTSD severity from mental health stigma and quality of life. The multiple regression model resulted in a statistically significant prediction between PTSD severity, mental health stigma, and quality of life. The model summary depicted in Table 22 below shows the multiple correlation coefficient, R^2 for the overall model was 67.5% with an adjusted R^2, of 67.1% indicating a large effect size (Leard Statistics, 2015). This indicates the model explains 67.5% of the range of variance between PTSD, ISMI and QoL scores (Leard Statistics, 2015).

Table 22

Model Summary

Model	R	R^2	ΔR^2
1	.82	.68	.67

Note. Model = "Enter" method in SPSS Statistics; R = multiple correlation coefficient; R^2 = coefficient of determination; ΔR^2 = proportion of variance

The statistical significance of the overall model was < .001 as depicted in Table 23 below, showing that ISMI scores and QoL scores statistically significantly predicted PTSD severity, $F(2, 170) = 176.459$, $p < .0001$, adj. $R^2 = .671$.

Table 23

ANOVA results

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	45647.28	2	22823.64.55	176.46	<.001
Residual	21988.21	170	129.34		
Total	67635.50	172			

Note. Dependent variable = PTSD; Predictors = ISMI and QoL; Model = "Enter" method in SPSS Statistics; df = degrees of freedom; F = F-value; Sig = significance

Regression coefficients and standard errors can be found in Table 24 below. Predictions of PTSD scores can be made with the following formula, PTSD= 13.33 - (2.31 x ISMI) - (-29 x QoL) (Leard Statistics, 2015). Predictions were made to determine the PTSD score for a female veteran with a ISMI score of 22 and a QoL score of 87. The PTSD score was predicted as 62.72 with a 95% confidence interval. There was a statistically significant relationship between PTSD

severity, mental health stigma and quality of life ($p < .05$). Therefore, the null hypothesis was rejected and the alternative hypothesis was accepted (Leard Statistics, 2015).

Table 24

Multiple regression results for PTSD severity

PTSD severity	B	95% CI for B LL	UL	SE B	β	R^2	ΔR^2
Model						.68	.67***
Constant	13.33*	.256	26.41	6.62			
QoL	-.29***	-.40	-.20	.05	-.28***		
ISMI	2.31***	1.95	2.67	.19	.64***		

Note. Model = "Enter" method in SPSS Statistics; B = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE B = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2. *p < .05. **p < .01. ***p < .001.

Summary

The demographics of female veterans show the most common participant is above the age of 65, White, married or in a domestic partnership, college educated, a mother of 2 children and employed. A total of 63% of the women were able to make an informed decision about EMDR for treatment and 23.1% needed more information to make an informed decision. A total of 63.6% of participants were interested in EMDR for PTSD treatment and 67% of participants were interested in exercise for PTSD treatment. The multiple regression test was run, showing a statistically significant relationship between PTSD, ISMI, and QoL scores. The null hypothesis

for RQ1 was rejected, indicating there is a significant relationship between PTSD, mental health stigma, and quality of life on severity of symptoms in female veterans.

Chapter Five: Conclusions

Overview

A discussion of the results of chapter four is addressed in this chapter. This chapter also provides details about the implications of the study as well as limitations of the study. The chapter concludes with recommendations for future research.

Discussion

This study identified that there is a significant relationship between PTSD severity, mental health stigma and quality of life. Furthermore, the study showed that female veterans are interested in EMDR and exercise for Treatment of PTSD. Research already conducted by the NCVAS 2017 study suggested female veteran PTSD severity impacts their quality of life and mental health stigma impacts the severity of PTSD symptoms. Washington and colleagues also brought awareness to the need for female specific input in services provided to female veterans (2015). This study added to the current research in that female veterans have been able to share an interest in EMDR and exercise as treatment and the study created clarity on the symptom severity of PTSD, mental health stigma and quality of life in the population sampled. This study also identified the demographics of female veteran sample, further providing information on their lifestyle and social demands.

Age

This study showed the average female veteran participant was between the age of 55 and 54. The most common age was above the age of 65. The age range of 18 to 34 years of age was the least representative of the population.

Ethnicity

The ethnicity of female veterans is a rarely explored demographic in the current literature (Strong et al., 2018). This study showed that the majority of female veterans participating in the study were White. The next most common ethnicity was Hispanic/Latino. The third most common ethnicity was Black/African American. The following ethnicities were in the following order of frequency: Native Hawaiian/Pacific Islander, Asian/Asian American and American Indian/Alaska Native.

Education

Education has been known to be important to female veterans per the current research (Strong et al., 2018). Education resources have also been shown to be desired by female veterans (Strong et al., 2018). This study showed that the average female veteran has some college experience and most commonly has an associate degree. This study did not share details about limitations of ability to attain more education or desire to be more educated.

Relationship Status

There is limited research available on relationship patterns of female veterans (Strong et al.2018). Allen and colleagues (2018) highlighted the impact PTSD symptoms had on relationship satisfaction; more specifically the study was male-dominated and identified avoidance symptoms were more damaging than hyperarousal symptoms of marital quality in that use of negative lifestyle choices were utilized by veterans to ease the pain of emotional disconnection (Allen et al., 2018). LeMotte and colleagues (2021) found that communication patterns in relationships were impacted positively by empathy levels. Male veterans have been shown to have higher divorce rates according to current research (Allen et al., 2018). The Veterans Association showed female veterans are at a higher rate of divorce than male veterans (NCVAS, 2016). The results of this study contradicted this research, showing that most of the

population was married or in a domestic partnership. The understanding of relationship dynamics and lifestyle choices was not explored in this study and would need to be specifically targeted to define the difference in male and female relationship dynamics and lifestyle choices.

Children

Strong and colleagues (2018) identified that information about female veterans and children is not clear in the current literature. Several studies in the current literature shared children of veterans were at high risk of emotional dysregulation and veteran parents may have a decreased ability to manage this dysregulation, but specific information about children and female veterans is not known (Allen et al., 2018; Church et al., 2018; Freytes et al., 2017; Parsons et al., 2018; Romero et al., 2015; Segal, 2013). This study identified female veterans have on average between 1 and 2 children with the most common number of children being 2. This study did not explore the child rearing of female veterans or the ability for female veterans to manage their children.

Employment

The current literature does not provide specific explanation of employment demographics for female veterans (Strong et al., 2018). The results of this study show that the majority of the female veteran population are employed. The second most common status is retired. The rest of the employment status is as follows: homemaker, unable to work, unemployed or a student. This study did not share the specifics of barriers to employment or desire to be employed.

Symptom Severity

Female veterans are known to have a higher rate of sexual and childhood trauma based on the current literature (Flatt et al., 2021; Masheb et al., 2021; Spinola et al., 2019). Mental disorders such as PTSD, depression, anxiety, degenerative diseases, and suicidality are also more common

in female veterans than in male veterans (Arditte et al., 2019; Flatt et al., 2021; Masheb et al., 2021; Monteith et al., 2021; Pitts et al., 2019; Schneider & Ling, 2019; Sidossis et al., 2021; Spinola et al., 2019; Strong et al., 2018; Yaffe et al., 2019). Female veterans are described in the current literature as struggling specifically with sleep, eating disorders, chronic pain, and cardiovascular disorders (Flatt et al., 2021; Masheb et al., 2021; Monteith et al., 2021; Sidossis et al., 2021; Spinola et al., 2019; Strong et al., 2018; Yaffe et al., 2019). The results of this study did not detail the physical or mental health of female veterans, but it did show an average score of 41 on the PTSD screening with a diagnosis of PTSD being met with a score of 45. The study also showed an average score of 69 with a range of scores between 16 to 112.

Quality of Life

Current research identified that mental illness increases the risk of quality of life concerns (Bochicchio et al., 2019; Druss, 2017, Stefanovics et al., 2020). The results of this study showed a negative correlation between lower quality of life and higher rates of PTSD symptoms. Current research suggests that female veteran lower quality of life may be due to the factors of social isolation and negative social relationships (Allen et al., 2018; Barlett et al., 2018; Calhoun et al., 2018; Lucas et al., 2021; NCVAS, 2016; Nowlan et al., 2017; Rodgers et al., 2020; Strong et al., 2018; Walter et al., 2014). The results of this study indicate an average quality of life score of 69 with the highest score being 112. This score does indicate the level of happiness in social functioning but does not define the details of social functioning.

Stigma of Mental Illness

Female veterans are described in the current literature as having an increased negative mental health stigma due to a male-dominated treatment model (Blais et al., 2018; Blais & Renshaw, 2013; Bonfils et al., 2018; Boyd et al., 2016; Currier et al., 2017; Elliott et al., 2018; Fox et al.,

2018; Mittal et al., 2013; Nichter et al., 2020; Wastler et al., 2020; Williamson et al., 2019; Williston et al., 2020). The results of this study show an average internalized mental health stigma of 22 out of 36. The stigma is high however a distinction between the stigma of men and women was not made in this study and cannot indicate if female mental health stigma is higher than the male mental health stigma.

Treatment Needs

The gender specific data collection regarding use of EMDR and exercise for PTSD treatment is not clear in the current literature (Newins et al., 2019; Schwarz et al., 2020; Shivakumar et al., 2017; Van Minnen et al., 2020). More specifically women veterans are limited in access to treatment due to various caretaking responsibilities as addressed in various research articles (Rodgers et al., 2020; Stefanovics & Rosenheck, 2019; Strong et al., 2018; Washington et al., 2015). This study showed the population sample is likely to be married or in a partnership with children. This study did not address the limitations of the population sample's ability to access treatment, however the sample did show an interest in EMDR and exercise as desired treatment options.

Another factor in worsening PTSD symptoms is the presence of chronic pain in the veteran population (Edmond et al., 2018). Chronic pain is also associated with other diagnoses not explored specifically in this study including anxiety, depression and degenerative brain diseases (Escarfulleri et al., 2021; LaCroix et al., 2016; Pendse et al., 2021; Torero-Aguilera et al., 2017). Medication management is a popular treatment for chronic pain however Edmond and colleagues (2018) showed women are less likely to utilize medication for pain management and more likely to utilize exercise to manage pain than men. The results of this study show a high level of

interest in utilizing exercise for PTSD treatment, but this study did not explore use of medication management by female veterans.

Implications

The results of this study impact how the mental health community views female veterans and the needs for their treatment. This study created clarity on the demographics of female veteran age, ethnicity, education, relationship status, children, and employment status. This study showed the PTSD symptom severity of female veterans is high, as well as an internalized stigma of mental health. This study defined the quality of life of female veterans is moderate and shed light on the desire for EMDR and exercise for PTSD treatment. The information provided by this research study provides the community care network of ministry and counseling the insight to provide effective care for female veterans.

The insights of this study show that female veterans may benefit from marriage and family counseling, parenting resources, social recreation, EMDR treatment, and exercise therapies. Churches may support this population by providing childcare resources in order for women to seek the mental health treatment they need. Mental health professions may support this population by encouraging adjunct physical exercise therapy with a personal trainer in addition to EMDR treatment. Both ministry and clinical professions may also support this population by supporting education on healthy relationship dynamics and facilitating practice of these dynamics with members of the community.

In light of the scriptures, we have a duty to our community to support and comfort those who have suffered. 2 Corinthians 1:6-7 states,

“If we are distressed, it is for your comfort and salvation; if we are comforted, it is for your comfort, which produces in you patient endurance of the same sufferings we suffer. And our

hope for you is firm, because we know that just as you share in our sufferings, so also you share in our comfort" (New International Version).

Romans 5:2-4 says,

"Through whom we have gained access by faith into this grace in which we now stand. And we boast in the hope of the glory of God. Not only so, but we also glory in our sufferings, because we know that suffering produces perseverance; perseverance, character; and character, hope" (King James Version).

The teachings of the scriptures show an abundance of comfort when we are willing to sit in suffering with the poor in spirit; however, there is also a need to take up the role of a teacher with great esteem and respect. James 3:1 cautions, however: "Not many of you should become teachers, my fellow believers, because you know that we who teach will be judged more strictly" (King James Version).

Limitations

A limitation of the study was a low risk of a type one and type two errors. Type one error risk was impacted by reliability of measures, various Likert scales and violations of assumptions. Type two error risk was impacted by the use of unique screening questions created for the purpose of this study.

A type one error occurs when a researcher rejects the null hypothesis incorrectly (Heppner et al., 2016). Protections from this error were created by setting an alpha level at 0.05 with a confidence interval of 95% (Warner, 2013). Reliability of the screening instruments also impacts the risk of a type one error (Heppner et al., 2016). The PTSD Checklist Military Version has a reliability of 0.96 and validity of 0.97 (Norris & Hamblen, 2003). The Internalized Stigma of Mental Illness Inventory has a statistically adequate internal consistency and test-retest

reliability (Hammer & Toland, 2017). The Quality of Life Scale has a stable reliability and validity rating (Burckhardt & Anderson, 2003). Each screening instrument had a different Likert scale which may have impacted the risk of making a type one error. The normal distribution data was slightly skewed in PTSD, ISMI and QLS screening. Lasty, two outliers were removed from the data set to support minimizing a type one error. However, six other outlier survey entries were included in the study creating increased risk of a type one error.

Type two errors are made when the null hypothesis is accepted incorrectly (Heppner et al., 2016). Type two error risk is increased by use of unreliable measures. The EMDR informed decision screening question did not have standardized reliability due to the question uniquely relating to this research study. The decision-making question was not included in hypothesis testing but was presented prior to participants completing screening tools. The impact of this question on the outcome of screening responses is unknown. Only 13.9% of survey responses utilized in data analysis did not share an ability to make an informed decision on EMDR for treatment based on the explanation of EMDR by this researcher. Additionally, 23.1% of the sample needed more information about EMDR to make an informed decision. The interest questions relating to the interest of female veterans utilizing EMDR and exercise for PTSD treatment are not a reliable measure due to the questions being uniquely created for the purpose of this study. Only 23.7% of the sample was interested in EMDR for PTSD treatment but 39.9% needed more information before expressing firm interest in EMDR. 43.9% of the sample expressed a firm interest in exercise for PTSD treatment but 23.1% needed more information before making a firm interest statement. The impact of these interest questions on the validity of responses from the sample is unknown.

Recommendations for Future Research

The specifics of various population concerns were not evaluated by this study. The specifics include mental health concerns, physical health concerns, relationship dynamics, parenting dynamics, social functioning, employment and education satisfaction, difference in mental health stigma between male and female veterans, use of medication management and extent of mental health treatment use. These areas will be addressed by this writer in the following sections.

Mental Health Research Recommendations

Concerns for mental health include depression, anxiety, suicidality and degenerative diseases (Masheb et al., 2021 and Spinola et al., 2019). The Patient Health Questionaire-9 (PHQ-9) is a helpful screening tool for depression as referenced by Lamers and colleagues (2018). Kok and peers (2015) recognized the Depression, Anxiety and Stress Scale (DASS-21) is useful in measuring depression and anxiety. Rutter and Brown (2017) evaluated the effectives of using the Generalized Anxiety Disorder Scale (GAD-7) in measuring anxiety in both men and women. Calati and fellow researchers (2020) found the Modular Assessment of Risk of Imminent Suicide (MARIS) is a screening to catch short-term suicide risk. Lastly, Julayanont and colleagues (2015) identified the use of the Montrel Cognitive Assessment-Basic (MoCA-B) in identing risk of degenerative brain disease. The combination or use of any one of these screenings may provide details of the severity of these mental health concerns in the female veteran population.

Physical Health Research Recommendations

Physical health issues not discussed in this study are the following: substance use, chronic pain, eating disorders, sleep and cardiovascular disease. Tiet and fellow researchers (2019) found success in utilizing the 2-item screen of Drug Use (SoDU) to screen substance use in those with PTSD. Ramirez-Maestre and Esteve (2015) identified the effectiveness of using the Impairment

and Functioning Inventory Revised version (IFI-R) to measure chronic pain. Konstantakopoulos and colleagues (2020) used the Assessment of Insight in Eating Disorder (SAI-ED) to interview participants' thoughts on their eating patterns and if they are considered healthy or unhealthy. Mollayeva and fellow researchers (2016) used the Pittsburg Sleep Quality Index to measure sleep satisfaction. Lastly, Elbadrmany and Sakhuja (2023) used the QRISK3 to measure cardiovascular disease risk. This writer recommends the use of these tools or others not mentioned in this manuscript to understand these symptoms in female veterans in further research.

Family Dynamics Research Recommendations

Women veterans' ability to communicate in a relationship and parent their children was not an area of concern for this study, however it does appear to be an area of concern in the current literature (Strong et al., 2018). This writer recommends considering the use of the Relationship Behavior Rating scale, the Coercion in Intimate Partner Relationships scale, the Parenting Capacity Assessment (PACs) and the Parent-Child Relationship Scale (P-CRS) to understand relationship dynamics in this population (Asdonk et al., 2020; Quintigliano et al., 2023; Willson & Fritz, 2023). Understanding the ways women relate in a relationship both as an intimate partner and as a parent may provide insight into creating helpful resources for female veterans in these areas of functioning.

Social Functioning Research Recommendations

Social functioning in the female veteran population is not well known and may be an area of further consideration of research. This study recognized that women veterans in the United States are often employed and have been college educated, however there was not explorations of specific needs in these areas. To understand these needs more clearly the following assessments

may be used; Social Functioning Scale, Job Satisfaction Scale and the Higher Education Service Quality scale (Kuhney et al., 2022; Ramos et al., 2022; Teeroovengadum et al., 2019). Details of these assessments will give the research a better understanding of social functioning in female veterans.

Use of Treatment Research Recommendations

This study showed there is a significant negative mental health stigma among female veterans but this study did not explore the stigma of accessing current mental health services. Zhou and peers (2019) recognized that the Inventory of Attitudes to Seeking Mental Health Services (IASMHS) was helpful in addressing stigma of seeking support in male veterans, this assessment may be helpful to understand the stigma of seeking services in female veterans. Edmond and fellow researchers (2018) brought awareness to the need for medication monitoring in the veteran population. Hatah and colleagues (2020) found the Malaysia Medication Adherence Assessment Tool (MyMAAT) can address medication use. These tools may create more awareness of use of services in female veterans.

Summary

This study identified a significant relationship between PTSD symptom severity, quality of life and mental health stigma in the female veteran population. This same population showed an interest in seeking EMDR and exercise as treatment for PTSD. In addition to female veterans, active female soldiers and reserve soldiers may be interested in these treatments to further prevent PTSD severity. As Laban said to Jacob, “The women are my daughters, the children are my children, and the flocks are my flocks, All you see is mine, Yet what can I do today about these daughters of mine, or about the children they have borne?” (Genisis 31:33, New

International Version). Generations of men and women in years to come will flourish or suffer from the decisions made in this generation.

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Appendix

Demographic Survey

What is your age range?

A. 18-24

B. 25-34

C. 35-44

D. 45-54

E. 55-64

F. 65+

What is your ethnicity?

A. White

B. Hispanic or Latino

C. Black or African American

D. Native American or American Indian

E. Asian/Pacific Islander

F. Other

What is the highest degree or level of school you have completed?

A. No schooling completed

B. Nursery school to 8th grade

C. Some high school, no diploma

D. High school graduate, diploma or the equivalent (for example: GED)

E. Some college credit, no degree

F. Trade/technical/vocational training

G. Associate degree

H. Bachelor's degree

I. Master's degree

J. Professional degree

K. Doctorate degree

What is your marital status?

A. Single

B. Married or domestic partnership

C. Widowed

D. Divorced

E. Separated

How many children are you providing caring for?

A. 0

B. 1

C. 2

D. 3

E. 4+

What is your current employment status?

A. Employed

B. Unemployed

C. Homemaker

D. Student

E. Retired

F. Unable to work

PTSD Checklist Military Version

INSTRUCTIONS: Below is a list of problems and complaints that veterans sometimes have in response to stressful military experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

1) Not at all 2) A little bit 3) Moderately 4) Quite a bit 5) Extremely

1. Repeated, disturbing memories, thoughts, or images of a stressful military experience? 1 2 3 4 5

2. Repeated, disturbing dreams of a stressful military experience? 1 2 3 4 5

3. Suddenly acting or feeling as if a stressful military experience were happening again (as if you were reliving it)?

1 2 3 4 5

4. Feeling very upset when something reminded you of a stressful military experience? 1 2 3 4 5

5. Having physical reactions (e.g., heart pounding, trouble breathing, sweating) when something reminded you of a stressful military experience? 1 2 3 4 5

6. Avoiding thinking about or talking about a stressful military experience or avoiding having feelings related to it? 1 2 3 4 5

7. Avoiding activities or situations because they reminded you of a stressful military experience? 1 2 3 4 5

8. Trouble remembering important parts of a stressful military experience? 1 2 3 4 5

9. Loss of interest in activities that you used to enjoy? 1 2 3 4 5

10. Feeling distant or cut off from other people? 1 2 3 4 5

11. Feeling emotionally numb or being unable to have loving feelings for those close to you?

1 2 3 4 5

12. Feeling as if your future will somehow be cut short? 1 2 3 4 5

13. Trouble falling or staying asleep? 1 2 3 4 5

14. Feeling irritable or having angry outbursts? 1 2 3 4 5

15. Having difficulty concentrating? 1 2 3 4 5

16. Being "super-alert" or watchful or on guard? 1 2 3 4 5

17. Feeling jumpy or easily startled? 1 2 3 4 5

PCL-M for DSM-IV (11/1/94) Weathers, Litz, Huska, & Keane National Center for PTSD - Behavioral Science Division

Internalized Stigma of Mental Illness Inventory- 9 Item Version (ISMI-9)

We are going to use the term “mental illness” in the rest of this questionnaire, but please think of it as whatever you feel is the best term for it. For each question, please mark whether you strongly disagree (1), disagree (2), agree (3), or strongly agree (4).

1. Stereotypes about the mental ill apply to me.
    1. Strongly disagree
    2. Disagree
    3. Agree
    4. Strongly agree
2. In general, I am able to live life the way I want to.
    1. Strongly disagree
    2. Disagree
    3. Agree
    4. Strongly agree
3. Negative stereotypes about mental illness keeps me isolated from the ‘normal’ world.
    1. Strongly disagree
    2. Disagree
    3. Agree
    4. Strongly agree
4. I feel out of place in the world because I have a mental illness.
    1. Strongly disagree
    2. Disagree
    3. Agree

4. Strongly agree

5. Being around people who don't have a mental illness makes me feel out of place or inadequate.

    1. Strongly disagree
    2. Disagree
    3. Agree
    4. Strongly agree

6. People without illness could not possibly understand me.

    1. Strongly disagree
    2. Disagree
    3. Agree
    4. Strongly agree

7. Nobody would be interested in getting close to me because I have a mental illness.

    1. Strongly disagree
    2. Disagree
    3. Agree
    4. Strongly agree

8. I can't contribute anything to society because I have a mental illness.

    1. Strongly disagree
    2. Disagree
    3. Agree
    4. Strongly agree

9. I can have a good, fulfilling life, despite my mental illness.

1. Strongly disagree
2. Disagree
3. Agree
4. Strongly agree

Scoring Key

The ISMI-9 contains 9 items which produce a total score. Reverse-code items 2 and 9 before calculating the total score. Add the item scores together and then divide by the total number of answered items. The resulting score should range from 1-4. For example, if someone answers 8 of the 9 items, the total score is produced by adding together the 8 answered items and dividing by 8.

Quality of Life Scale (QOL)

Please read each item and circle the number that best describes how satisfied you are at this time. Please answer each item even if you do not currently participate in an activity or have a relationship. You can be satisfied or dissatisfied with not doing the activity or having the relationship.

1. Material Comforts home, food, conveniences, financial security…
    1. Terrible
    2. Unhappy
    3. Mostly Dissatisfied
    4. Mixed
    5. Mostly Satisfied
    6. Pleased
    7. Delighted
2. Health- being physically fit and vigorous…
    1. Terrible
    2. Unhappy
    3. Mostly Dissatisfied
    4. Mixed
    5. Mostly Satisfied
    6. Pleased
    7. Delighted
3. Relationships with parents, siblings and other relatives-communicating, visiting, helping…
    1. Terrible

2. Unhappy
3. Mostly Dissatisfied
4. Mixed
5. Mostly Satisfied
6. Pleased
7. Delighted

4. Having and rearing children…

1. Terrible
2. Unhappy
3. Mostly Dissatisfied
4. Mixed
5. Mostly Satisfied
6. Pleased
7. Delighted

5. Close relationships with spouse or significant other…

1. Terrible
2. Unhappy
3. Mostly Dissatisfied
4. Mixed
5. Mostly Satisfied
6. Pleased
7. Delighted

6. Close friends…

1. Terrible
2. Unhappy
3. Mostly Dissatisfied
4. Mixed
5. Mostly Satisfied
6. Pleased
7. Delighted

7. Helping and encouraging others, volunteering, giving advice…
    1. Terrible
    2. Unhappy
    3. Mostly Dissatisfied
    4. Mixed
    5. Mostly Satisfied
    6. Pleased
    7. Delighted
8. Participating in organizations and public affairs…
    1. Terrible
    2. Unhappy
    3. Mostly Dissatisfied
    4. Mixed
    5. Mostly Satisfied
    6. Pleased
    7. Delighted

9. Learning- attending school, improving understanding, getting additional knowledge…
    1. Terrible
    2. Unhappy
    3. Mostly Dissatisfied
    4. Mixed
    5. Mostly Satisfied
    6. Pleased
    7. Delighted
10. Understanding yourself- knowing your assets and limitations- knowing what life is about…
    1. Terrible
    2. Unhappy
    3. Mostly Dissatisfied
    4. Mixed
    5. Mostly Satisfied
    6. Pleased
    7. Delighted
11. Work- job or in home…
    1. Terrible
    2. Unhappy
    3. Mostly Dissatisfied
    4. Mixed
    5. Mostly Satisfied

6. Pleased
7. Delighted

12. Expressing yourself creatively…

1. Terrible
2. Unhappy
3. Mostly Dissatisfied
4. Mixed
5. Mostly Satisfied
6. Pleased
7. Delighted

13. Socializing- meeting other people, doing things, parties, ect…

1. Terrible
2. Unhappy
3. Mostly Dissatisfied
4. Mixed
5. Mostly Satisfied
6. Pleased
7. Delighted

14. Reading, listening to music, or observing entertainment…

1. Terrible
2. Unhappy
3. Mostly Dissatisfied
4. Mixed

5. Mostly Satisfied
6. Pleased
7. Delighted

15. Participating in active recreation…

1. Terrible
2. Unhappy
3. Mostly Dissatisfied
4. Mixed
5. Mostly Satisfied
6. Pleased
7. Delighted

16. Independence, doing for yourself…

1. Terrible
2. Unhappy
3. Mostly Dissatisfied
4. Mixed
5. Mostly Satisfied
6. Pleased
7. Delighted

Social Media Recruitment

Dear valued female veteran:

As a doctoral student in the Department of Community Care and Counseling, at Liberty University. I am conducting research as part of the requirements for a Doctor of Education degree. The purpose of this study is to describe the severity of PTSD symptoms, the mental health stigma, and quality of life in female veterans; and furthermore, understand the desire for these women to engage in exercise and EMDR for PTSD treatment. If you meet my participant criteria and are interested, I would like to invite you to join my study.

Participants must be 18 years of age or older, a female veteran. If you are interested in participating in this study, please click the survey link. The survey takes approximately 9 minutes to complete. Participation is completely anonymous and no personal identifying information will be collected.

A consent document is attached to the survey.

To participate, please click the hyperlink: https://www.surveymonkey.com/r/HBYCBZY

Sincerely,

Ericka Day

Doctoral Student in the Department of Community Care and Counseling, Liberty University

Consent For Participation

Title of the Project: EMDR and Exercise: Treating PTSD in Female Veterans

Principal Investigator: Ericka Day, doctoral student in the Department of Community Care and Counseling, Liberty University

Assigned Chair: Stephany Pracht, EdD Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age and a female veteran. Taking part in this research project is voluntary. Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of this study is to describe the severity of PTSD symptoms, mental health stigma, and quality of life in female veterans; and furthermore, understand the desire for these women to engage in exercise and EMDR for PTSD treatment.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to complete anonymous surveys that should take about 9 minutes to complete.

How could you or others benefit from this study?

Benefits include assisting in female veteran PTSD treatment!

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researchers will have access to the records. Data collected from you may be shared for use in future research studies or with other researchers. If data collected from you is shared, any information that could identify you, if applicable, will be removed before the data is shared.

- Participant responses will be anonymous.

Is study participation voluntary?

Participation in this study is voluntary. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser.

Whom do you contact if you have questions or concerns about the study?

The researchers conducting this study are Ericka Day and her assigned Liberty University Department of Education Chair, Dr. Stephany Pracht EdD. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Ericka Day at [redacted] You may also contact the researcher's faculty sponsor, Stephany Pracht, EdD at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. you can print a copy of the document for your records. If you have any questions about the study before or after you sign this document, you can contact the researchers using the information provided above.

Debriefing Statement

Title of the Project: EMDR and Exercise: Treating PTSD in Female Veterans

Principal Investigator: Ericka Day, Doctoral Student in the Department of Community Care and Counseling, Liberty University

Assigned Chair: Stephany Pracht, EdD, Liberty University

Thank you for being part of a research study.

You recently participated in a research study. You were selected as a participant because you are 18 years of age or older and a female veteran. Participation in this research project was voluntary.

Please take time to read this entire form and ask any questions you may have.

What was the study about and why was it being done?

The purpose of this study is to describe the severity of PTSD symptoms, mental health stigma, and quality of life in female veterans; and furthermore, understand the desire for these women to engage in exercise and EMDR for PTSD treatment.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researchers will have access to the records.

- Participant responses will be anonymous

What should you do if you decide to withdraw from the study?

Because the surveys were anonymous, it is not possible to link your survey to you and remove your survey from the study. Your responses will be recorded and included in the study.

Whom do you contact if you have questions or concerns about the study?

The researchers conducting this study are Ericka Day and her assigned Liberty University Department of Education Chair. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Ericka Day at [redacted] You may also contact the researcher's faculty sponsor, Stephany Pracht, EdD at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

PTSD Checklist Military Version Permission Letter

Permission was granted to utilize the PTSD Checklist Military Version via personal communication with Todd Mckee on June 23, 2022 (T. McKee, personal communication, June 23, 2022).

Internalized Stigma of Mental Illness Inventory- 9 Item Permission Letter

According to Dr. Joseph Hammer the creator of the Internalized Stima of Mental Illness Inventory- 9, permission is not required for use of this survey. The information was gathered from the website for Dr. Joseph Hammer's research instruments (Internalized Stigma of Mental Illness Scale-9 (ISMI-9) – Dr. Joseph H. Hammer (drjosephhammer.com).

Quality of Life Scale Permission Letter

Permission was granted to utilize the Quality of Life Scale via personal communication with author Carol Burakhardt on January, 1, 2024 (C. Burakhardt, January 1, 2024).

Institutional Review Board Approval Letter

May 26, 2023

Ericka Day

Stephany Pracht

Re: IRB Exemption - IRB-FY22-23-1518 EMDR and Exercise: Treating PTSD in Female Veterans

Dear Ericka Day, Stephany Pracht,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, PhD, CIP

Administrative Chair

Research Ethics Office

Institutional Review Board Modification Approval Letter

January 12, 2024

Ericka Day

Stephany Pracht

Re: Modification - IRB-FY22-23-1518 EMDR and Exercise: Treating PTSD in Female Veterans

Dear Ericka Day, Stephany Pracht,

The Liberty University Institutional Review Board (IRB) has rendered the decision below for IRB-FY22-23-1518 EMDR and Exercise: Treating PTSD in Female Veterans.

Decision: Exempt

Your request to make the following changed to your study has been approved:

1. Increase the number of planned participants from 138 to 164;
2. Utilize social media instead of email to recruit study participants;
3. No longer focus on female veterans enrolled in Salem, Virginia, VA services;
4. Change the study objective to include data on mental health stigma;
5. Add the Internalized Stigma of Mental Illness Inventory (ISMI-9);

6. Replace the World Health Organization Quality of Life Scale (WHOQOL-BREF) with the Quality of Life Scale (QOL); and
7. Reduce the survey completion time estimate from 30 minutes to 9 minutes.

Thank you for submitting documentation of permission/your revised study documents for our review and documentation. **For a PDF of your modification letter, click on your study number in the My Studies card on your Cayuse dashboard. Next, click the Submissions bar beside the Study Details bar on the Study Details page. Finally, click Modification under Submission Type and choose the Letters tab toward the bottom of the Submission Details page. If your modification required you to submit revised documents, they can be found on the same page under the Attachments tab.** Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Thank you for complying with the IRB's requirements for making changes to your approved study. Please do not hesitate to contact us with any questions. We wish you well as you continue with your research.

Sincerely,

G. Michele Baker, PhD, CIP

Administrative Chair

Research Ethics Office