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Maria Varvoutis Date

Secondary Traumatic Stress in Military Spouses: A Systematic Review

By

Maria Varvoutis
Master of Public Health

Hubert Department of Global Health

_____

Dabney P. Evans, PhD, MPH
Committee Chair

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By

Maria Varvoutis

Bachelor of Science in Health Education and Behavior
University of Florida
2011

Thesis Committee Chair: Dabney P. Evans, PhD, MPH

An abstract of
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Abstract

Secondary Traumatic Stress in Military Spouses: A Systematic Review
By Maria Varvoutis

Post-traumatic stress disorder (PTSD) and deployments have a significant impact upon military families, however, a limited amount of research has been conducted on the relationship and origins between secondary traumatic stress and military spouses (STS). This systematic review explores the connections and origins of STS in a prognosis manner to provide health professionals and researchers with evidence-based research. Between June and October 2015, the researcher conducted a systematic search through PubMed, PyschINFO, Web of Science and Cochrane. Forty-five articles were included in the final analysis, and yielded two themes that affect the manifestation and prevalence of secondary traumatic stress—psychosocial and marriage satisfaction.

The models found in this review illustrate a positive correlation between STS and military spouses from 1990 to 2015. Although the origins did not have a positive linear trend towards a single determining factor, the evidence suggests that lowered marital satisfaction and psychosocial health play a significant role in the manifestation of STS. The overlap of these branches interplay with the perception of military spouses in a manner that calls for further research and declaration of how mental health professional define STS specifically in the military arena. The researcher made final recommendations on methods to lower the prevalence and ultimately decrease the cost of spending on mental health in the United States military.

Keywords: mental health, secondary traumatic stress, military spouses, PTSD

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Acknowledgments

I would like to thank my husband and family for the countless hours, motivational speeches, and late night conversations that made this research possible. I would also like to thank my thesis advisor who spent hours deciphering my work into a readable piece of academic literature.

The researcher would like to dedicate this study to the unknown number of military spouses who have and will continue to deal with secondary traumatic stress (STS) on a daily basis. It is my utmost desire that this work opens a bigger a door and stirs the United States Department of Defense to further their research and exploration into this silent killer that is tearing countless families apart.

Table of Contents

Table of Tables and Figures

Introduction

Researchers have conducted minimal research on the relationship and origins of secondary traumatic stress (STS) in military spouses; however, countless military personnel have been deployed to complex humanitarian emergencies in conflict zones (Motta, Kofer, Hertz, and Hafeez, 1999). The undertaking of this research into STS has become increasingly urgent, as mental health research has connected military deployments to increased levels of stress, anxiety, and depression among personnel and their families (Mansfield, Kaufman, Marshall, & Gaynes, 2010).

As this topic gradually comes to the forefront of mental health research in the military community, researchers earnestly seek out the predictive factors for this mental ailment. This research investigates the association of STS in military spouses to active duty deployments to conflict zones (Bjornestad, Schweinle, & Elhai, 2014; Francisko, Stevanovic, Jelusic, Roganovic, Klaric, & Grkovic, 2007; Stevanovic, Franciskovic, & Grkovic, 2012). This relationship is being further investigated based upon the fact that researchers have established that mental health treatment interventions be implemented in military families to weaken the negative associations of deployments and civilian spouse' risk of STS (Figley, 1993; Solomon, Waysman, Levy Mikuluncer, Benbenishty, Florian, & Bleich, 1992). These interventions further explore the familial implications of STS and give greater perspective on how to address them.

The first objective of this research is to conduct a systematic review using the Cochrane Review methodology on the relationship and origins of STS in military spouses of active duty personnel. The second objective of this research is to determine the relationship and origins of STS in civilian spouses whose significant other is currently, or was deployed to a conflict zone. The long-term goal of this study is to provide a better understanding of secondary traumatic

stress in military spouses whose significant other has served in a conflict zone. Furthermore, researchers may be able to use these findings to strengthen their argument on the relationship and origins of STS found in military spouses.

Through this study STS is defined in the field of mental health, exhibits room for growth in the area of interventions, and exemplifies the origins in military spouses. The researcher used the *Cochrane Handbook for Systematic Reviews of Interventions* methods for the completion of this review (version 5.1.0). This handbook published by the Cochrane Collaboration details the process of conducting a systematic review of prognosis reviews. Through this type of systematic review, the researcher is able to supply evidence-based findings to clinicians and medical health professionals to ensure improved health outcomes in the target population (Cochrane Workshop: Prognosis Reviews n.d.).

History of Mental Health in the Military

In 1999, Neugebauer suggested that although public health research was expanding, it was focusing primarily on mortality and thus ignoring the health implications of severely debilitating disorders such as mental health (Neugebauer, 1999). The World Health Organization defines mental health as "the state of well being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community" (World Health Organization, 2016). Mental health disorders transpire when an individual cannot carry out on a daily basis one of the afore mentioned levels of mental health. The World Health Organization (WHO) World Mental Health (WMH) surveys have asserted that 18.1-36.1% of individual experience a mental illness at some point in their life (Kessler et al., 2011). WHO WMA also suggested in these surveys that increased violence is indicative of the rise of mental health (Kessler et al., 2011). As a result,

mental health research has become a greater international priority in order to lessen global mortality and morbidity (Neugebaurer, 1999; Lopez, Mathers, Ezzati, Jamison, & Murray, 2006).

Mental health research and treatment was brought to the forefront for veterans after the Vietnam War as the United States rushed to answer the questions of what our veterans were experiencing. Veterans were returning home emotionally numb, continually experiencing anger fits, and endless nightmares. Post-traumatic stress disorder (PTSD) was initially defined as 'shell-shock', or the 'thousand-yard stare', that ailed of most of these veterans, yet the mental health of their family members soon also became a concern (Helmus, & Glenn, 2005). In fact, Baronet proved in 1999 that living with someone with a severe mental illness (SMI) could cause increased rates of psychological distress among family members (Baronet, 1999).

The short and long-term impacts of deployments are highly associated with increased mental and physical needs. In fact, the prevalence rates of post-traumatic stress disorder (PTSD), depression, and traumatic brain injury (TBI) in the military range from 7% to 40% (Tanielian & Jaycox, 2008). Each of these mental health conditions are often associated with warfare and hostility from experiencing firsthand the trials of peacekeeper missions and political conflict related complex humanitarian emergencies. Approximately 33% of service members who return from combat suffer from at least one of these conditions, and 5% meet the criteria for all three diagnoses (Tanielian & Jaycox, 2008). In 2004, research highlighted that less than half of these individuals sought out mental health treatment (Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004). The findings later confirmed that once again that more than 50% of cases of military post-traumatic stress disorders (PTSD) are unreported yearly (Richardson, Frueh, & Acierno, 2010). Although underreporting is an ever-pressing concern in this area, military

personnel in 2010 still had higher rates of diagnosis with PTSD when compared to civilians (Richardson, Frueh, & Acierno, 2010).

Military Spouses and STS

Figley (1983, 1993, 1995, 1999) defined the primary symptoms of secondary traumatic stress as individuals who exhibit the same traumatic symptoms as the population they are serving (Arzi, Solomon, & Dekel, 2000; McCann & Pearlman, 1990; Solomon, Waysman, Levy, Fried, Mikulincer, Benbenishty, Florian, & Bleich, 1992). Secondary traumatic stress has been associated with "compassion fatigue" (Figley, 1995), "vicarious traumatization" (McCann & Pearlman, 1990; Pearlman & Saakvitne, 1995), "trauma transmission" (Baranowsky, Young, Johnson-Douglas, Williams-Keeler, & McCarrey, 1998), and "burnout" (Figley, 1998). As seen by the multiple definitions by scholars and researchers over the years, STS has limited empirical support and thus is difficult to define. However, through this limited definition, STS has been reported in aid workers recently returning from post-conflict deployments, social workers who work with at-risk and vulnerable populations, and in Holocaust survivors through retrospective research (Bride, Robinson, Yegidis, & Figley, 2004; Yehuda, Bell, Bierer, & Schmeidler, 2008).

Military spouses are at an increased risk for secondary traumatic stress because of the intimate role they play with active duty deployments and combat-related PTSD (Cash 2006; Dekel & Solomon, 2006; Mansfield, Marshall, Gaynes, Morrissey, Engel, 2010). As defined by Figley, the literature describes spouses experiencing STS as those who experience the same mental and physical adjustment to life post-deployment as their active duty partners. In fact, combat-related PTSD, stemming from the active duty member or veteran, has been proven to cause inter-marital strain and relationship disturbances (Carroll, Reuger, Foy, Donahoe, 1985; Jordan, Nunley, Cook, 1992; Solomon, Weisenberg, Schwarzwald, Mikulincer, 1987).

Furthermore, studies have demonstrated that mental health among United States military spouses deteriorates throughout deployment (Green, Nurius, & Lester, 2013). This stems directly from how a military spouse connects, or identifies, to the active duty partner in a manner that actually causes secondary trauma (Green et al, 2013; Maloney, 1998). The most well-known theories to date on this subject come from Solomon who completed his work in 1992. Although his research states that wives exhibit STS through identification, he also found that spouses might experience STS in result of living in close proximity to a loved one who has experienced trauma (Solomon et al., 1992). In conclusion, the origins of secondary traumatic stress in military spouses have been associated with multiple theories.

Regardless of what the trigger may be, there is evidence that traumatic stress significantly affects physical health and permanently alters the capacity of individuals to handle routine activities (Schnurr & Green, 2004; van der Kolk, 1996). This is of great importance to the military community where statistics show that over half (55.2%) of active duty personnel are married, and thus may be living with significant other that has recently deployed or is experiencing PTSD (Office of the Deputy Assistance Secretary of Defense, 2013). Researchers can hypothesize that as over half of active duty personnel and veterans continue to underreport their PTSD, military spouses must also underreport cases of STS.

It conclusion, the amount of empirical literature available of this subject is limited, non-conclusive, differs greatly, and is in great need of further research. The United States Armed Forces Mental Health Command recognized the need for further research on this topic at the Pacific Command in the summer of 2015. However, leadership retracted the proposal and did endorse any further action (Major John Batka, personal communication, July 13, 2015). In conclusion, the researcher compiled this review in order to disentangle findings in this fairly new

field of study, and to inform future research directions.

Methods

The objective of this research study was to examine the relationship and origins of secondary traumatic stress (STS) in spouses of active duty personnel. While post-traumatic stress disorder (PTSD) is well-studied among the armed forces, the purpose of this systematic review was to analyze the relationships and origins of STS in military spouses. The researcher conducted a systematic search of PubMed, PyschINFO, Web of Science, and Cochrane was between June and October 2015 through specific search terms based upon the search criteria requirements of each database (Table 1).

Table 1. Systematic Search Term Criteria

Database	**Search Terms**
PubMed	((Spouses/Psychology[MeSH Major Topic]) AND traumatic stress) AND veterans
Web of Science	secondary traumatic stress AND spouse OR partner*[1] OR wife OR wives OR husband* AND veteran OR veterans*
PsycINFO	secondary traumatic stress AND (wife OR spouse OR partner OR husband) AND (military OR veteran OR veterans OR war)
Cochrane	secondary traumatic stress spouses

The systematic review includes published citations and abstracts, as well as unpublished articles and dissertations. The researcher analyzed the articles by first reviewing all titles/abstracts to determine relevance to the project. Secondly, the researcher did not specify a publication date range to accurately access the relationship and origins of STS over time. All studies were included on both male and female spouses across all ages and races/ethnicities, and were delimited to English publications.

[1] An asterisk is used as a catchall search symbol on the search engine, Web of Science.

This analysis focuses solely on the interconnection between military personnel and their spouses. Therefore, the researcher did not included published books or non-academic magazines discussing STS (i.e. *Time Magazine*), as well as studies that discussed STS pervading spouses and children simultaneously. If the studies connected STS with intimate partner violence/abuse or alcohol/drug use the researcher excluded it. The final exclusions conducted by the researcher included extracting any articles from the initial review that discussed Prisoners of War (POW) STS, or spousal mental health diagnosis' prior to deployment. After reviewing the titles/abstracts, the researcher compiled a final list of articles for a full read through and review.

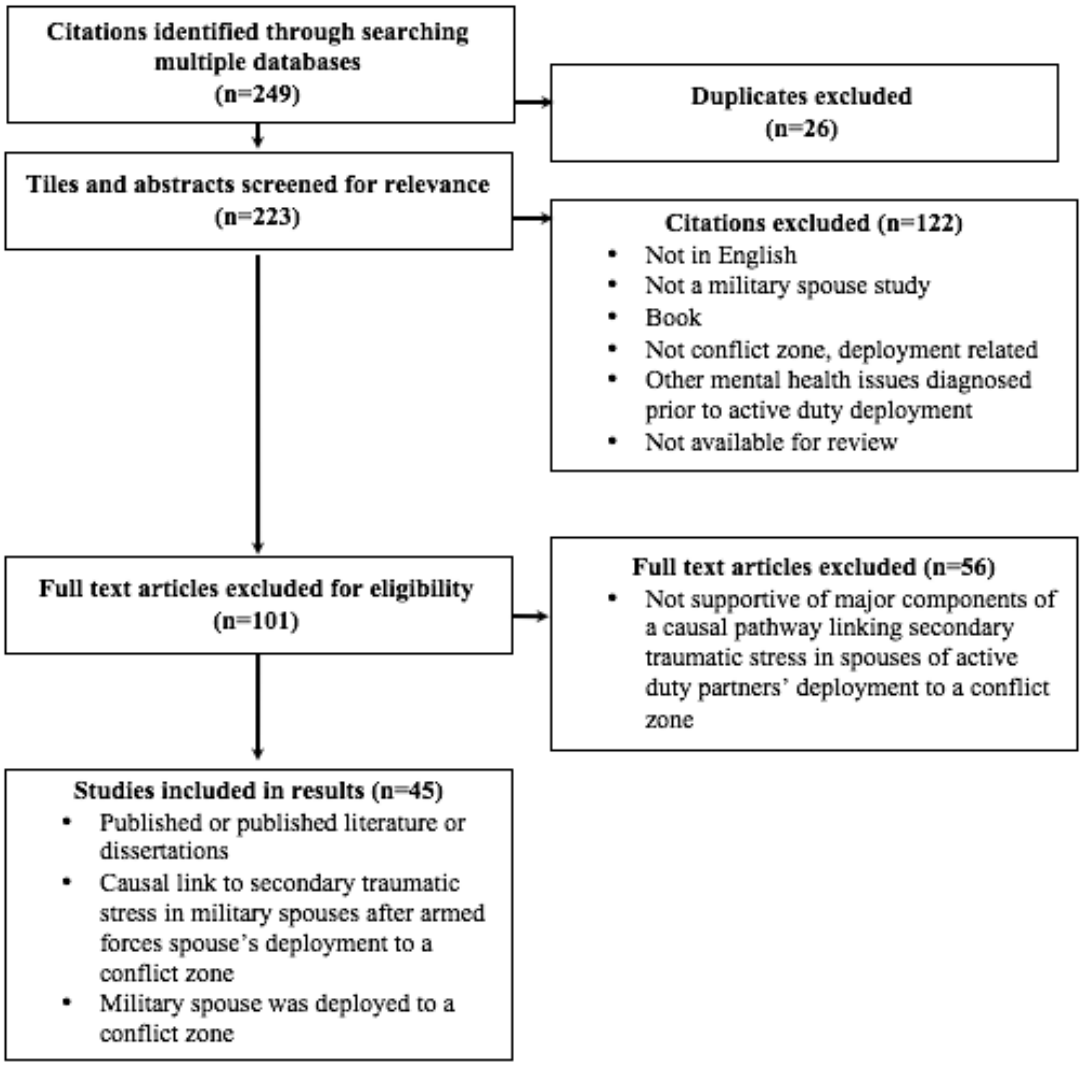
To determine the correlations between STS and military spouses, the researcher inserted the final list of articles into *EndNote* and summarized the data in *Microsoft Excel*. With the aid of *EndNote* and *Excel,* the researcher sorted citations by year, type of publication, target population, location, methods, objectives, results, and limitations. The researcher also created a scatter plot graph through *Microsoft Excel* depicting the frequency of publications per year. This scatter plot provided a simple linear prevalence of yearly publications of secondary traumatic stress as related to military spouses and conflict zone deployments.

In order to balance the evidence the researcher conducted a qualitative analysis on the final list of articles and documents. Through the analysis and discussion of STS and military spouses, themes emerged and were identified and summarized through a causal plot diagram. With the addition of this visual aid, the researcher was able to exhibit the relationship and origins of secondary traumatic stress in military spouses.

Results

By utilizing the search criteria, 249 citations were included in the primary analysis and dissection. After screening all titles and abstracts for relevancy, the researcher included 101 articles for the full text review. Of the 45 articles that met the inclusion criteria for the final review there were 11 qualitative research studies, 18 quantitative research studies, 4 mixed methods studies, and 12 literature reviews, conceptual pieces, or viewpoints. Twenty-three (51%) of these articles were conducted in the United States of America, five (11%) in other first world countries, and ten (22%) in low and middle-income countries (LMIC).

Figure 1. Flow Chart of Article Inclusion and Exclusion Figure



1, the *Flow Chart of Article Inclusion and Exclusion*, indicates the final number of research

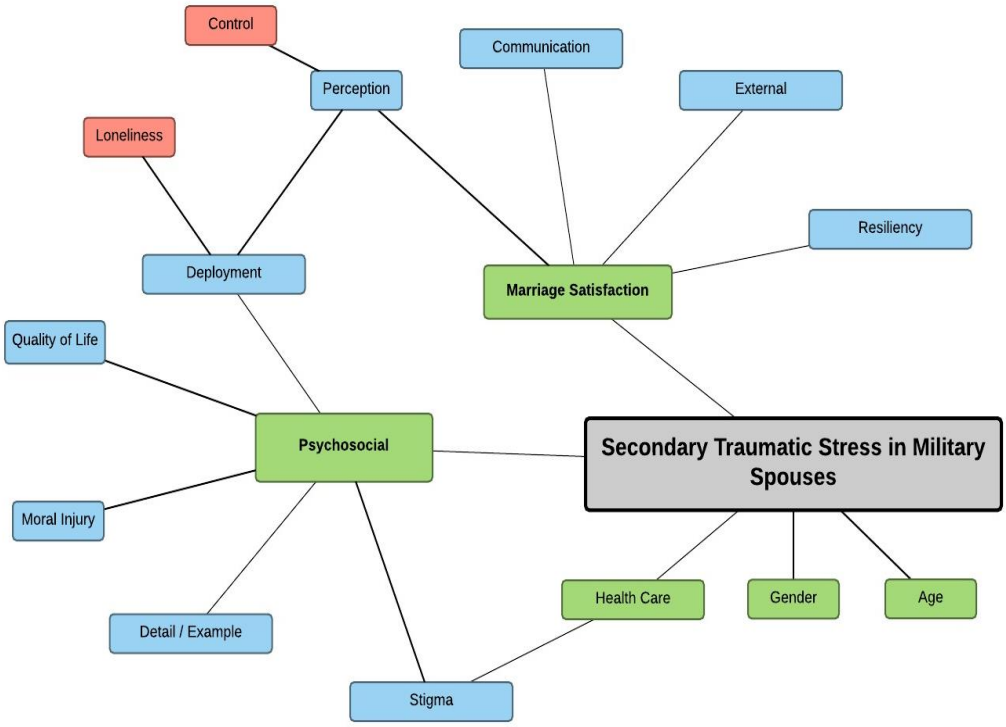
articles and other documents that met the inclusion criteria according to this review. Thirty-nine researchers (87%) published after 2001, while five researchers (11%) published prior to 2001. Seventeen articles (38%) focused on female partners who had an average age of fifty years or below, and four (9%) were on female partners fifty years and above. Marriage was included as a demographic feature between partners in 44% of the articles.

A causal process diagram helps visualize the connections of how multiple variables fit into a complex system. As seen in Figure 2, causal process diagrams can help with planning data collection and analysis and ensure that the research does not exclude cofounders from the study (Joffe & Mindell, 2006). Furthermore, causal process diagrams guarantee the researcher collects causal connections and not merely associations. The review indicated through the aid of the causal process diagram that partner-to-partner secondary traumatic stress was causally connected. After the full text review, the researcher presented the findings in thematic order from the most to the least commonly cited STS connecting factors to military spouses. Within each category, there were sub-categories that were not as dominant themes; however, the authors consistently causally connected these together in the discussion portion of their studies.

Psychosocial

Of the 45 citations that were included in the final review, 33 met the final inclusion criteria by linking STS to psychosocial health complications in military spouses. This was the first of two of the largest connections made between all citations. The researcher directly connected the degradation of psychosocial health in response to STS symptoms to deployment, quality of life, moral injury, and environment.

Figure 2. Mind Map of Themes and Categories Found in the Systematic Review



Researchers causally linked STS in military spouses to deployments as they systematically result in feelings of loneliness and worsened partner perception of the active duty member's emotional and physical health (deBurgh, 2011, Melvin, 2012; Padden, 2013; Renshaw, Rhoades, Blais, Markman, Stanley, 2011; Warner, 2009). The Patient Health Questionnaire, Perceived Stress Scale, and Deployment Stressors were tools used to assess this correlation.

Multiple authors used Quality of life (QoL) as a standard to gauge STS in partners through the World Health Organization Quality of Life Questionnaire, and the Manchester Short Assessment of Quality of Life (Peraica, Petrovic, Kozaric-Kovacic, 2014; Stevanovic, Grkovic, 2012; Stevanovic, Klaric, Rebic, 2012; Zdjelarevic, 2011). Each of these tools showed a negative correlation between QoL and a positive correlation for psychological symptoms in partners.

Peraica noted in 2014 that QoL may be the best predictor for STS (Peraica, Vidović, Petrović, & Kozarić-Kovačić, 2014 & Kozarić-Kovačić, 2014).

One review article cited the possible root cause of STS in military spouses is 'moral injury' (Nash, 2013). The military community is a unique society that Nash felt may nurture fear conditioning, or 'moral injury'. This phenomenon is in need of further research in military spouses and families as a deep internal fear of doing the 'wrong thing' may actually be a root cause of the many psychological symptoms of STS.

A final attribute related to psychosocial health is how the environment of the spouse plays a predictive role in the formation of STS (Fals-Stewart, 2005; Peraica et al., 2014; Solomon et al., 1992; Waysman, Mikulincer, Solomon, & Weisenberg, 1993). In two studies, the research teams scaled the living environment of the research participants according to the Family Environmental Scale (Solomon et al., 1992; Waysman et al., 1993). These researchers found that STS manifested in military spouses after living with an active duty partner who had PTSD (Fals-Stewart, 2005; Peraica et al., 2014; Solomon et al., 1992). On the other hand, Waysman et al., found that spouses who come from rigid, or 'moral', households were less susceptible to experiencing STS compared to their peers who had less rigid, or 'expressive', upbringings (Waysman et al., 1993).

Marriage Satisfaction

The second largest predictive factor for STS in military spouses was marriage satisfaction. Out of the 45 included citations, 25 articles fit under this causal connector. Lowered marriage satisfaction was a side effect and commonly exhibited factor that corresponded to external trauma, perception, communication, and partner resiliency. (Dekel, 2010; Dirkzwager,

2005; Fals-Stewart, 2005; Melamed, 2011; Mikulincer, 1995; Outram et al., 2009; Renshaw, Rodrigues, & Jones, 2008; Renshaw, Rodrigues, 2010; Renshaw, Carter, Markman, Stanley, 2014; Renshaw, Meis, Erbes, 2014; Solomon, Levy, Fried, Mikulincer, Benbenishty, Florian, Bleich, 1992).

Spouses who positively correlated their active duty partner's psychological symptoms to external trauma, or external attribution, had higher levels of marriage satisfaction (K. D. Renshaw, Rodrigues, & Jones, 2008). Spouses who associated their active duty partner's psychological symptoms with internal personal characteristics, however, were more likely to experience lowered marital satisfaction. To compound this, spouses who internally attributed their partner's symptoms also believed that their active duty partner was experiencing more stress than reported. Furthermore, when a spouse attributed an active duty's psychological symptoms to uncontrollable events, the spouse was less likely to perceive lowered marital satisfaction (Renshaw et al., 2008, 2012, 2014; Stevanovic et. al., 2012a, 2012b).

Therefore, communication was a sub-topic of marriage satisfaction that several authors hypothesized could have lowered the likelihood of STS if partners had been more open about what they were experiencing physically and emotionally post-combat (Bramsen, van der Ploeg, , 2000; Campbell, 2012; Johnson, 2012; Melamed, 2011; Renshaw, Allen, Rhoades, et. al 2011, 2012; Renshaw et. al 2014).

Several researchers also found that marriage satisfaction scaled by the level of resiliency found in the spouses was a predictive factor for STS (Dekel, 2010; Edem 2011; Figley, 1993; Melvin, 2012). Within the military community resiliency is often labeled as the 'hardiness' or ability of one to bounce back after several set backs (Jefferson, 2011). Although researchers did not specifically examine this in the analysis, it was included in all final discussions as a possible

explanation to why some spouses were more prone to STS than others. Overall, resiliency was stated as a personal characteristic that military spouses must acquire in order to overcome the challenges of living in a military family (Figley, 1993).

Perception

The connecting factor between marriage satisfaction and psychosocial health was partner perception. In 11 articles researchers found partner perception to be a direct predictor of the level of partner STS (Iniedu, 2011; Klaric, 2012; Manguno-Mire, 2007; Renshaw et. al 2010, 2011, 2012; Stevanovic, Grkovic, 2012; Stevanovic, Klaric, Rebic, 2012; Warner, 2009). Each of these authors discussed how a spouse's belief that the active duty partner was experiencing more stress than he/she was reporting led to a heightened proportion of STS symptoms. Similarly, a couple authors defined spousal perception and portrayal of STS by the amount of 'control' that spouses felt was present in their lives (de Burgh, 2011; Edem Iniedu, 2011). The return of active duty personnel and number of deployments also was a factor of 'perceived control' by the civilian spouse. The Center for Epidemiological Studies—Depression Scale, Spouse Perception (Farero) questionnaires, the Marital Problems Index (MPI), the Mississippi Scale for Combat-Related PTSD, the Patient Health Questionnaire 9, the Manchester Short Assessment of Quality of Life, and the Modified Questionnaire for Secondary Traumatization were all tools used to assess this causal connection.

Gender & Age

Out of the 45 citations that met the final inclusion criteria, three articles attributed the origins of STS to age and gender. The authors consistently found that among civilian spouses, females were more likely to experience STS than males (Baum, 2014; Carter, Markman, Stanley,

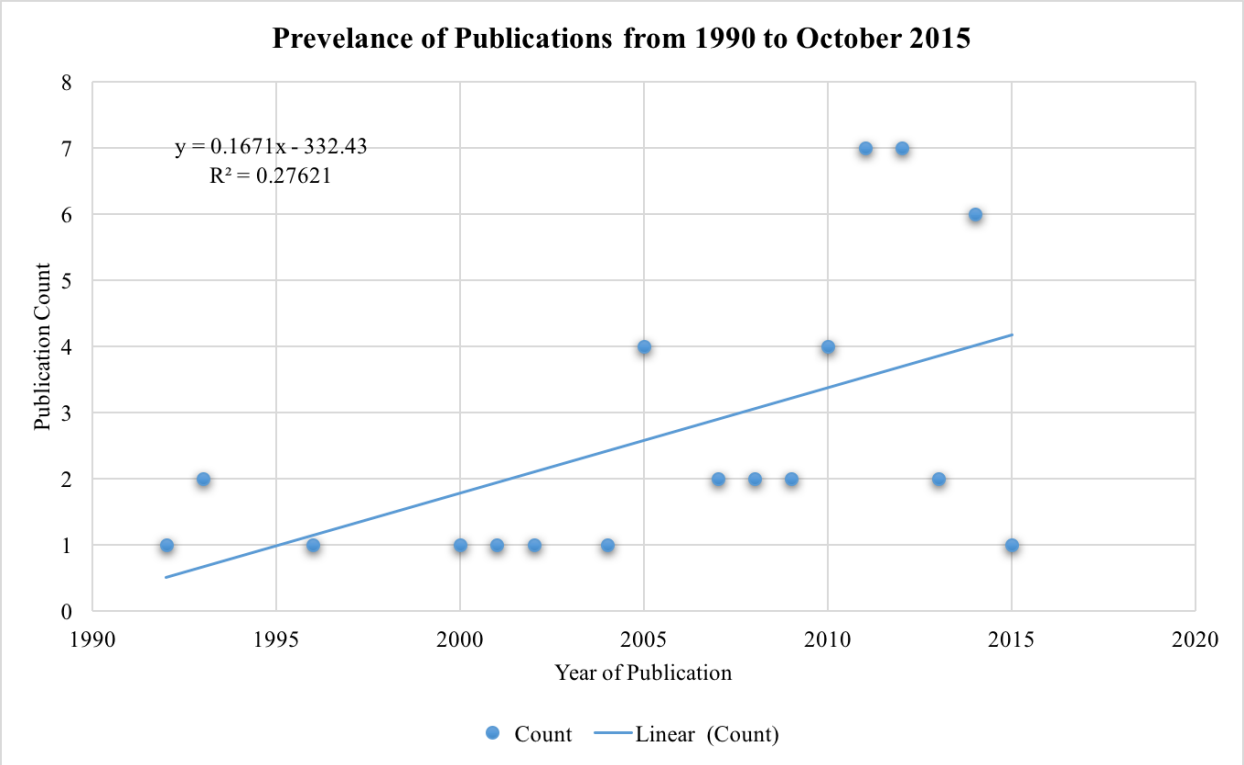
2014). However, evidence has not conclusively proven whether or not spouses either above or below the age of fifty are more susceptible (Melvin, 2012; Matthew, Jennings, Campbell, 2012).

Health Care

O'Toole specifically looked at the lack of available mental health in Australian Vietnam veterans and their spouses through qualitative interviews (O'Toole, Catts, Pierse, 2010; Ohyre, Brendel, Fredman, Bui, et al., 2015). These interviews revealed that while spouses may be experiencing depression or other STS symptoms, they are not following through with adequate mental health treatment. Ohye also reported in 2015 that there were not an adequate proportion of mental health facilities and resources available to the military community (Ohyre et al., 2015).

Trends in STS Publications

Table 2. Prevalence of Publications from 1990 to October 2015

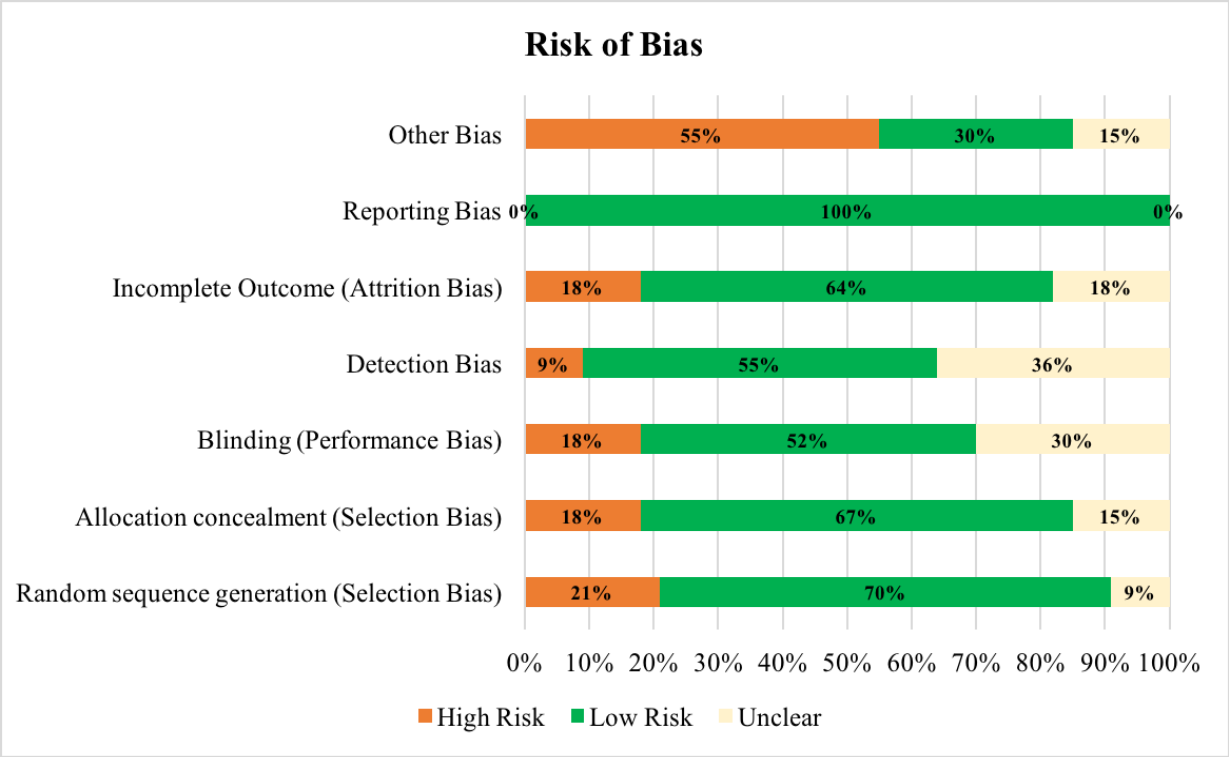


The primary focus of this review was to analyze the relationship and origins of secondary traumatic stress to October 2015; henceforth, the researcher calculated the publication count in

Microsoft Excel through a linear equation shown in Table 2, *Prevalence of Publications from 1990 to October 2015*. The linear equation of y = 0.17x – 332.43 proves that there is a positive correlation in the amount of articles and documents that have been published on secondary traumatic stress from 1990 to October 2015. Although this does not determine the overall prevalence of secondary traumatic stress, this statistical characteristic of the study is included to depict the growing attention to STS in academic literature.

Risk of Bias

Table 3. Risk of Bias of Included Citations



A final qualitative analysis evaluated the level of bias from each research article that contributed to the overall bias of this study. By using the Cochrane Method, the researcher completed the analysis shown in Table 3, *Risk of bias of Included Citations* (Higgins, Altman, Sterne, 2011). The level of bias found in each study dictated the overall risk of bias found in the

review. ‘Reporting Bias’ proved to be the lowest risk, while ‘Other Bias’ was the highest risk. As stated in the *Cochrane Handbook for Systematic Reviews of Interventions*, ‘Other Bias’ was any bias that was not found in the common classifications of bias in the (version 5.1.0).

The models found in this review conclusively depict a positive correlation between STS and military spouses from 1990 to the present. Although the origins did not have a positive linear trend towards a single determining factor, the evidence endorses that lowered marital satisfaction and psychosocial health play a significant role in the manifestation of STS. The causal connection of these branches interplay with the perception of military spouses in a manner that calls for further research and determination of mental health professionals define STS in the military arena.

Discussion

The researcher proved that STS in military spouses is linked to long-term physical and emotional side effects such as lowered psychosocial and marriage satisfaction (Figure 2). These themes place military spouses at greater risk for lowered levels of mental health and extenuated stress levels. Consequently, as proven by several researchers, STS places military spouses at a greater risk for long-term damage to the body and shorter life spans (Campbell, 2012; Lyons, 2001).

In the last decade alone, researchers have urged the military community to speak out and to continue to be actively involved in further research. In order to break the causal link of STS in spouses of military personnel, research must be able state what next steps mental health professionals should take. This is not possible without the help of military community members who believe in the weight and importance of this research.

Therefore, there is an overwhelming need for further empirical data to support exploratory methods such as screening and longitudinal models on STS in military spouses. By following spouses and active duty partners before, during, and after deployments to conflict zones for multiple years, researchers would be able to inherently reach more conclusive results surrounding the origins and long term effects of STS (Kessler et al., 2011; Renshaw et al., 2014; Solomon et al., 2008; Vasterling et al., 2015).

This review shows promise for further research on STS in military spouses as all findings are consistent with behavioral social science theories of psychosocial distress. For instance, the association of STS with negative perceptions in military spouses supports cognitive theory. This is indicative from that individual distress can stem from one's own interpretation of the event (Beck, 1995). Furthermore, the origination of STS in military spouses from perception alone supports the association of family member's perception of mental health dysfunction in the home (Renshaw & Rodrigues, 2010).

Recommendations

From this analysis, several recommendations concerning future public health implications emerge. First of all, these results point to the need for psychosocial education for military spouses and active duty personnel both before and after deployment (Bjornestad, 2014; I. R. Bramsen, I. E.;van der Ploeg, H. M., 2000; Caska, 2011; Lester, 2012; K. D. R. Renshaw, T. L.;;Rodrigues, C. S., 2010). This level of education could halt the increasing prevalence of STS by breaking down barriers that allow STS to enter the lives of multiple military families. Researchers have stated that an open dialogue about external stressors, such as heightened negative perceptions, would lower STS symptoms (Campbell et al., 2012; Lyons, 2001; Renshaw et al., 2014; Vasterling et al., 2015). Furthermore, mandatory psychosocial education could

screen active duty personnel and spouses for pre-dispositional characteristics for traumatic stress. The results of this screening could allow for treatment-specific follow up during and after the deployments (Renshaw et al., 2008; Mansfield et al., 2010). This longitudinal modeling of the data would be vital to the research process as individuals in the study may have altered mental health states prior to or post deployment (Renshaw et al., 2014).

Secondly, providing yearly screenings of STS in military spouses during their annual exams could lower the Department of Defense medical spending on mental health treatment. From 2007 to 2012 alone, the cost of mental health care treatment in the military was about $4.5 billion (Brewin, 2013). No records to date have been published on how much of this funding is allocated to military spouses it is difficult to understand the specific financial implications. However, Congress would not have to raise the Department of Defense Mental Health budget ceiling if treatment centers utilized preventative measures such as this screening.

Screenings for STS in all military spouses that receive their annual exam could establish, or rule out, STS in those that may appear healthy but are at risk (Institute for Quality and Efficiency in Health Care, 2013). Annual screenings would provide an immediate answer to this asymptomatic illness often unknowingly enters the lives of military spouses across all military branches. Only those who exhibit high-risk characteristics or abnormal screenings would undergo diagnostic testing. Although habitual screening for STS could lower the overall prevalence, it could also increase lead-time bias. Lead-time bias would provide extra time for counseling, awareness, and education about the topic at hand while also advancing the level of diagnosis. However, this increase in lead-time could also cause individuals to know they are more at risk thus causing symptoms to manifest in an earlier fashion then they would have without screening (Snowden, 2003).

Limitations

This analysis has several limitations regarding the validity of this research on STS and military spouses. With over half (58%) of the articles focusing on female civilian spouses, the researcher cannot generalize these conclusions to all military spouses. As this research did not include children, the researcher can also not generalize these conclusions to all military families. Further limitations in this study include author bias, as the researcher did not have additional authors crosschecking the included and excluded articles. Additionally, the articles chosen for this review may have caused the researcher look only at this topic in a negative light and could have further biased this analysis.

Another limitation that was included in this study is stigma. The World Health Organization defines stigma as a tool that disrupts the "prevention of mental health disorders, the promotion of mental well-being and the provision of effective treatment and care" (WHO, 2016). For example, a research team found stigma as a connecting factor in Ebola and HIV/AIDS as each of these diseases forces affected individuals not to reach out for medical attention (Davtyan, Brown, Folayan, 2014). Stigma from their communities surrounding the disease debilitated these individual's desire to seek medical care to slow the symptoms of their disease.

In a similar manner, the stigma associated with mental health affects the desire of spouses to state if he/she has secondary traumatic stress, and ultimately causes reporting bias (Table 3). Through qualitative research, researchers have pronounced that spouses have chosen not to receive care for their disorder, as they feared an unknown level of stigma from within the military community and the civilian population (Renshaw, 2014; Yambo, 2014). Individuals in these studies declared that they fear the unknown repercussions of stating that he/she has a mental disorder that stems from their spouse's deployment. Renshaw also found that military

spouses believe that they cannot openly talk about secondary traumatic stress as they may cause their spouse to lose his/her job (2014).

A final note of stigma that may have biased this study is that spouses admitted that they believed they might not appear as 'hardy', or resilient, if they reported psychological distress on their research questionnaires (Grove, 2015; Vasterling, 2015). Each of these layers of stigma is a topic that should be included in future longitudinal models of STS. These limitations provide further evidence that STS in military spouses requires additional research and attention in order to provide conclusive, evidence-based results that can assist mental health professionals with the diagnosis and treatment of STS.

Conclusion

As proven by this research through the voices of several great minds who have tirelessly worked to break down the origins of STS in military spouse, health professionals must address STS in order to ensure that military spouses do not suppress their symptoms in order to blend into their environment. This is extremely dangerous for both the affected individuals and society. Through the research in this study it has been proven that mental health illnesses are not be at the forefront of military spouses health education, prevention, and treatment. However, psychosocial education and screenings in military spouses and their active duty partners both before and after deployments could begin to slow the steady progression and growth of traumatization among our military families.

Secondary traumatic stress deserves further research, time and dedication in the form of screening, longitudinal modeling and ultimately, an expanded library of empirical data. This research will provide long term increased health benefits and quality of life for possibly millions of military spouses that have yet to still tell their stories. For the advancement of public health,

and the unspoken voice of millions, secondary traumatic stress must be answered by our Department of Defense before the silent battle of traumatic stress consumes our military and cripples our active duty personnel's first line of emotional defense—their spouses.

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