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The impact of PTSD symptoms on physical and mental health functioning in returning veterans

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ABSTRACT

This study aimed to determine the unique impact of PTSD symptoms, beyond other frequently examined factors on physical and mental health functioning in a sample of returning veterans. Assessments of 168 returning OEF/OIF veterans conducted an average of six months following return from deployment included measures of emotional disorders and the Short Form (36) Health Survey. Hierarchical multiple regressions revealed significant, unique contribution of Clinician-Administered PTSD Scale (CAPS) score above all other predictors in the model (demographics, severity of trauma exposure, physical injury, substance abuse and depressive symptoms), for both the physical (8%) and mental (6%) health aggregate scores, along with significant prediction of physical health (4–10%) and mental health (3–7%) subscale scores. The only other significant predictors were age for physical health scores, and depressive symptoms for mental health scores. PTSD criterion B (re-experiencing) symptoms uniquely predicted reduced physical health functioning and higher experience of bodily pain, while criterion D (hyperarousal) symptoms uniquely predicted lower feelings of energy/vitality and poorer perceptions of emotional health.

1. Introduction

As the majority of soldiers have returned from Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), much of our attention has turned toward ensuring adequate healthcare for those who have served the country upon their return. Indeed, the cost of resources required for the treatment of physical conditions and mental health symptoms incurred during deployment appears formidable, with a median annual cost per patient being in the range of $1500 to $6000 (Hendricks et al., 2012; Taylor et al., 2012). VA hospitals have seen a distinct increase in physical conditions such as traumatic brain injury, chronic musculoskeletal pain, and symptoms stemming from exposure to environmental toxins, which all originate from specific hazards of these conflict zones (Spelman, Hunt, Seal, & Burgo-Black, 2012). In addition, a great deal of focus has been placed on the detection and effects of various mental health concerns, particularly posttraumatic stress disorder (PTSD), following the highly stressful experience of serving in Iraq and Afghanistan (e.g. Shea, Reddy, Tyrka, & Sevin, 2014; Shea, Vujanovic, Mansfield, Sevin, & Liu, 2010). Healthcare burden from those combat veterans screening positive for this disorder alone includes a higher number of missed days from work, a higher public health cost (in the range of $8000 median annual cost per veteran), and higher health care utilization across the medical system (Taylor et al., 2012; Tuerk et al., 2012). Further, veterans with a diagnosis of PTSD present with elevated rates of several medical conditions (e.g. cancer, stroke, non-fatal heart disease, arthritis), greater rates of smoking, and lower frequency of exercise and recommended medical screenings as compared to the age-matched general population (Buckley, Mozley, Bedard, Dewulf, & Greif, 2004).

Given these striking and ongoing impacts on the healthcare system, the intersection of mental health symptoms on physical health functioning in the population of returning veterans has become an area in need of further investigation. Numerous studies have highlighted the notable influence of specific mental health issues on physical health in veterans (particularly, depression and substance use), finding a clear association between higher incidence of these psychological disorders and poorer health functioning. For instance, a study by Possemato and colleagues examined the medical records of over 4000 OEF/OIF veterans seeking treatment in

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primary care clinics in the VA and found that a diagnosis of a depressive or substance use disorder was independently associated with higher medical disease burden (as measured by number of health conditions) and higher mental healthcare utilization (Possemato, Wade, Andersen, & Ouimette, 2010). Diagnosis of these two mental disorders was not associated with higher use of medical services for physical conditions, however. Another study found that self-reported hazardous drinking patterns in returning OEF/OIF veterans were associated with poorer self-reported health functioning (McDevitt-Murphy et al., 2010).

Other studies in veteran and civilian populations have focused more specifically on the influence of trauma histories on physical health. Studies examining the medical records of large portions of the general population have indicated a significantly increased incidence of a variety of cardiovascular (coronary artery disease, incidence of heart attack, stroke), pulmonary (bronchitis, asthma), and other (arthritis, renal dysfunction) health conditions in individuals with a trauma experience as compared to those without such a history, even after controlling for demographic characteristics, depression, and substance use issues (Glaesmer, Brahler, Gundel, & Riedel-Heller, 2011; Spitzer et al., 2009). Similarly, veterans with a higher reported exposure to war trauma have indicated a significantly higher level of psychological distress and greater number of physical health problems (Maia, McIntyre, Pereira, & Ribeiro, 2011).

One particular meta-analysis examined the pooled effect of some 62 studies looking at the impact of PTSD and PTSD symptoms (in both veteran and non-veteran populations) on general health symptoms and specific reported health problems (e.g. cardio-respiratory symptoms, gastrointestinal disorders, and musculoskeletal pain), and found robust evidence for poorer health outcomes for individuals meeting criteria for PTSD and also in the sub-threshold category endorsing high levels of PTSD symptoms (Pacella, Hruska, & Delahanty, 2013). While the authors examined a variety of moderators when this data was available (namely, gender, veteran status, recruitment location, method of assessment, type of comparison group, and scale of measurement), they did not include other variables previously implicated as possible mediators in health functioning such as age, injury, and other mental health conditions (e.g. depression and substance use; see Flood, McDevitt-Murphy, Weathers, Eakin, & Benson, 2009). However, the authors did find higher effect sizes in veteran samples across the majority of health outcomes, indicating a greater impact of PTSD symptoms in this population.

Another related area of concern is health-related quality of life, which is more broadly conceptualized as health functioning and impairment in daily life due to health issues. In line with this, a study conducted by Shiner, Watts, Pomerantz, Young-Xu, and Schnurr (2011) more specifically examined this relationship between PTSD and health functioning in a sample of veterans. The study authors examined changes in health functioning in 167 primarily Vietnam era veterans meeting a threshold score of at least 50 on the PTSD Symptom Checklist (PCL) in a VA primary care clinic over two time points (with an average interval of 300 days), and categorized these individuals according to improvement in PTSD as measured by this self-report scale ("better": reduction by more than 5 points; "worse": increase by more than 5 points; or "unchanged": score 5 points more or less than baseline). The analysis controlled for baseline scores on the PCL and SF-36 Health Survey (SF-36), age, gender, and time to follow-up. Results revealed that those classified as doing "worse" in their PTSD symptoms reported poorer mental health functioning, social functioning, general health, and feelings of vitality than the other groups (Shiner et al., 2011).

Another study examining changes in health-related quality of life and health functioning in a sample of 800 OIF veterans before and after a deployment to Iraq found some evidence for a negative relationship between PTSD symptom severity (as measured on the PCL) and health functioning immediately following return from deployment (Vasterling et al., 2008). However, while the structural equation modeling analyses showed a direct inverse relationship between PTSD symptoms and daily health functioning prior to deployment, this relationship was only indirect at post-deployment. Specifically, PTSD symptoms seemed to negatively impact physical health symptoms, which in turn were associated with poorer daily health functioning. The analyses only controlled for age, and the authors noted that the absence of a direct relationship at post-deployment assessment might be explained by the influence of other important variables (such as depression) that were not assessed in the investigation.

A more recent study built on this prior study by examining the impact of specific clusters of PTSD symptoms on physical health in a sample of tobacco-dependent veterans with chronic PTSD, taking nicotine use, chronic health conditions, substance use and depression into account (Harder et al., 2011). The study authors found a robust, unique contribution of the numbing (criterion C) and hyperarousal (criterion D) symptoms of PTSD on most assessed domains of physical health. This study was, however, restricted to veterans meeting full criteria for PTSD who also had significant nicotine dependence, and the mean age (around 58 years old) of the sample indicated an overall older population. Nevertheless, these studies taken in sum suggest an association between PTSD and poorer health functioning in general, but the relative impact of PTSD symptoms on health in comparison to other mental health issues or trauma exposure remains unclear, particularly in recently returning soldiers (Qureshi, Pyne, Magruder, Schulz, & Kunik, 2009).

The current study aims to extend these findings and contribute distinctly to the literature examining the impact of posttraumatic stress symptoms on health functioning in recently returned OEF/OIF veterans. To our knowledge, this is the first comprehensive study to explore unique prediction of health functioning by continuous PTSD symptoms in this population, beyond the effects of other more frequently examined factors (e.g. depressive symptoms, alcohol use disorders, trauma exposure, and demographic characteristics). In addition to the influence of overall PTSD symptom levels, this study aimed to examine the influence of the individual PTSD symptom clusters (i.e. criteria B-D) scores on physical and mental health domains (and each of their constituent subscales) of the SF-36 Health Survey (SF-36), after controlling for other predictors previously implicated in health functioning in this population. The SF-36 is a self-report measure used across the majority of studies examining the impact of PTSD on health-related quality of life (e.g. Harder et al., 2011; Malik et al., 1999; Richardson, Long, Pedlar, & Elhai, 2008; Shiner et al., 2011). We predicted that PTSD symptom scores would significantly and uniquely contribute to OEF/OIF veterans' report of health functioning within the first year of return from deployment, with higher PTSD symptomatology being uniquely associated with poorer physical and mental health functioning. We limited our exploration to one year post-return to specifically examine acute risk of PTSD symptoms on perceived health-related quality of life, to better understand the more immediate impacts of PTSD on health functioning. Given previous findings (Shea et al., 2010) that subjective distress was most strongly predicted by hyperarousal (criterion D) relative to re-experiencing (criterion B) and avoidance (criterion C) symptoms in this sample, we predicted that hyperarousal symptoms would significantly and uniquely predict mental health functioning. We also speculated that due to the potential impact of poor sleep and persistent hypervigilance, that hyperarousal symptoms would also predict poorer physical health functioning, consistent with the findings of the few previous studies examining the impact of this subset of symptoms on the physical health in various veteran populations (Harder et al., 2011; Kimerling, Clum, & Wolfe, 2000).