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Gender Differences in the Impact of Warfare Exposure on Self-Rated Health

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A B S T R A C T

Background: This study examined gender differences in the impact of warfare exposure on self-reported physical health.
Methods: Data are from the 2010 National Survey of Veterans, a nationally representative survey of veterans from multiple eras of service. Regression analyses assessed gender differences in the association between warfare exposure (deployment to a war zone, exposure to casualties) and health status and functional impairment, adjusting for sociodemographics.
Findings: Women reported better health status but greater functional impairment than men. Among men, those who experienced casualties only or both casualties and deployment to a war zone had worse health compared with those who experienced neither stressor or deployment to a war zone only. Among women, those who experienced casualties only or both stressors reported worse health than those who experienced war zone only, who did not differ from the unexposed. No association was found between warfare exposure and functional impairment in women; in men, however, those who experienced exposure to casualties or both stressors had greater odds of functional impairment compared with those who experienced war zone only or neither stressor.
Conclusions: Exposure to casualties may be more predictive of health than deployment to a war zone, especially for men. We did not find a stronger association between warfare exposure and health for women than men. Given that the expansion of women's military roles has allowed them to serve in direct combat, their degree and scope of warfare exposure is likely to increase in the future.

A wealth of evidence exists regarding the negative effects of military service on long-term health. Components of military service, such as direct experience in combat and the more general stress of being deployed to a war zone, can be conceptualized as examples of warfare exposure, which has been linked to worse health in veterans (Elder, Shanahan, & Clipp, 1997; Hoge et al., 2004; King, King, Gudanowski, & Vreven, 1995). Typically, research on the health consequences of warfare exposure among veterans has focused on mental health outcomes such as posttraumatic stress disorder (PTSD), but other negative outcomes include higher rates of physician-diagnosed chronic conditions, worse self-reported health, and lower health functioning compared with civilians (Lehavot, Hoerster, Nelson, Jakupcak, & Simpson, 2012; Schnurr & Spiro, 1999; Schnurr, Spiro, & Paris, 2000). This study focuses on the association between warfare exposure and post-deployment self-rated health, and how this association might differ between men and women.

The negative health consequences of warfare have been demonstrated in samples of veterans across a range of service eras, from Vietnam veterans (Kulka et al., 1990), to the more recent cohorts deployed to the Persian Gulf (Proctor et al., 1998) or to Iraq and Afghanistan (Hoge et al., 2004). Generally, compared with veterans without PTSD, veterans with more PTSD symptoms or who were diagnosed with PTSD as a result of combat exposure exhibited worse physical health outcomes, including higher rates of coronary heart disease, more

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self-reported medical symptoms and conditions, and lower scores on the Medical Outcomes Study Short Form-36 (SF-36) and veteran's version (SF36-V; Barrett et al., 2002; Beckham et al., 1998; Boscarino, 2004; Dobie et al., 2004; Kubzansky, Koenan, Spiro, Vokonas, & Sparrow, 2007). Veterans using Department of Veterans Affairs (VA) health services report lower scores on the SF36-V compared with the general population, as well as more limitations in performing activities of daily living (ADLs) as a measure of functional status (Singh et al., 2005).

Assessment of warfare exposure has generally focused on traditional notions of combat, such as firing a weapon, being fired upon, and witnessing the death or injury of others (King et al., 1995). However, definitions of warfare that focus on prototypical combat roles may be less applicable in contemporary warfare, which is characterized by irregular and uncertain operations (Burrelli, 2012; Miller, Kavanagh, Lytell, Jennings, & Martin, 2012; Sternke, 2011; Street, Vogt, & Dutra, 2009). This also has implications for defining women's war zone experiences, because women have historically been excluded from units whose primary mission was direct combat. Because military occupations are classified into broad categories of combat arms, combat support, and combat service support, women have generally not served within combat arms. However, female veterans who served in combat support capacities may still experience the substantive risks of warfare exposure when traveling alongside combat arms units, and when exposed to the aftermath of battle, such as dealing with casualties (Murdoch et al., 2006; Street et al., 2009). Including more general aspects of warfare exposure, such as deployment to a war zone or dealing with casualties, may help to encapsulate a wider range of possible stressors.

Most studies examining the relation between warfare exposure and health have sampled male veterans (Frayne et al., 2006). Although some studies have focused on the health consequences of deployment among female veterans of a specific cohort (Kang et al., 2014; Pierce, Lewandowski-Romps, & Silverschanz, 2011), few comprehensive studies have examined the range of deployment stressors faced by women from multiple eras of service (Bond, 2004; Sternke, 2011). More generally, given the different prevalence of PTSD among men and women in the general population, there may be gender differences in exposure to trauma (Olff, Langeland, Draijer, & Gersons, 2007; Tolin & Foa, 2006). Military sexual trauma is one deployment-related stressor more commonly experienced by women than men (Frayne et al., 2006). It is associated with worse post-deployment physical health, as well as mental health problems such as PTSD and depression (Sadler, Booth, Mengeling, & Doebbling, 2004; Smith et al., 2011; Street et al., 2009). One of the most powerful protective factors against developing PTSD is perceived social support, especially in military samples (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). Female service members generally report lower levels of perceived social support from other military personnel, and also report fewer indicators of social support compared with their male peers (Frayne et al., 2006; Street et al., 2009).

Research on women veterans has been limited by the fact that much of the literature has focused on women using Veterans Health Administration services. Although these studies demonstrate the need for care among women enrollees, samples drawn from health care users are not representative of the overall veteran population, because women who seek services have disproportionately higher rates of service-connected disabilities and worse physical and mental health. Therefore, non–treatment-seeking samples are more representative of the overall veteran population, especially for women veterans (Friedman et al., 2011; Ouimette, Wolfe, Daley, & Gima, 2003).

Some studies utilizing national samples, such as the 2010 Behavioral Risk Factor Surveillance Survey, indicate that veterans have worse health and greater health care needs compared with civilians. Veterans from all eras of service consistently demonstrate poorer physical and mental health and higher rates of risky health behaviors compared with their civilian counterparts. Veteran men are more likely than civilian men to report fair or poor health status, worse functional health, such as limited activities owing to health problems, and more chronic conditions, such as cardiovascular disease, cancer, arthritis, depression, and anxiety (Hoerster et al., 2012). Veteran women are also more likely to report worse health status compared with civilian women, as well as more limited functional health and increased mental distress (Lehavot et al., 2012). These disparities between veterans and civilians highlight the importance of addressing the health and health care needs of veterans.

Warfare clearly has a deleterious effect on health, but whether and how this effect differs for male and female veterans remains unclear. The association is complicated by the broader demographic differences between men and women veterans. Women veterans of today are generally younger, have higher levels of education, and are more likely to be ethnic or racial minorities than male veterans (Frayne et al., 2006). Thus, when examining gender differences in the association between warfare exposure and health, it is important to account for these sociodemographic differences. In the present study, it was hypothesized that greater levels of warfare exposure would be associated with worse self-reported health, as defined by both health status and functional impairment, adjusting for sociodemographic characteristics. Regarding gender differences, it was hypothesized that a stronger association between warfare exposure and health would be observed in women than men, given women's greater risk for stressors such as military sexual trauma, and lower access to resources such as social support.

Methods

Sample

The 2010 National Survey of Veterans is the sixth in a series of surveys commissioned by the VA to assess needs for veteran programs and services, as well as beneficiaries' awareness of these services (Westat, 2010). The 2010 National Survey of Veterans was mandated by Congress as part of the Veterans Benefits Improvement Act (2004). Veterans were recruited using an address-based sampling approach, which matched U.S. Postal Service residential addresses with VA health care and beneficiary data and Department of Defense data on military retirees and those separated from active duty. This population included all noninstitutionalized veteran residents in the 50 states and the District of Columbia, and was recruited in 2009 and 2010. Veterans from all eras of service were sampled, from World War II to September 2001 or later. A prenotification letter was sent, followed by a screening survey to determine eligibility. Households with any veteran were eligible; they received an extended questionnaire with an option to fill out the survey online. A reminder postcard and follow-up survey were also sent. The total number of surveys distributed was 14,163, with 8,710 returned, for a response rate of 61.5%. After excluding 931 veterans with missing gender data, the present study included 500 female