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Military-Related Trauma is Associated with Eating Disorder Symptoms in Male Veterans

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Abstract

Objective—Eating disorders are understudied among male veterans, who may be at increased risk due to high rates of trauma exposure and experiences of multiple traumatization in this population. This study sought to examine the associations between specific types of trauma (i.e., childhood physical abuse, adult physical assault, childhood sexual abuse, adult sexual assault, and military-related trauma) and eating disorder symptoms in a large, nationally-representative sample of trauma-exposed male veterans.

Method—Survey data were collected from $N = 642$ male veterans. Traumatic experiences in childhood and adulthood were assessed using the Trauma History Screen and the National Stressful Events Survey. Eating disorder symptoms were assessed with the Eating Disorder Diagnostic Scale. Analyses also controlled for age and body mass index.

Results—Multiple traumatization was associated with increased eating disorder symptoms. However, military-related trauma was the only trauma type that was uniquely associated with eating disorder symptoms when controlling for other trauma types. Examination of different types of military-related trauma indicated that this association was not driven by exposure to combat.

Discussion—Non-combat, military-related trauma was associated with eating disorder symptom severity in male veterans. Results highlight the need for better assessment of eating disorder symptoms in this population.

Keywords

Trauma; Eating Disorders; Men; Veterans

Though eating disorders disproportionately affect women, a significant minority of individuals with eating disorders are men (Hudson, Hiripi, Pope Jr., & Kessler, 2007; Weltzin et al., 2005). Eating disorders, particularly binge eating disorder (BED), affect as

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many as 3% of men in the general population (Raevuori, Keski-Rahkonen, & Hoek, 2014), and prevalence estimates may be even higher in specific populations. For example, 9% of men presenting to a weight loss clinic endorsed probable BED and another 12% endorsed binge eating with loss of control occurring with subclinical frequency (Linde et al., 2004). Whereas these numbers underscore the need for further research on men, eating disorders and eating disorder symptomatology continue to be understudied, underdiagnosed, and undertreated in predominantly male populations, especially military veterans.

Veterans may be at elevated risk for eating disorder symptoms (EDS) due to the high rates of trauma exposure and experiences of multiple traumatization in this population. Over 80% of veterans report lifetime exposure to three or more potentially traumatic events (Clancey et al., 2006). Trauma exposure has been previously identified as a transdiagnostic risk factor for eating disorders (Brewerton, 2007; Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004). Though the majority of studies on trauma and eating disorders have been conducted on women, Mitchell and colleagues (2012) found that 100% of men with lifetime anorexia nervosa (AN) or bulimia nervosa (BN) and 98.4% of men with BED reported a history of trauma.

We recently examined the associations between exposure to traumatic experiences and EDS in trauma-exposed female veterans (Arditte Hall, Bartlett, Iverson, & Mitchell, 2017). Histories of adult physical assault, adult sexual assault, and military-related trauma were each associated with greater EDS, as was exposure to multiple types of traumas. When controlling for the influence of the other trauma types, however, only military-related trauma was significantly associated with EDS.

This investigation replicated and extended these findings in a large, nationally-representative sample of male veterans. We examined rates of childhood physical abuse, childhood sexual abuse, adult physical assault, adult sexual assault, and military-related trauma, and tested the associations between each trauma type and EDS. Based on our previous findings (Arditte Hall et al., 2017), we hypothesized that trauma occurring in adulthood would be associated with greater EDS. Our second aim was to examine the association between multiple traumatization and severity of EDS. Lastly, we examined which trauma types were uniquely associated with EDS after controlling for the co-occurrence among them. Again, based on our previous research, we expected military-related trauma to be robustly associated with greater EDS.

Method

Participants

A random sample ($n = 1,126$) of trauma-exposed veterans was selected from a sample of 3,156 veterans, who had enrolled in a GfK Knowledge Networks, Inc. research panel and participated in a previous study (Pietrzak & Cook, 2013). Among those invited to participate, 860 completed the survey (76.4% response rate). Of responders, 163 were excluded due to questionable validity of responses and/or symptom over-reporting. Female veterans ($n = 55$) were also excluded, as this subsample was too small for gender comparisons. The final sample included 642 male veterans. Average age was 64.11 ($SD =$

11.20) years; 85.5% were White, Non-Hispanic and their average body mass index (BMI) was 29.35 ($SD = 5.57$).

Measures

Trauma History Screen (THS; Carlson et al., 2011)—The THS assesses exposure to 13 types of trauma with dichotomous yes/no response options. Items assessing childhood physical abuse, adult physical assault, childhood sexual abuse, adult sexual assault, and military-related trauma were included in this study. In addition to examining presence or absence of each trauma type, responses were summed to create a count score (range 0-5).

National Stressful Events Survey (NSES; Kilpatrick et al., 2011)—The NSES assesses exposure to traumatic events and the presence and severity of PTSD symptoms. To supplement THS data, participants responded to three dichotomous (yes/no) items assessing exposure to combat, military sexual trauma, and “other” traumatic experiences occurring in the military. Examples of other traumatic experiences include: motor vehicle accident, traumatic loss of a close friend or unit member, or morally injurious events, such as witnessing cruel/inhuman acts (Stein et al., 2012).

Eating Disorder Diagnostic Scale (EDDS; Stice, Telch, & Rizvi, 2000)—The EDDS is a 22-item measure of AN, BN, and BED symptoms. It can be used to calculate probable diagnoses or summed to create a total score (Stice et al., 2000). The total score, without the item assessing amenorrhea, was our primary outcome variable. Internal consistency was good ($\alpha = .89$).

Procedure

As described elsewhere (Mitchell & Wolf, 2016), data were collected using an online research panel that is representative of the United States population. A 35-minute, web-based survey was administered to a subset of this panel. Participants were awarded 50,000 points (equivalent to \$50) upon completion. The local IRB approved study procedures.

Statistical Approach

Complete data were collected from 585 participants. Less than 2% of data were missing from all variables, except the EDDS (4.4% missing). Participants with and without complete EDDS data did not differ in rates of trauma endorsement or average BMI, but those without complete data were older than participants with complete data ($p < .001$). There was no evidence to indicate that EDDS missingness was related to EDDS scores and data were determined to be missing at random.

Partial correlations were conducted to examine the associations between individual trauma types and EDS severity controlling for age and BMI, two factors previously linked to EDS severity (Polivy & Herman, 2004; Rosenberger & Dorflinger, 2013). Next, the count score of the THS items was included in a linear regression model to determine whether greater trauma exposure was positively associated with EDS. Finally, a multiple linear regression model was estimated to examine the unique association between each trauma type and EDS severity, controlling for the other trauma types, age, and BMI. Models were first estimated

using the THS items, so that analyses would parallel those of our female veteran study (Arditte Hall et al., 2017). We then estimated models using NSES military trauma items in order to better explore the impact of various military trauma exposures.

Descriptive statistics and partial correlations were conducted using IBM SPSS Statistics 20. All available data were included in these analyses. Regression analyses were conducted using Mplus 7.0, which accounted for missing data using full information maximum likelihood.

Results

The mean EDDS score was 10.68 ($SD = 10.41$) and 4.1% (weighted percentage) of the sample met criteria for a probable eating disorder. When asked about the past three months, a significant minority of participants endorsed eating disorder behaviors occurring 1/week; binge eating (24.1%) was the most commonly reported behavior, followed by fasting (11.7%), excessive exercise (6.7%), use of laxatives or diuretics (2.3%), and vomiting (1%). Additionally, 15.6% of participants endorsed a history of childhood physical abuse, 16.5% endorsed adult physical assault, 5.9% endorsed childhood sexual abuse, 0.6% endorsed adult sexual assault, and 36.4% endorsed military-related trauma. Because only 4 participants endorsed adult sexual assault, the data were underpowered to detect meaningful effects and this variable was excluded from subsequent analyses.

EDDS scores as a function of trauma type are presented in Table 1. Neither childhood physical abuse ($r = .05, p = .24$) nor childhood sexual abuse ($r = .02, p = .58$) was associated with EDS severity. The association between adult physical assault and EDDS scores was also not significant ($r = .08, p = .06$). However, men who endorsed military-related trauma reported more severe EDS than men who did not ($r = .18, p < .001$).

The highest rate of co-occurrence was between military-related trauma and adult physical assault (9.2%). Examination of the co-occurrence of three or more trauma types revealed that 4.8% endorsed childhood physical abuse, adult physical assault, and military-related trauma. All other combinations of three or more trauma types were endorsed by less than 1.3% of the sample. Participants who endorsed a greater number of trauma types also endorsed more severe EDS ($\beta = .11, B = 1.25, SE = .42, p = .003$).

In the full model, individuals who were younger ($\beta = -.10, B = -.10, SE = .04, p = .006$) or who had greater BMIs ($\beta = .39, B = .73, SE = .07, p < .001$) were more likely to endorse EDS. Considering all trauma types together, only military-related trauma was significantly associated with EDS ($\beta = .13, B = 2.72, SE = .80, p = .001$). Childhood physical abuse ($\beta = -.02, B = -0.55, SE = 1.12, p = .62$), adult physical assault ($\beta = .04, B = 1.00, SE = 1.10, p = .36$), and childhood sexual abuse ($\beta = -.005, B = -0.24, SE = 1.60, p = .88$) were not.

On the NSES, 24.6% of participants reported exposure to combat, 1.2% reported MST, and 22.6% reported experiencing another form of military-related trauma. Because of the low frequency of MST, it was excluded from subsequent analyses. Whereas partial correlations revealed no significant association between combat exposure and EDS ($r = .07, p = .08$), other military-related traumas were associated with greater EDS ($r = .17, p < .001$). In a

regression model that controlled for age, BMI, childhood physical and sexual abuse, and adult physical assault, other military-related trauma ($\beta = .15$, $B = 3.68$, $SE = .90$, $p < .001$), but not combat ($\beta = .06$, $B = 1.31$, $SE = .87$, $p = .13$), was associated with greater EDS.

Discussion

Approximately 4% of a nationally representative sample of trauma-exposed male veterans met criteria for a probable eating disorder. When trauma types were considered as standalone vulnerability factors or simultaneously within a regression model, military-related trauma was the only factor associated with EDS. Overall, results replicated the pattern of findings that emerged from our previous study of trauma-exposed female veterans (Arditte Hall et al., 2017). Results also extend our previous findings, suggesting that military-related traumatic experiences other than combat (e.g., an accident, traumatic loss, or moral injury) may be most strongly associated with EDS. Because the exact nature of these other traumatic experiences is not known, it is difficult to determine why they were associated with elevated eating disorder symptoms. Future research should better characterize these experiences, as well as their emotional and behavioral sequelae, in order to elucidate the path from trauma exposure to EDS.

In contrast with some research on civilians (Caslini et al., 2016), but consistent with most research on female veterans (Arditte Hall et al., 2017; Forman-Hoffman, Mengeling, Booth, Torner, & Sadler, 2012), we did not find an association between childhood trauma and EDS severity. Potential explanations for this finding include a) recency effects in individuals with multiple traumatization, b) self-selection biases, and/or c) issues with the retrospective recall of childhood trauma. Despite the lack of a direct association between childhood trauma and EDS, it is possible that such experiences may still confer indirect risk for EDS in male veterans by increasing the risk for re-traumatization (Clancey et al., 2006). Results offer preliminary support for this hypothesis, as the number of trauma types endorsed was positively associated with EDS severity.

The study was not without limitations. Our sample was enriched for military-related trauma. Further, the THS and NSES are screening measures of trauma exposure, and they do not differentiate between all types of military-related trauma. Finally, due to the small number of participants endorsing adult sexual assault or MST in our sample, we were unable to examine how these experiences may be related to EDS. The rate of adult sexual assault in male veterans is estimated to be between 1-2% (Hoyt, Klosterman, & Williams, 2011), which represents a sizeable number of people and a particularly vulnerable subpopulation of veterans. Future research should look to examine this association more explicitly.

Despite limitations, this study highlights the importance of screening for disordered eating among male veterans, particularly those with a history of non-combat, military-related trauma. As a next step, research should more closely examine the function of EDS in this population and begin to identify optimal treatments for trauma-exposed male veterans with EDS.

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Table 1

EDDS total score means (standard deviations) for veterans with and without a history of a particular trauma type.

	Trauma +	Trauma -
CPA	11.85 (11.98)	10.48 (10.11)
APA	12.45 (11.61)	10.33 (10.14)
CSA	11.57 (11.02)	10.60 (10.31)
ASA	–	–
MRT	13.12 (11.91)	9.28 (9.20)

Note. Trauma + = endorsed history of a given trauma type; Trauma - = denied history of a given trauma type; CPA = childhood physical abuse; APA = adult physical assault; CSA = childhood sexual abuse; ASA = adult sexual assault; MRT = military-related trauma.