Journal of Anxiety Disorders 68 (2019) 102145

Contents lists available at ScienceDirect

Journal of Anxiety Disorders

journal homepage: www.elsevier.com/locate/janxdis

Patterns and correlates of racial/ethnic disparities in posttraumatic stress disorder screening among recently separated veterans

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ARTICLE INFO

Keywords:
Posttraumatic stress disorder
Race and ethnicity
Disparities
Stress
Social support
Trauma

ABSTRACT

Background: Despite the high prevalence of posttraumatic stress disorder (PTSD) among military veterans, there is a lack of knowledge about racial/ethnic differences. The current study describes patterns and correlates of PTSD screening across race/ethnicity and gender in a sample of 9420 veterans recently separated from the military. Veterans who identified as White (n = 6222), Hispanic/Latinx (n = 1313), Black (n = 1027), Asian/Hawaiian/Pacific Islander (n = 420) and multiracial (n = 438) were included.

Method: Trauma exposure and PTSD were assessed with the Primary Care PTSD Screen for DSM-5. Contextual factors examined included the intensity of ongoing stressful events, perceived social support, and socio-demographic variables (e.g., income). Weighted analyses were conducted to account for differential sample response rates. Regression analyses examining correlates of racial/ethnic differences in PTSD screening were stratified by gender.

Results: Among men and women, positive PTSD screening rates were significantly elevated among Black, multiracial, and Hispanic/Latinx veterans compared with White veterans. Sociodemographics, trauma exposure, stress and social support accounted for elevated positive screening rates among all racial/ethnic groups except Black men and multiracial women.

Conclusions: Findings suggest that Black, Hispanic/Latinx and multiracial veterans may be at higher risk for PTSD shortly following separation from the military. Contextual factors examined explain the excess risk among some, but not all, subgroups. Further specifying disparities in PTSD diagnostic rates and risk factors will enable targeted and tailored intervention among veteran subgroups.

1. Introduction

As the population of U.S. service members and veterans becomes increasingly diverse, it is essential to study health disparities (National Center for Veterans Analysis and Statistics, 2018). One of the most pressing health concerns among veterans is posttraumatic stress disorder (PTSD), a mental health condition characterized by physiological, cognitive and emotional responses to a traumatic event that interfere with an individual's functioning across life domains (Friedman, Resick, Bryant, & Brewin, 2011; Oster, Morello, Venning, Redpath, & Lawn, 2017). Elucidating PTSD screening patterns by race/ethnicity and gender can inform targeted outreach, prevention, and intervention during transition out of the military, which may more efficiently shore up veteran mental health and prevent functional declines (Fulton et al., 2015).

To date, research on this topic is limited. The work that has been

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https://doi.org/10.1016/j.janxdis.2019.102145
Received 3 January 2019; Received in revised form 16 July 2019; Accepted 13 September 2019
Available online 16 September 2019
0887-6185/ Published by Elsevier Ltd.

done suggests that compared with White veterans, Black/African-American and Hispanic/Latinx veterans have higher rates of PTSD, and Asian-American veterans have similar or lower rates (Dursa, Reinhard, Barth, & Schneiderman, 2014; Friedman, Schnurr, Sengupta, Holmes, & Ashcraft, 2004; Frueh, Brady, & De Arellano, 1998; Pole, Gone, & Kalkarni, 2008; Schlenger et al., 1992). Research on the contribution of contextual factors to racial/ethnic disparities in PTSD is mixed. Some studies, particularly among Vietnam veterans, have found that elevated PTSD rates among minority veterans could be explained by combat exposure and sociodemographic factors (Dohrenwend, Turner, Turse, Lewis-Fernandez, & Yager, 2008; Pole et al., 2008). However, studies of post-9/11 active-duty military men (Hall-Clark et al., 2017) and national samples (Alegria et al., 2013; Roberts, Gilman, Breslau, Breslau, & Koenen, 2011) suggest that racial/ethnic disparities in PTSD, particularly among Black/African-American individuals, persist after accounting for factors such as socioeconomic status, trauma exposure, and psychiatric history. Racial/ethnic minorities experience a higher burden of life stress and lower social support than their white peers, which may contribute to disparities in PTSD risk (Alegria et al., 2013; Almeida, Molnar, Kawachi, & Subramanian, 2009; Brewin, Andrews, & Valentine, 2000; Meyer, Schwartz, & Frost, 2008; Muralidharan, Austern, Hack, & Vogt, 2016; Sternthal, Slopen, & Williams, 2011; Williams, 2018).

Even less research has examined whether racial/ethnic disparities in PTSD vary by gender. The identities of veteran, racial/ethnic minority and woman intersect in various ways that lead to uniquely stressful experiences among racial/ethnic minority female veterans during and after their military service (Huynh-Hohnbaum, Damron-Rodriguez, Washington, Villa, & Harada, 2003). For example, compared with their White peers, Black women veterans report higher rates of unwanted sexual harassment and sexual coercion, and report higher psychological distress related to gender harassment (Buchanan, Settles, & Woods, 2008). Likely as a consequence of their disproportionate stress burden, female racial/ethnic minority veterans have been shown to have higher rates of PTSD and other psychiatric symptoms (e.g., depression and anxiety) compared with their White female peers (Carter et al., 2016). In addition, research that has not examined race/ethnicity has shown higher rates of PTSD among women in national and civilian samples (Tolin & Foa, 2006) and some evidence for greater PTSD risk among female military and veteran samples (Xue et al., 2015). On the other hand, some studies have not found significant gender differences in PTSD among veterans (Dursa et al., 2014; Hoge, Clark, & Castro, 2007; Street, Gradus, Giasson, Vogt, & Resick, 2013). Thus, more evidence is needed to examine whether racial/ethnic disparities in PTSD will operate similarly among men and women.

Past research has been limited by a focus on predominantly older veterans, infrequent consideration of the intersection of race/ethnicity and gender, small sample sizes for racial/ethnic subgroups, and reliance on Veterans Health Administration (VA) data. The current study helps fill a gap in the literature by examining racial/ethnic and gender disparities in positive PTSD screening in a large, diverse sample of recently separated military veterans. We examined a broad array of correlates that may explain racial/ethnic and gender disparities in positive PTSD screening, including sociodemographics (e.g., socioeconomic status, age), trauma exposure, life stress and social support.

2. Methods

2.1. Sampling and procedure

We utilized data from The Veterans Metrics Initiative, an ongoing prospective cohort study of well-being among a national sample of recently separated military veterans (Vogt et al., 2018). The TVMI sample at time 1 is composed of 9554 veterans (18.3% women; mean age = 34.4, SD = 9.6). To recruit a representative sample of recently transitioned veterans, we identified eligible veterans from a VA/Department of Defense repository (VADIR), which has contact information for all separated service members.

Because response rates tend to vary between 20% and 30% for surveys of US military personnel and veterans (Vogt et al., 2018), we conservatively estimated that we would obtain a response rate of 20% during the first survey administration. We ultimately invited 48,965 veterans to participate in the study when the opportunity arose to draw a sampling frame that included the entire universe of veterans who met our inclusion criteria at the time of our main data extraction (fall, 2016). The sampling frame was limited to veterans who had a mailing address within the continental USA and those who had separated from active duty service or from activated status with the Reserves within the last 90 days. Among National Guard/Reservists, only those who experienced an activation of at least 180 days were included. Participating veterans (N = 9554) at time 1 had been separated from the military for an average of 3.1 months (SD = 2.1); approximately 3% were continuing to serve in the Reserves (n = 304).

The outreach methodology followed a modified Dillman mail survey procedure that involved multiple contacts with potential participants and the opportunity to opt out (Dillman, Smyth, & Christian, 2014). All potential participants received a pre-incentive of $5 cash, and those who completed the first survey received a $20 electronic gift. All study procedures were approved by the Boston VA Institutional Review Board.

2.2. Sample and weighting procedure

The time 1 assessment garnered a 23% response rate. The distribution of respondents in the TVMI sample is similar to the sampling frame on many key demographic and military variables, with a few exceptions: Lower level enlisted service members were less likely to participate than officers, younger veterans were somewhat less likely to participate than older veterans, and previously activated National Guard/Reservist personnel were slightly less likely to participate than their active duty peers. To adjust for differences in response likelihood and to enhance the generalizability of study findings to the larger population, we calculated an initial set of nonresponse bias weights based on gender, rank/paygrade, and branch of military service as observed in the sampling frame. This procedure adequately adjusted for observed differences based on the three weighting variables as well as likelihood of responding during the first wave of data collection. More details on the sampling frame and study procedures can be found elsewhere (Vogt et al., 2018).

2.3. Measures

2.3.1. Race/ethnicity

Race and ethnicity were assessed based on National Institutes of Health clinical research reporting policies (NIH, 2001). Participants were asked to indicate their ethnicity (Hispanic, Latino/a or Spanish Origin) and then all racial groups they identified with (Native American or Alaska Native; Black; Asian; West Asian, Middle Eastern or North African; Native Hawaiian; Other Pacific Islander; White/European; Other). Following NIH reporting policies (NIH, 2001), veterans who endorsed being of Hispanic, Latinx, or Spanish origin were categorized in the Hispanic/Latinx group, regardless of race.

Non-Hispanic participants who chose more than one race were coded as multiracial. Those identifying as West Asian, Middle Eastern, or North African (n = 37) were re-coded as White/European, following NIH reporting policies (NIH, 2001). Those who selected “other” were recoded based on their text response (e.g., “Scottish” recoded as White/European), missing (e.g., “human”), or remained as other. Participants with missing race and ethnicity data (n = 50) or coded as other (n = 24) were excluded from analyses.

We report PTSD screening rates for Native American/Alaska Native veterans (n = 67) but do not include them in regression analyses due to

small sample sizes when stratified by gender. As in previous research (Onoye et al., 2017), Asian, Native Hawaiian and Other Pacific Islander groups were combined into one racial group, hereafter referred to as AHPI (n = 420; 4.8%). These recodes resulted in five race/ethnicity categories (Hispanic/Latino, White, Black, AHPI, multiracial).

2.3.2. Trauma exposure and PTSD screening

The *Primary Care PTSD Screen for DSM-5* (PC-PTSD-5; Prins et al., 2016) assessed trauma exposure and PTSD symptoms. Trauma exposure was assessed by first orienting respondents to the type of event ("Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic") and then giving examples based on the DSM-5 definition of a traumatic event (e.g., physical or sexual assault; seeing someone killed or injured). Veterans were asked to indicate (yes/no) whether they had experienced such an event before age 18 (childhood trauma), after age 18 but before joining the military, during military service, or after separation. In order to obtain more fine-grained information about the timing of trauma exposure, this question was modified slightly from the original PC-PTSD-5, which only asked about whether or not a traumatic event had occurred at any point in the respondent's life. In analyses, these four dichotomous variables represented trauma exposure at each life stage.

Those who endorsed trauma exposure were then asked five yes/no questions assessing PTSD symptoms over the past month (i.e., nightmares or intrusive thoughts, hypervigilance, avoidance, emotional numbing, guilt and blame). Those who denied trauma exposure were given a score of 0, based on PC-PTSD-5 scoring procedures. Respondents were identified as having a *positive PTSD screen* if they scored 3 or more, the cutoff that most accurately identifies persons meeting criteria for PTSD based on a diagnostic interview (Prins et al., 2016). This cutoff was chosen to capture veterans who were at highest risk for PTSD.

In a sample of veterans, the PC-PTSD-5 was shown to have excellent diagnostic accuracy (Prins et al., 2016). The cutoff score of 3 was shown to maximize sensitivity at a specificity greater than 0.80, a strategy that minimizes both false negatives and false positives. This cutoff was found to identify 94.8% of participants whom were diagnosed with PTSD via a diagnostic interview (i.e., the MINI), whereas higher cutoff scores identified fewer cases accurately (Prins et al., 2016). However, this cutoff also identified more false positives than higher cutoff scores (e.g., 26.4% identified by the PC-PTSD-5 as having PTSD vs. 14.3% identified by the MINI). Current rates may thus be slightly higher than would be identified by a diagnostic interview; thus, this cutoff was chosen in current analyses in order to capture as many veterans as possible who would be likely to screen positive for PTSD.

2.3.3. Life stress

Ongoing life stress was assessed by a 13-item questionnaire drawing content from four different measures of chronic stress: The *Life Experiences Survey* (Sarason, Johnson, & Siegel, 1978), the *Chronic Stress Index* (Zenk et al., 2013), the *Chronic Strain Inventory* (Howerton & Van Gundy, 2009), and the *Social Readjustment Rating Scale* (Holmes & Rahe, 1967). This approach was taken to create a measure that comprehensively covered all the overarching stressor categories assessed by these four measures, while limiting time burden. Veterans rated on a 5-point scale how much stress they experienced over the past 3 months within the following life domains: Safety in neighborhood/home, discrimination, legal problems, health problems, finances, caregiving (family and children), relationship problems, sexual harassment/assault, loss of a loved one, and pressure at work or school. Response options ranged from "this does not apply to me" to "high stress." The items were averaged to create a *life stress* score. Cronbach's alpha for the full sample was .82; values were similar across race/ethnicity (range: .80 to.86).

2.3.4. Social support

Social support was assessed with the 8-item Medical Outcomes Study Social Support Survey (Moser, Stuck, Silliman, Ganz, & Clough-Gorr, 2012). Veterans indicated the frequency with which someone would be available to provide practical (e.g., "take you to the doctor") and emotional (e.g., "turn to for suggestions about how to deal with a personal problem") support. Responses were rated on a 5-point scale ranging from "none of the time" to "all of the time." Items were averaged to create a *social support* score. Cronbach's alpha for the full sample was .95; values were similar across race/ethnicity (range: .95 to .96).

2.3.5. Sociodemographics

Participants indicated their household income and their highest level of education from a list of options. Post-secondary education refers to vocational or technical training (excluding military training) or some college. Veterans also reported their age, military rank, military occupation, and whether they had been deployed.

2.4. Statistical analyses

Analyses were conducted with STATA 8.0 statistical software (StataCorp, 2003) using survey analysis methods to include probability sampling weights. We first examined racial/ethnic group differences in sociodemographic, trauma, life stress, and social support variables, as well as positive PTSD screening utilizing a design-corrected Pearson chi-squared test (categorical outcomes) or independent samples t-tests (continuous outcomes), with a criterion alpha of .05. Cohen's d effect sizes are reported for group differences; effect sizes of 0.2 are considered small, 0.5 medium, and 0.8 large (Sawilowsky, 2009).

Next, we utilized logistic regression for complex survey designs, where we fit the odds ratio (OR) of having a positive PTSD screen as a function of our variables of interest, with models stratified by gender. In Model 1, we predicted positive PTSD screens by race/ethnicity and age. We next examined whether racial/ethnic differences remained after accounting for socioeconomic status (i.e., education and household income; Model 2), trauma exposure (Model 3), life stress (Model 4), and social support (Model 5). We took this incremental approach to more accurately identify the specific factors contributing to differences in positive PTSD screening rates among each racial/ethnic/gender group. Categorical variables were dummy coded, with the reference group indicated by an OR of 1. White was used as the reference for race/ethnicity. Statistically significant results were indicated by 95% confidence intervals that excluded 1.

3. Results

3.1. Demographics

White veterans comprised the majority of the sample (n = 6222; 66.1%), followed by Hispanic/Latino (n = 1313; 13.9%), Black (n = 1027; 10.9%), multiracial (n = 438; 4.7%), and AHPI (n = 420; 4.5%) veterans. Among the AHPI veterans, 317 (75.5%) identified as Asian/Asian-American, 75 (17.9%) as other Pacific Islander, and 28 (6.7%) as Native Hawaiian. The largest multiracial groups were White/Native American or Alaska Native (n = 194; 44.3%), White/Black (n = 129; 29.5%), and White/Asian (n = 104; 23.7%). The majority of Hispanic/Latinx veterans were White (60%).

3.2. Racial/ethnic and gender differences in PTSD screening, trauma exposure and correlates

There were significant racial/ethnic differences in age, gender, rank, military occupation, deployment rates, education, and household income (Table 1). Compared with White veterans, all racial/ethnic minority groups had a greater proportion of veterans who were women

Table 1
Weighted statistics and effect sizes for racial/ethnic differences in sociodemographic, trauma, stress, social support variables, and PTSD screening rates.

	White		Black			Hispanic/Latinx				AHPI					Multiracial					
	n = 6,222		n = 1,027			n = 1,313				n = 420					n = 438					
Variables	n	%	n	%	W(d)†	n	%	W(d)	B‡(d)	n	%	W(d)	B(d)	H§(d)	n	%	W(d)	B(d)	H(d)	A(d)¶
Age					.09*			.12*	.19*			.34*	.24*	.28*			.14*	.21*	.03	.27*
18-34 Years	3,351	64.5	469	57.1		865	65.9			218	51.9				287	65.5				
35-49 Years	2,247	27.9	458	34.5		361	27.5			121	28.8				127	29.0				
50-65 Years	454	5.1	67	4.8		51	3.9			30	7.1				12	2.7				
65+ Years	170	2.6	33	3.6		36	2.7			51	12.1				12	2.7				
Gender					.39*			.10*	.26*			.14*	.23*	.03			.26*	.11*	.15*	.11
Male	5,284	87.0	700	72.1		1,064	83.4			331	82.2				327	77.4				
Female	938	13.0	327	27.9		249	16.6			89	17.8				111	22.6				
Rank					.31*			.38*	.08*			.13*	.22*	.32*			.17*	.18*	.28*	.04
Enlisted	4,532	81.9	906	92.3		1,189	94.1			332	86.5				354	87.8				
Officer	1,690	18.1	120	7.7		124	5.9			88	13.5				84	12.3				
Military Occupation					.19*			.07*	.15*			.35*	.06	.10*			.08	.16*	.02	.12
Combat Arms	1,581	25.7	118	13.8		269	21.0			70	17.3				90	20.7				
Combat Support	2,401	39.5	388	38.8		548	42.3			154	38.4				187	43.6				
Service Support	2,233	34.7	520	47.4		496	36.7			196	44.4				161	35.6				
Deployed	4,479	66.6	752	66.5	.00	860	60.6	.11*	.11*	228	48.4	.35*	.33*	.22*	308	65.2	.02	.02	.09	.31*
Education					.07*			.18*	.17*			.08*	.11*	.21*			.11*	.07	.11*	.15*
HS Diploma	1,005	22.0	147	19.4		323	29.6			81	24.2				72	22.1				
Post-Secondary	1,750	32.7	330	36.6		500	39.5			103	27.5				160	40.0				
College Degree	2,066	30.5	385	32.5		369	24.7			154	36.0				147	29.1				
Graduate Degree	1,401	14.8	165	11.5		121	6.2			82	12.4				59	8.8				
Household Income					.16*			.20*	.05			.14*	.08	.13*			.12*	.06	.09*	.09*
Less Than $24,999	1,051	21.4	268	31.7		379	32.2			118	32.8				98	27.1				
$25,000 – $44,999	1,150	21.5	248	25.6		354	28.6			79	20.1				117	27.6				
$45,000 – $74,999	1,457	23.7	255	23.5		330	23.2			96	22.7				98	22.2				
$75,000 – $99,999	865	12.5	105	8.2		100	7.2			44	9.6				51	10.0				
$100,000 Or More	1,699	21.0	151	11.0		150	8.8			86	14.9				74	13.1				
Childhood Trauma	1,265	20.9	286	27.6	.15*	361	27.4	.14*	.00	99	21.7	.02	.13*	.12*	132	30.5	.21*	.06	.06	.19*
Premilitary Adult Trauma	837	13.6	184	18.2	.12*	209	15.6	.05	.06	73	16.6	.08	.04	.03	81	18.6	.13*	.01	.08	.05
Military Trauma	3,883	58.2	700	63.1	.09*	831	59.0	.01	.07	212	44.7	.25*	.34*	.27*	296	65.6	.14*	.05	.12*	.39*
Postmilitary Trauma	556	9.9	158	16.2	.17*	175	13.7	.11*	.06	48	11.5	.05	.12*	.06	66	17.7	.22*	.03	.10	.16*
Any Trauma	4,299	65.9	771	71.8	.11*	943	69.0	.06	.05	246	53.7	.23*	.34*	.29*	330	73.3	.16*	.03	.08	.37*
Life Stress (M,*SD*)	.77	*.56*	.99	*.69*	.27*	.86	*.63*	.12*	.18*	.94	*.66*	.25*	.05	.14*	.88	*.60*	.15*	.18*	.02	.13
Social support (M,*SD*)	2.91	*.98*	2.63	*1.11*	.22*	2.75	*1.08*	.16*	.07	2.71	*1.06*	.26*	.03	.10	2.65	*1.12*	.24*	.02	.09	.00
Positive PTSD Screen	1,430	22.5	388	36.3	.29*	422	30.6	.18*	.11*	90	20.7	.04	.31*	.21*	159	35.7	.28*	.01	.10	.31*

PTSD = posttraumatic stress disorder; AHPI = Asian, Native Hawaiian or Pacific Islander; HS = High School; M = mean; SD = standard deviation.
* $p < .05$.
† Cohen's d for comparison with White.
‡ Cohen's d for comparison with Black.
§ Cohen's d for comparison with Hispanic/Latinx.
¶ Cohen's d for comparison with AHPI.

or who had enlisted. All racial/ethnic minority groups reported significantly higher life stress and lower social support than the White veteran group.

Rates of positive PTSD screens were lowest among AHPI veterans (20.7%), and highest among Black veterans (36.3%), followed by multiracial (35.7%), Hispanic/Latino (30.6%), and White (22.5%) veterans (Table 1). Among Native American or Alaska Native veterans (n = 67), 43.3% had a positive PTSD screen (not included in subsequent analyses due to low sample size).

The largest group differences in PTSD screening were seen between AHPI and Black (d = .31) and AHPI and multiracial (d = .31) veterans, as well as between White and Black (d = .29) and White and multiracial (d = .28) veterans. Hispanic/Latino veterans also had elevated positive screening compared with AHPI veterans (d = .21). In terms of trauma exposure, the largest effect sizes were between AHPI veterans compared with all other racial/ethnic groups in reporting any trauma (d's = .23–.37) and military trauma (d's = .25–.39), whereby AHPI veterans reported lower rates of trauma.

Racial/ethnic differences in PTSD screening and trauma exposure rates were also examined by gender (Table 2). The highest rates of positive PTSD screens were among multiracial women (48.1%) and Black men (37.9%). AHPI men had the lowest rates of positive screens (19.8%). Only multiracial women differed significantly from their male counterparts in the rates of positive PTSD screens (d = .30).

3.3. Multivariable models of PTSD screening

Table 3 details multivariable model results for women veterans. Each model significantly predicted positive PTSD screening. In model 1 (Wald $\chi^2 = 45.68$, pseudo $R^2 = .027$, $p < .001$), Black (OR = 1.50, 95% CI = 1.11, 2.03), Hispanic/Latina (OR = 1.76, 95% CI = 1.27, 2.44) and multiracial (OR = 2.86, 95% CI = 1.82, 4.49) women had significantly higher odds of screening positive for PTSD compared with White women. Including education and income (Model 2: Wald $\chi^2 = 63.67$, pseudo $R^2 = .038$, $p < .001$) reduced the odds ratios but did not fully explain elevated positive screening rates for any group. Adding trauma exposure (Model 3: Wald $\chi^2 = 343.43$, pseudo $R^2 = .241$, $p < .001$) fully explained elevated positive screening rates among Black women. The addition of life stress (Model 4: Wald $\chi^2 = 330.85$, pseudo $R^2 = .312$, $p < .001$) slightly reduced the odds ratios. Finally, including social support (Model 5: Wald $\chi^2 = 324.10$, pseudo $R^2 = .328$, $p < .001$) fully explained elevated positive screening rates for Hispanic/Latina women. The elevated rates of positive PTSD screens among multiracial women persisted after

Table 2
Weighted prevalence and effect sizes for within-race/ethnicity gender differences in positive PTSD screening and trauma exposure.

	White %			Black %			Hispanic/Latino %			AHPI %			Multiracial %		
Variables	W	M	d	W	M	d	W	M	d	W	M	d	W	M	d
Positive PTSD Screen	23.6	22.3	.03	32.0	37.9	.11	36.0	29.5	.13	25.0	19.8	.12	48.1	32.0	.30*
Any Trauma	65.0	66.1	.02	66.4	73.9	.14*	72.5	68.3	.08	62.1	51.8	.18	80.5	66.7	.21
Childhood Trauma	28.7	19.7	.19*	28.5	27.2	.03	41.9	24.5	.36*	27.1	20.6	.15	46.2	25.9	.40*
Adult Pre-military Trauma	18.3	12.8	.14*	16.4	18.9	.06	16.1	15.5	.02	20.0	15.9	.10	31.9	14.8	.39*
Military Trauma	53.3	59.0	.10*	58.8	64.8	.11	55.8	59.7	.07	48.6	43.9	.09	71.3	63.9	.14
Post-military Trauma	7.8	10.2	.07*	12.4	17.7	.13	17.7	12.9	.13	7.4	12.4	.15	14.2	18.7	.11

PTSD = posttraumatic stress disorder; W = Women; M = Men; d = Cohen's d effect size; AHPI = Asian, Native Hawaiian or Pacific Islander.
* $p < .05$.

Table 3
Weighted logistic regression models predicting positive PTSD screening by race/ethnicity, sociodemographics, trauma exposure, life stress and social support among women (n = 1708).

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variables	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Race/Ethnicity										
White	1		1		1		1		1	
Black	1.50	(1.11 – 2.03)*	1.37	(1.00 – 1.86)*	1.37	(.96 – 1.96)	1.31	(.90 – 1.90)	1.26	(.87 – 1.84)
Hispanic/Latina	1.76	(1.27 – 2.44)*	1.61	(1.16 – 2.23)*	1.54	(1.04 – 2.28)*	1.57	(1.04 – 2.37)*	1.50	(.98 – 2.30)
AHPI	1.12	(.65 – 1.95)	1.12	(.64 – 1.96)	1.26	(.66 – 2.40)	1.15	(.64 – 2.09)	1.23	(.68 – 2.23)
Multiracial	2.86	(1.82 – 4.49)*	2.78	(1.77 – 4.36)*	2.13	(1.29 – 3.53)*	2.32	(1.35 – 4.01)*	2.09	(1.21 – 3.60)*
Age										
18–34 years	1		1		1		1		1	
35–49 years	.95	(.74 – 1.22)	1.23	(.93 – 1.62)	.84	(.61 – 1.15)	.81	(.59 – 1.13)	.77	(.55 – 1.07)
50–65 years	.60	(.34 – 1.07)	.88	(.47 – 1.63)	.76	(.38 – 1.50)	.79	(.38 – 1.63)	.74	(.35 – 1.53)
65+ years	.26	(.11 – .64)*	.27	(.10 – 0.68)*	.23	(.07 – 0.71)*	.29	(.10 – 0.84)*	.24	(.08 – 0.73)
Education										
HS diploma			1.73	(1.05 – 2.85)*	2.34	(1.31 – 4.17)*	2.28	(1.26 – 4.14)*	2.67	(1.47 – 4.84)*
Post-secondary			1.38	(.92 – 2.05)	1.12	(.71 – 1.75)*	1.13	(.71 – 1.79)	1.25	(.79 – 1.99)
College degree			1.3	(.91 – 1.86)	1.16	(.79 – 1.71)*	1.14	(.77 – 1.70)	1.19	(.81 – 1.77)
Graduate degree			1		1		1		1	
Household Income										
Less than $24,999			1.75	(1.12 – 2.74)*	1.70	(1.04 – 2.78)*	1.22	(.74 – 2.03)	1.10	(.66 – 1.84)
$25,000 – $44,999			1.98	(1.28 – 3.04)*	1.97	(1.21 – 3.21)*	1.52	(.93 – 2.51)	1.45	(.88 – 2.40)
$45,000 – $74,999			1.61	(1.06 – 2.46)*	1.65	(1.04 – 2.62)*	1.35	(.84 – 2.16)	1.36	(.85 – 2.17)
$75,000 – $99,999			1.67	(1.04 – 2.69)*	2.10	(1.20 – 3.67)	1.83	(1.02 – 3.31)*	1.86	(1.02 – 3.38)*
$100,000 or more			1		1		1		1	
Childhood trauma										
Absent					1		1		1	
Present					1.68	(1.21 – 2.34)*	1.63	(1.16 – 2.27)*	1.57	(1.12 – 2.19)*
Premilitary adult trauma										
Absent					1		1		1	
Present					1.42	(.98 – 2.05)	1.24	(.85 – 1.80)	1.26	(.86 – 1.85)
Military trauma										
Absent					1		1		1	
Present					10.76	(7.30 – 15.87) *	10.78	(7.12 – 16.31) *	10.84	(7.17 – 16.40) *
Postmilitary trauma										
Absent					1		1		1	
Present					2.48	(1.64 – 3.75)*	1.89	(1.24 – 2.87)*	1.97	(1.27 – 3.04)*
Chronic stress										
Continuous measure							3.88	(2.97 – 5.07)*	3.34	(2.56 – 4.35)*
Social support										
Continuous measure									sss.69	(.60 – .80)*

PTSD = posttraumatic stress disorder; OR = Odds Ratio; CI = Confidence Interval; AHPI = Asian, Native Hawaiian or Pacific Islander; HS = High School.
* 95% CI does not include 1.

accounting for all variables.

Table 4 details multivariable model results for male veterans. Each model significantly predicted positive PTSD screening. In model 1 (Wald $\chi^2 = 145.99$, pseudo $R^2 = .018$, $p < .001$), Black (OR = 2.07, 95% CI = 1.71, 2.50), Hispanic/Latino (OR = 1.48, 95% CI = 1.26, 1.74) and multiracial (OR = 1.68, 95% CI = 1.29, 2.18) men had significantly higher odds of screening positive for PTSD compared with White men. Including education and income in model 2 (Wald $\chi^2 = 311.64$, pseudo $R^2 = .040$, $p < .001$) and trauma exposure in model 3 (Wald $\chi^2 = 1070.05$, pseudo $R^2 = .241$, $p < .001$) reduced the odds ratios but did not fully explain elevated positive screening rates for any group. The addition of life stress in model 4 (Wald $\chi2 = 1086.14$, pseudo $R^2 = .313$, $p < .001$) fully explained elevated positive screening rates among Hispanic/Latino and multiracial men. The addition of social support in model 5 (Wald $\chi^2 = 1134.89$, pseudo $R^2 = .326$, $p < .001$) slightly reduced the odds ratio among Black men, but the elevated rates of positive PTSD screens persisted in this group after accounting for all variables of interest.

Table 4
Weighted logistic regression predicting positive PTSD screening by race/ethnicity, sociodemographics, trauma exposure, life stress and social support among men (n = 7690).

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variables	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Race/Ethnicity										
White	1		1		1		1		1	
Black	2.07	(1.71 – 2.50)*	1.84	(1.51 – 2.23)*	1.81	(1.44 – 2.27)*	1.48	(1.16-1.88)*	1.46	(1.15 – 1.86)*
Hispanic/Latino	1.48	(1.26 – 1.74)*	1.31	(1.11 – 1.54)*	1.28	(1.06 – 1.55)*	1.22	(1.00 – 1.49)	1.17	(.95 – 1.44)
AHPI	.89	(.66 – 1.20)	.83	(.61 – 1.12)	1.03	(.73 – 1.44)	.74	(.52 – 1.07)	.70	(.48 – 1.01)
Multiracial	1.68	(1.29 – 2.18)*	1.59	(1.22 – 2.08)*	1.39	(1.02 – 1.88)*	1.31	(.94 – 1.82)	1.22	(.88 – 1.70)
Age										
18–34 years	1		1		1		1		1	
35–49 years	1.48	(1.32 – 1.66)*	2.12	(1.86 – 2.43)*	1.43	(1.23 – 1.66)*	1.34	(1.15 – 1.57)*	1.31	(1.12 – 1.53)*
50–65 years	.82	(.64 – 1.06)	1.48	(1.13 – 1.96)*	1.05	(.78 – 1.40)	.97	(.71 – 1.31)	.93	(.68 – 1.27)
65+ years	.85	(.58 – 1.25)	1.04	(.70 – 1.54)	1.84	(1.15 – 2.95)*	1.95	(1.18 – 3.20)*	1.80	(1.10 – 2.95)*
Education										
HS diploma			1.63	(1.28 – 2.06)*	1.73	(1.34 – 2.24)*	1.78	(1.35 – 2.34)*	1.86	(1.41 – 2.45)*
Post-secondary			2.08	(1.70 – 2.56)*	1.95	(1.56 – 2.44)*	2.01	(1.60 – 2.54)*	2.05	(1.62 – 2.60)*
College degree			1.45	(1.19 – 1.76)*	1.49	(1.21 – 1.84)*	1.53	(1.24 – 1.90)*	1.56	(1.25 – 1.94)*
Graduate degree			1		1		1		1	
Household Income										
Less than $24,999			1.91	(1.53 – 2.37)*	2.11	(1.67 – 2.67)*	1.59	(1.23 – 2.04)*	1.41	(1.09 – 1.81)*
$25,000 – $44,999			2.26	(1.83 – 2.78)*	2.25	(1.80 – 2.82)*	1.83	(1.45 – 2.30)*	1.70	(1.34 – 2.16)*
$45,000 – $74,999			1.64	(1.35 – 1.99)*	1.59	(.62 – 0.92)*	1.40	(1.14 – 1.73)*	1.35	(1.09 – 1.67)*
$75,000 – $99,999			1.23	(.98 – 1.54)	1.23	(.97 – 1.55)	1.14	(.90 – 1.45)	1.10	(.86 – 1.40)
$100,000 or more			1		1		1		1	
Childhood trauma										
Absent					1		1		1	
Present					1.33	(1.12 – 1.59)*	1.29	(1.07 – 1.55)*	1.31	(1.09 – 1.58)*
Premilitary adult trauma										
Absent					1		1		1	
Present					1.08	(.89 – 1.32)	1.12	(.91 – 1.37)	1.10	(.90 – 1.35)
Military trauma										
Absent					1		1		1	
Present					19.06	(14.42 – 25.18)*	19.84	(14.54 – 27.07)*	19.32	(14.26 – 26.19)*
Postmilitary trauma										
Absent					1		1		1	
Present					2.37	(1.95 – 2.90)*	2.03	(1.64 – 2.52)*	2.03	(1.63 – 2.52)*
Chronic stress										
Continuous measure							3.79	(3.32 – 4.32)*	3.28	(2.87 – 3.74)*
Social support										
Continuous measure									.70	(.66 – 0.75)*

PTSD = posttraumatic stress disorder; OR = Odds Ratio; CI = Confidence Interval; AHPI = Asian, Native Hawaiian or Pacific Islander; HS = High School.
* 95% CI does not include 1.

4. Discussion

This study examined racial/ethnic and gender disparities in PTSD screening, as well as the contributions of sociodemographics, trauma exposure, life stress, and social support. Compared with White veterans, each of the racial/ethnic minority groups reported higher life stress and lower social support. The life stress findings are in line with past studies show that racial/ethnic minorities experience a higher burden of psychosocial stress (Meyer et al., 2008; Sternthal et al., 2011; Williams, 2018). Also consistent with our findings, prior research suggests that racial/ethnic minorities report lower social support than Whites, including among veterans, particularly when considering specific domains such as friend support and emotional support (Alegria et al., 2013; Almeida et al., 2009; Muralidharan et al., 2016; Peek & O'Neill, 2005; Rees, Karter, & Young, 2010; Sarkisian & Gerstel, 2004). In contrast, some studies have found similar levels of social support across race/ethnicity among US-born individuals in domains such as family support (Almeida et al., 2009). The cultural value of *familism* within many Hispanic/Latin cultures suggests that social support may be more prevalent, but current findings would seem to contradict this hypothesis. Previous research suggests that there may be an effect of acculturation to American culture on reducing *familism* and perceived social support among Hispanic/Latinx individuals (Almeida et al., 2009). A more fine-grained examination of racial/ethnic differences in patterns of social support, such as friend versus family support and the role of acculturation, may be important to elucidating its specific relevance to mental health disparities.

A health disparity is defined by the National Institutes of Health as "a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage" (Department of Health & Human Services, 2008). Our findings thus suggest that there are significant racial/ethnic disparities in positive PTSD screening within this cohort of recent post-9/11 veterans. In line with past research (Hall-Clark, Sawyer, Golik, & Asnaani, 2016; Pole et al., 2008), positive PTSD screening rates were highest among Black, Hispanic/Latino and multiracial veterans, and lowest among White and AHPI veterans. These patterns likely reflect disparities in PTSD diagnostic rates, but research is needed to confirm this hypothesis. There were minimal gender differences within racial/ethnic groups, which is consistent with past research among veterans (Dursa et al., 2014; Hoge et al., 2007; Street et al., 2013). Gender differences did emerge among multiracial veterans, whereby women veterans reported significantly higher rates than men. We did not examine whether these differences were due to social or economic disadvantage, and thus cannot say whether this represents a health disparity. Past research has not specifically examined gender differences in PTSD among multiracial populations; current findings suggest that this would be a fruitful avenue of future research.

Notably, rates reported in a past meta-analysis of PTSD rates among veterans (23%) most closely reflects rates among White veterans in the current study (Fulton et al., 2015). This suggests that past studies in this area may have been limited by non-representative samples. Alternatively, as current rates for all groups are higher than those reported among post-9/11 veterans in other studies (e.g., Dursa et al., 2014), it may be that veterans are more likely to screen positive for PTSD closer to separation due to the stressful nature of this transition and past studies have assessed a smaller proportion of veterans at this life stage. It may also be that the PC-PTSD-5 is a more sensitive instrument than those employed in past studies (e.g., PTSD Checklist [PCL]).

Sociodemographics, trauma exposure, life stress and social support explained elevated rates of positive PTSD screens among Black women, Hispanic/Latinx veterans, and multiracial men. Supporting veterans of color in managing stress and seeking support within a variety of life domains may reduce risk for the onset or exacerbation of PTSD symptoms. The unique constellations of contextual factors that are the most effective intervention targets for specific racial/ethnic and gender groups may depend on the subgroup under consideration. For example, reducing chronic stress may be the most potent intervention target for Hispanic/Latino men, whereas increasing social support may be most beneficial for Hispanic/Latina women. The important role of social support for Hispanic/Latina women is in line with past research showing that PTSD is associated with more negative family relationships, lower social support and smaller social networks among Hispanic/Latinx veterans (Muralidharan et al., 2016; Pittman, 2014); current findings suggest this may be particularly relevant for Hispanic/Latina women.

In the final models, multiracial women continued to be twice as likely to screen positive for PTSD, and Black men were one-and-a-half times more likely to screen positive, compared with their White counterparts. National studies have reported similar findings, such that Black/African-American participants have higher rates of PTSD after controlling for sociodemographic, clinical, and social support variables (Alegria et al., 2013; Roberts et al., 2011). In contrast, this is the first study to report on PTSD screening rates among multiracial veterans. Multiracial women had the highest positive screening rates of all subgroups and the greatest elevations in positive screens compared with their White peers, which were not fully explained by the contextual factors.

Research on the prevalence of mental disorders among multiracial populations is extremely scarce. The limited work that has been done has focused on adolescents or college students and has found some evidence of elevated depression and suicidal ideation among multiracial as compared with White youth (Eisenberg, Hunt, & Speer, 2013) and increased substance use and use of violence compared with monoracial youth (Choi, Harachi, Gillmore, & Catalano, 2006). Another study found few differences (Campbell & Eggerling-Boeck, 2006). No studies that we identified have reported on prevalence of PTSD or related constructs among multiracial community or veteran samples. Our findings highlight the importance of considering multiracial veterans, especially women, as a distinct, high-risk subgroup for the development of PTSD. Studies can also examine specific multiracial identities (e.g., White and Black) to further refine our understanding of PTSD risk within this population.

Discrimination is a risk factor for PTSD, particularly among racial/ethnic minorities (Lewis, Cogburn, & Williams, 2015; Sibrava et al., 2019), which may explain some of the additional excess risk for positive PTSD screening among Black men and/or multiracial women. We assessed discriminatory stress in the past three months as part of our measure of life stress, but measures of lifetime discrimination may demonstrate a more robust association with PTSD and may explain racial/ethnic differences not accounted for in current analyses. In addition, evidence suggests that some maladaptive cognitions, such as rumination and minimizing the severity of the trauma, are more prevalent among racial/ethnic minority service members (Hall-Clark et al., 2017). These or other post-trauma coping strategies (e.g., avoidance) may additionally contribute to excess risk among some subgroups. Greater trauma severity may also account for excess positive screening rates. Indeed, Black Americans have been found to experience potentially more serious traumas and higher levels of stress in response to a trauma (Norris, 1992; Roberts et al., 2011).

5. Limitations and future directions

Limitations of the current study include the use of a short screening measure of PTSD rather than a diagnostic assessment. The PC-PTSD cutoff employed is associated with a high rate of sensitivity to detecting PTSD; however, it is not diagnostic. Notably, a recent study of PTSD screening among veterans with a diagnosis of PTSD in their VA medical chart found that Black men and AHPI women were more likely to screen positive for PTSD on the PC-PTSD (Koo, Hebenstreit, Madden, & Maguen, 2016). This raises the possibility that elevated rates among Black men in the current study may be due to greater sensitivity of the PC-PTSD for detecting PTSD in this subgroup, which may impact cross-racial/ethnic group comparisons. Further research is needed to understand the mechanisms of differential screening rates, as well as racial/ethnic and gender differences in PTSD diagnoses based on a structured clinical assessment.

An additional limitation of the current study is the combination of some racial/ethnic groups and the exclusion of other groups due to low sample sizes. This is an ongoing problem in PTSD research and health disparities research more broadly (Onoye et al., 2017; Pole et al., 2008). Studies often require targeted recruitment and/or oversampling of underrepresented groups to obtain adequate sample sizes. As the diversity of the veteran population increases, such strategies will need to be employed to accurately characterize the mental health needs of veteran demographic subgroups.

There are within-racial/ethnic group differences in risk and prevalence of PTSD. More information regarding relevant cultural variables such as racial/ethnic identity, nativity, generational status, and acculturation, all of which have been shown to influence PTSD risk, will improve future research (Alcántara, Casement, & Lewis-Fernández, 2013; Alegria et al., 2013; Onoye et al., 2017; Pole et al., 2008). In addition, particularly when considering the intersection of race/ethnicity and gender, it will be important to examine the role of cultural gender norms (e.g., machismo and marianismo in Hispanic/Latinx communities) in shaping PTSD symptomology.

Reporting of trauma and PTSD symptoms may be influenced by mental illness stigma, cultural norms of disclosure and emotional expression, and cultural differences in manifestations of traumatic stress (Alcántara et al., 2013; Finley, 2011). In addition, racial/ethnic differences in peritraumatic responses (e.g., fear, guilt, dissociation) or differential endorsement of symptom clusters may contribute to disparities in PTSD risk (Alcántara et al., 2013; B. N. Hall-Clark et al., 2017). It will be beneficial to examine the extent to which extent these factors might account for racial/ethnic disparities in PTSD risk in order to improve culturally-appropriate assessment and treatment.

6. Conclusions

The current study helps to fill a gap in the literature on racial/ethnic and gender differences in PTSD among military veterans. Our findings suggest that there are significant racial/ethnic disparities in positive PTSD screening rates among veterans, some but not all of which are fully explained by contextual factors. We found distinct patterns of risk factors among men and women, and some evidence of gender differences in PTSD screening rates by race/ethnicity. Thus, our findings point to the importance of examining patterns and correlates of PTSD at the intersection of race/ethnicity and gender within the broader U.S. population. Further work in this area is crucial to the development of targeted prevention and treatment interventions that will most

effectively reduce disparities in PTSD and related outcomes.

Acknowledgements

This research was managed by the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. (HJF); and collaboratively sponsored by the Bob Woodruff Foundation, Health Net Federal Services, The Heinz Endowments, HJF, Lockheed Martin Corporation, May and Stanley Smith Charitable Trust, National Endowment for the Humanities, Northrop Grumman, Philip and Marge Odeen, Prudential, Robert R. McCormick Foundation, Rumsfeld Foundation, Schultz Family Foundation, Walmart Foundation, Wounded Warrior Project, Inc., and the Veterans Health Administration Health Services Research and Development Service. The views expressed in this article are those of the authors and not an official position of any institution or funder. The authors have no conflicts of interest to report.

References

Alcántara, C., Casement, M. D., & Lewis-Fernández, R. (2013). Conditional risk for PTSD among Latinos: A systematic review of racial/ethnic differences and sociocultural explanations. *Clinical Psychology Review, 33*(1), 107–119. https://doi.org/10.1016/j.cpr.2012.10.005.

Alegria, M., Fortuna, L. R., Lin, J. Y., Norris, L. F., Valentine, A., Gao, S., ... Valentine, A. (2013). Prevalence, risk, and correlates of posttraumatic stress disorder across ethnic and racial minority groups in the U.S. *Medical Care, 51*(12), 1114–1123. https://doi.org/10.1097/MLR.0000000000000007.Prevalence.

Almeida, J., Molnar, B. E., Kawachi, I., & Subramanian, S. V. (2009). Ethnicity and nativity status as determinants of perceived social support: Testing the concept of familism. *Social Science & Medicine, 68*(10), 1852–1858. https://doi.org/10.1016/j.socscimed.2009.02.029.

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology*. https://doi.org/10.1037/0022-006X.68.5.748.

Buchanan, N. C. T., Settles, I. H., & Woods, K. C. (2008). Comparing sexual harassment subtypes among black and white women by military rank: Double jeopardy, the Jezebel, and the cult of true womanhood. *Psychology of Women Quarterly, 32*(4), 347–361. https://doi.org/10.1111/j.1471-6402.2008.00450.x.

Campbell, M. E., & Eggerling-Boeck, J. (2006). "What about the children?" the psychological and social well-being of multiracial adolescents. *The Sociological Quarterly*. https://doi.org/10.1111/j.1533-8525.2006.00041.x.

Carter, A., Borrero, S., Corbelli, J., Borrero, S., Wessel, C., Washington, D. L., ... Zickmund, S. (2016). Racial and ethnic health care disparities among women in the Veterans Affairs healthcare system: A systematic review. *Women's Health Issues : Official Publication of the Jacobs Institute of Women's Health, 26*(4), 401–409. https://doi.org/10.1016/j.whi.2016.03.009.

Choi, Y., Harachi, T. W., Gillmore, M. R., & Catalano, R. F. (2006). Are multiracial adolescents at greater risk? Comparisons of rates, patterns, and correlates of substance use and violence between monoracial and multiracial adolescents. *The American Journal of Orthopsychiatry*. https://doi.org/10.1037/0002-9432.76.1.86.

Department of Health and Human Services (2008). *The secretary's advisory committee on national health promotion and disease prevention objectives for 2020. Phase I report: Recommendations for the framework and format of healthy people 2020*October.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed mode surveys: The tailored design methodInternet, phone, mail, and mixed mode surveys: The tailored design method* (4th ed.). Hoboken, NJ, US: John Wiley & Sons Inc.

Dohrenwend, B. P., Turner, J. B., Turse, N. A., Lewis-Fernandez, R., & Yager, T. J. (2008). War-Related posttraumatic stress disorder in Black, Hispanic, and majority White Vietnam veterans: The roles of exposure and vulnerability. *Journal of Traumatic Stress*. https://doi.org/10.1002/jts.20327.

Dursa, E. K., Reinhard, M. J., Barth, S. K., & Schneiderman, A. I. (2014). Prevalence of a positive screen for PTSD among OEF/OIF and OEF/OIF-era veterans in a large population-based cohort. *Journal of Traumatic Stress*. https://doi.org/10.1002/jts.21956.

Eisenberg, D., Hunt, J., & Speer, N. (2013). Mental health in American colleges and universities: Variation across student subgroups and across campuses. *The Journal of Nervous and Mental Disease*. https://doi.org/10.1097/NMD.0b013e31827ab077.

Finley, E. P. (2011). *Fields of combat: Understanding PTSD among veterans of Iraq and.* Afghanistan: Cornell University Press.

Friedman, M. J., Resick, P. A., Bryant, R. A., & Brewin, C. R. (2011). Considering PTSD for DSM-5. *Depression and Anxiety*. https://doi.org/10.1002/da.20767.

Friedman, M. J., Schnurr, P. P., Sengupta, A., Holmes, T., & Ashcraft, M. (2004). The Hawaii Vietnam Veterans Project: Is minority status a risk factor for posttraumatic stress disorder? *The Journal of Nervous and Mental Disease, 192*(1), 42–50. https://doi.org/10.1097/01.nmd.0000105999.57129.ee.

Frueh, B. C., Brady, K. L., & De Arellano, M. A. (1998). Racial differences in combat-related PTSD: Empirical findings and conceptual issues. *Clinical Psychology Review, 18*(3), 287–305. https://doi.org/10.1016/S0272-7358(97)00087-1.

Fulton, J. J., Calhoun, P. S., Wagner, H. R., Schry, A. R., Hair, L. P., Feeling, N., ... Beckham, J. C. (2015). The prevalence of posttraumatic stress disorder in Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans: A meta-analysis. *Journal of Anxiety Disorders, 31*(2015), 98–107. https://doi.org/10.1016/j.janxdis.2015.02.003.

Hall-Clark, B. N., Kaczkurkin, A. N., Asnaani, A., Zhong, J., Peterson, A. L., Yarvis, J. S., ... Foa, E. B. (2017). Ethnoracial differences in PTSD symptoms and trauma-related cognitions in treatment-seeking active duty military personnel for PTSD. *Psychological Trauma Theory Research Practice and Policy, 9*(6), 741–745. https://doi.org/10.1037/tra0000242.

Hall-Clark, B., Sawyer, B., Golik, A., & Asnaani, A. (2016). Racial/ethnic differences in symptoms of posttraumatic stress disorder. *Current Psychiatry Reviews, 12*(2), 124–138. https://doi.org/10.2174/1573400512666160505150257.

Hoge, C. W., Clark, J. C., & Castro, C. A. (2007). Commentary: Women in combat and the risk of post-traumatic stress disorder and depression. *International Journal of Epidemiology, 36*(2), 327–329. https://doi.org/10.1093/ije/dym013.

Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research, 11*(2), 213–218. https://doi.org/10.1016/0022-3999(67)90010-4.

Howerton, A., & Van Gundy, K. (2009). Sex differences in coping styles and implications for depressed mood. *International Journal of Stress Management, 16*(4), 333–350. https://doi.org/10.1037/a0016843.

Huynh-Hohnbaum, A. L. T., Damron-Rodriguez, J. A., Washington, D. L., Villa, V., & Harada, N. (2003). Exploring the diversity of women veterans' identity to improve the deliverv of veterans' health services. *Affilia - Journal of Women and Social Work*. https://doi.org/10.1177/0886109903018002006.

Koo, K. H., Hebenstreit, C. L., Madden, E., & Maguen, S. (2016). PTSD detection and symptom presentation: Racial/ethnic differences by gender among veterans with PTSD returning from Iraq and Afghanistan. *Journal of Affective Disorders, 189*(2016), 10–16. https://doi.org/10.1016/j.jad.2015.08.038.

Lewis, T., Cogburn, C. D., & Williams, D. R. (2015). Self-reported experiences of discrimination and health: Scientific advances, ongoing controversies, and emerging issues. *Annual Review of Clinical Psychology, 11*, 407–440. https://doi.org/10.1146/annurev-clinpsy-032814-112728.

Meyer, D. I. H., Schwartz, S., & Frost, D. M. (2008). Social patterning of stress and coping: Does disadvantaged social status confer more stress and fewer coping resources? *Social Science & Medicine (1982), 67*(3), 368. https://doi.org/10.1016/j.socscimed.2008.03.012.

Moser, A., Stuck, A. E., Silliman, R. A., Ganz, P. A., & Clough-Gorr, K. M. (2012). The eight-item modified Medical Outcomes Study Social Support Survey: Psychometric evaluation showed excellent performance. *Journal of Clinical Epidemiology*. https://doi.org/10.1016/j.jclinepi.2012.04.007.

Muralidharan, A., Austern, D., Hack, S., & Vogt, D. (2016). Deployment experiences, social support, and mental health: comparison of black, white, and hispanic U.S. veterans deployed to Afghanistan and Iraq. *Journal of Traumatic Stress*. https://doi.org/10.1002/jts.22104.

National Center for Veterans Analysis and Statistics (2018). *Veteran population.* Retrieved December 3, 2018, from U.S. Department of Veterans Affairs website:https://www.va.gov/vetdata/veteran_population.asp.

National Institutes of Health (2001). *NIH Policy on Reporting Race and Ethnicity Data: Subjects in Clinical Research*.

Norris, F. H. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology, 60*(3), 409–418. https://doi.org/10.1037/0022-006X.60.3.409.

Onoye, J. M., Spoont, M., Whealin, J. M., Pole, N., MacKintosh, M. A., Spira, J. L., ... Morland, L. A. (2017). Improving assessment of race, ethnicity, and culture to further veteran PTSD research. *Psychological Trauma Theory Research Practice and Policy, 9*(2), 222–229. https://doi.org/10.1037/tra0000181.

Oster, C., Morello, A., Venning, A., Redpath, P., & Lawn, S. (2017). The health and wellbeing needs of veterans: a rapid review. *BMC Psychiatry, 17*(1), 414. https://doi.org/10.1186/s12888-017-1547-0.

Peek, M. K., & O'Neill, G. S. (2005). Networks in later life: An examination of race differences in social support networks. *International Journal of Aging & Human Development*. https://doi.org/10.2190/f1q1-jv7d-vn77-l6wx.

Pittman, J. (2014). Latino veterans with PTSD: A systematic review. *Behavioral Sciences, 4*(3), 320–340. https://doi.org/10.3390/bs4030320.

Pole, N., Gone, J. P., & Kalkarni, M. (2008). Posttraumatic stress disorder among ethnoracial minorities in the United States. *Clinical Psychology Science and Practice, 15*(1), 35–62. https://doi.org/10.1111/j.1468-2850.2008.00109.x.

Prins, A., Bovin, M. J., Smolenski, D. J., Marx, B. P., Kimerling, R., Jenkins-Guarnieri, M. A., ... Tiet, Q. Q. (2016). The Primary Care PTSD Screen for DSM-5 (PC-PTSD-5): Development and evaluation within a veteran primary care sample. *Journal of General Internal Medicine, 31*(10), 1206–1211. https://doi.org/10.1007/s11606-016-3703-5.

Rees, C. A., Karter, A. J., & Young, B. A. (2010). Race/ethnicity, social support, and associations with diabetes self-care and clinical outcomes in NHANES. *The Diabetes Educator, 36*(3), 435–445. https://doi.org/10.1177/0145721710364419.

Roberts, A. L., Gilman, S. E., Breslau, J., Breslau, N., & Koenen, K. C. (2011). Race/ethnic differences in exposure to traumatic events, development of post-traumatic stress disorder, and treatment- seeking for post-traumatic stress disorder in the United States. *Psychological Medicine, 41*(1), 71–83. https://doi.org/10.1017/S0033291710000401.Race/ethnic.

Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the Life Experiences Survey. *Journal of Consulting and Clinical Psychology, 46*(5), 932.

Sarkisian, N., & Gerstel, N. (2004). Kin support among blacks and whites: Race and family organization. *American Sociological Review*. https://doi.org/10.1177/000312240406900604.

Sawilowsky, S. S. (2009). New effect size rules of thumb. *Journal of Modern Applied*

Statistical Methods. https://doi.org/10.22237/jmasm/1257035100.
Schlenger, W. E., Kulka, R. A., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., ... Weiss, D. S. (1992). The prevalence of post-traumatic stress disorder in the Vietnam generation: A multimethod, multisource assessment of psychiatric disorder. *Journal of Traumatic Stress, 5*(3), 333–363. https://doi.org/10.1007/BF00977233.
Sibrava, N. J., Bjornsson, A. S., Benítez, A. C. I. P., Moitra, E., Weisberg, R. B., & Keller, M. B. (2019). Posttraumatic stress disorder in African American and Latinx adults: Clinical course and the role of racial and ethnic discrimination. *The American Psychologist, 74*(1), 101–116. https://doi.org/10.1037/amp0000339.
StataCorp (2003). *Stata statistical software: Release 8.* College Station, TX: StataCorp LP.
Sternthal, M. J., Slopen, N., & Williams, D. R. (2011). Racial Disparities in Health: How Much Does Stress Really Matter? *Du Bois Review, 1*(2011), 95–113.
Street, A. E., Gradus, J. L., Giasson, H. L., Vogt, D., & Resick, P. A. (2013). Gender differences among veterans deployed in support of the wars in Afghanistan and Iraq. *Journal of General Internal Medicine, 28*(Suppl. 2), S556–S562. https://doi.org/10.1007/s11606-013-2333-4.
Tolin, D. F., & Foa, E. B. (2006). Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research. *Psychological Bulletin*. https://doi.org/10.1037/0033-2909.132.6.959.
Vogt, D., Perkins, D. F., Copeland, L. A., Finley, E. P., Jamieson, C. S., Booth, B., ... Gilman, C. L. (2018). The Veterans Metrics Initiative study of US veterans' experiences during their transition from military service. *BMJ Open, 8*(6), e020734. https://doi.org/10.1136/bmjopen-2017-020734.
Williams, D. R. (2018). Stress and the mental health of populations of color: Advancing our understanding of race-related stressors. *Journal of Health and Social Behavior, 59*(4), 466–485. https://doi.org/10.1177/0022146518814251.
Xue, C., Ge, Y., Tang, B., Liu, Y., Kang, P., Wang, M., ... Zhang, L. (2015). A meta-analysis of risk factors for combat-related PTSD among military personnel and veterans. *PloS One, 10*(3), 1–21. https://doi.org/10.1371/journal.pone.0120270.
Zenk, S. N., Schulz, A. J., Izumi, B. T., Mentz, G., Israel, B. A., & Lockett, M. (2013). Neighborhood food environment role in modifying psychosocial stress-diet relationships. *Appetite, 65*, 170–177. https://doi.org/10.1016/j.appet.2013.02.008.