Gender Differences in Response to Deployment Among Military Healthcare Providers in Afghanistan and Iraq

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Abstract

Background: Despite their growing numbers in the United States military, little has been published on healthcare providers (HCP) or female service members from conflicts in Afghanistan and Iraq. The purpose of this secondary analysis of data from the 2005 *Department of Defense (DoD) Survey of Health Related Behaviors Among Active Duty Military Personnel* was to determine gender differences in reaction to the impact of operational stress in deployed military healthcare providers.

Methods: The unweighted study sample selected for this data analysis included results from female and male active duty military personnel over the age of 18 years ($n = 16,146$) deployed at least once to Operation Enduring Freedom (OEF) or Operation Iraqi Freedom (OIF) within the past 3 years ($n = 1,425$), for a final sample consisting of either officer (healthcare officer) or enlisted (healthcare specialist) personnel ($n = 455$) (weighted $n = 23,440$). Indices of psychologic distress and social relations were explored and compared.

Results: Enlisted female HCPs were more likely to be African American (42.3%) and single (63.0%) and represented the greater percentage with significant psychologic difficulties, as shown by serious psychologic distress endorsement (11.3%) and positive screen results for depression (32.2%). More harmful drinking patterns (Alcohol Use Disorders Identifications Test [AUDIT] score 8–15) were found in more female HCPs (enlisted 61.8%, officers 76.4%) compared with males (enlisted 41.1%, officers 67.1%).

Conclusions: Female HCPs serving in the current military conflicts are reporting significant psychologic distress that may adversely impact their performance within the military, in theaters of operations, and in their lives at home. Implications for clinical care of female service members and veterans of current wars are addressed.

Introduction

DESPITE THEIR GROWING numbers in the United States military and their changing roles within an operational environment, little has been published on female healthcare providers (HCPs) who have been deployed to Iraq (Operation Iraqi Freedom [OIF]) and Afghanistan (Operation Enduring Freedom [OEF]). Concerns have been raised about the impact on the health and well-being of women in the OIF/OEF cohort who have served on extended and repeated deployments¹ and currently comprise > 14% of the U.S. active duty military and > 18% of the National Guard and Reserve component.² Since the beginnings of the Iraq and Afghanistan conflicts, women have served in unprecedented roles, not only because of their occupational training but also because they are deployed to military zones without fronts and are

placed in new roles that require greater exposure to combat-related stressors. Women serving in the U.S. military today are able to qualify for most military occupational specialties, often serving side-by-side with men in ways and numbers that would have been considered unacceptable a few decades ago.

In the general population, lifetime prevalence for post-traumatic stress disorder (PTSD) is 7%–9% for women.³ Women are twice as likely as men to develop the disorder and more likely to suffer from chronic PTSD even though women's nonmilitary traumatic exposure is similar to or less than that of men.^{4–6} OIF/OEF provide a unique opportunity to better understand gender differences in mental health consequences of combat exposure, with a number of recent studies on returning service members describing psychologic morbidity in females compared with males.

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Some of these researchers failed to find gender differences in mental health problems occurring postdeployment,^{7–11} but a few studies have found a higher incidence of PTSD in females returning from deployment compared with males,^{12,13} who appear to have more substance abuse problems.¹¹ In some of these studies, female service members were also more likely than men to screen positive for depression.^{7,8,11,13–15}

Greater psychologic morbidity has been seen in deployed military HCPs, explained by poorer group cohesion and traumatic military medical and postdeployment experiences.¹⁶ Returning HCPs did not think that people understood what they had been through during deployment and felt unsupported.¹⁷ Historically, nurses who served in theater in Vietnam identified that their memories of horrific experiences remained with them decades after their return home.^{18–20} Posttraumatic stress symptoms in these nurses were attributable to multiple causes; however, the most significant were danger to self and others, exhaustion and fatigue, and care of the dying and critically wounded.²¹ Many similarities to the Vietnam nurse cohort have been noted in female HCPs serving in current conflicts, who also report similar responses and symptoms to exposures and experiences in theater and after return that are characteristic of other populations affected by traumatic experiences.^{22,23}

Besides gender and military role, there are other demographic variables and moderators of stress that have been found to impact outcomes in deployed service members.²⁴ Demographic variables that increase risk or protect service members exposed to combat from psychologic morbidity include socioeconomic status (SES), ethnicity, and social support.²⁵ An increase in PTSD is seen in younger persons, those from ethnic minorities (i.e., Hispanics and African Americans), and those with low SES.^{26–28} An abundance of evidence documents the protective role of social support in the etiology of PTSD symptomatology,^{26,29} and the ability to maintain and draw upon social relationships is pivotal to more positive outcomes after trauma. Social support is associated with lower PTSD risk in the general population^{26,29} and military settings.^{12,30} Women who screen positive for PTSD are more likely to be divorced or separated.³¹

Concerns about the health and well-being of returning female service members are evident in several studies documenting declines in long-term physical health after traumatic exposure.^{32,33} Recent research on women obtaining care through the Veteran's Administration Health system has revealed a greater burden of physical problems and medical illness associated with a PTSD diagnosis.^{31,34} As chronic PTSD is considered to be difficult to treat and has an association with comorbid health problems, early intervention may be beneficial in limiting the progression of subsequent symptomatology.

The purpose of this secondary data analysis was to explore the impact of operational stress on deployed female military HCPs in an effort to generate hypotheses for this unique population. Specific aims included (1) describing psychologic distress (i.e., posttraumatic stress, depression, anxiety, alcohol misuse, serious psychologic distress) and social relations (i.e., before and after deployment, divorce and separation) in male and female military HCPs who served at least one tour of duty in OIF/OEF in the prior 3-year period and (2) comparing male and female military HCPs in this sample with regard to

the impact of operational stress on psychologic morbidity and social relations.

Materials and Methods

This research involved a retrospective descriptive-exploratory design secondarily analyzing data from active duty military healthcare personnel who completed the 2005 *Department of Defense (DoD) Survey of Health Related Behaviors Among Active Duty Military Personnel* (HRB survey). The HRB survey is an anonymous survey conducted every 2–4 years by Research Triangle International (RTI) on behalf of the DoD.³⁵ The results are used to guide prevention and intervention strategies intended to improve the health and readiness of the armed forces and to specify gaps in current understanding that require further study.

Sample

The HRB survey included all military personnel who were on active duty at the time of data collection. Recruits, academy cadets, and personnel who were absent without leave (AWOL), incarcerated, or undergoing a permanent change of station (PCS) were excluded. The survey was conducted in two phases, with phase 1 involving a worldwide on-site group administration of the questionnaire to large groups of military personnel, and phase 2 involving a mail portion to persons in smaller locations (about 10% of selected sample), on leave, or temporary duty change where on-site administration was not feasible. The final sample consisted of 16,146 usable questionnaires (3,639 Army, 4,627 Navy, 3,356 Marine Corps, and 4,524 Air Force) and reflected an overall response rate of 51.8%.

The study sample for the secondary data analysis included results from male and female active duty military personnel over the age 18 years who completed the HRB survey. Those respondents who answered Question 158 as enlisted (healthcare specialist) or officer (healthcare officer) and those who answered Question 157 (OEF or OIF) were selected for the secondary study sample of HCPs. According to the HRB survey, healthcare specialists included specialists in patient care and treatment, medical support, and related medical and dental services; healthcare officers included physicians, dentists, nurses, veterinarians, allied health officers, and health services administration officers.³⁵

Measures

Psychologic functioning. Several psychologic instruments, embedded in the HRB survey, were used to assess psychologic functioning in the study sample. The PTSD Checklist-civilian version (PCL-C) was used to assess PTSD.³⁶ This HRB survey used the civilian rather than military version (PCL-M) to capture PTSD symptoms that may be the result of either military or nonmilitary traumatic exposures (i.e., that occurred before being in the service).³⁵ The PCL-C is a 17-item measure of the 17 DSM-IV symptoms of PTSD. The PCL can be scored several different ways, using a total range of 17–85 obtained by summing the scores, with customary cutoff of ≥ 50 used in many of the studies reviewed for this article.^{7,21,31} Cutoff scores for probable PTSD diagnosis have been validated for some populations, with recent research highlighting the need to be attentive to whom the PCL is given,

anticipating the prevalence rate in advance (i.e., by applying a gold standard to a small representative sample under study). For example, Terhakopian et al.³⁷ reported that cutoff values of 44 had calculated weighted average sensitivity of 0.62 and specificity of 0.90, without overestimating the prevalence of PTSD in soldiers and marines returning from Iraq. In a primary care clinic for female and male service members, a PCL cutoff value in the range of 28–34 has been predictive of the need for referral.^{38,39} Subsyndromal PTSD is defined as having positively endorsed symptoms for meeting criterion B and either criterion C or D. The PCL items with scores ≥ 3 were used for this category.

The measure of symptoms of alcohol dependence was determined using the Alcohol Use Disorders Identification Test (AUDIT). The AUDIT was developed by the World Health Organization (WHO) as a method of alcohol screening.⁴⁰ A cutoff value of 8 points is an index for potential problem drinking, scores between 8 and 15 indicate hazardous drinking, scores between 16 and 19 are suggestive of harmful drinking, and scores of ≥ 20 indicate the need for further diagnostic evaluation for alcohol dependence.^{40,41}

Several other psychologic screens were included in this analysis. An index of need for further depression evaluation (DEPFlag) based on the Burnam screening criteria version A⁴² was used to detect depression and dysthymia. A positive score indicated that respondents (1) felt sad, blue, or depressed for 2 weeks or more in the past 12 months or reported 2 or more years in their lifetime of feeling depressed and felt depressed much of the time in the past 12 months and (2) felt depressed on 1 or more days in the past week.³⁵ Serious psychologic distress (SPD) was measured by a six-item scale, the K-6.^{43,44} Scores for this five-point Likert scale screen range from 0 to 24. A score of ≥ 13 suggests the possibility of serious mental illness.³⁵ Generalized anxiety disorder (GAD) symptoms were assessed using a set of six-items adapted from the Patient Health Questionnaire (PHQ).⁴⁵ If respondents reported three or more symptoms on more than half of the days in the past 30 days, they met screening criteria.^{35,46}

The following questions from the HRB survey regarding social functioning were also included in the analysis. Question 151 inquired about increased conflict from most recent deployment to time of survey, and Question 152 asked about divorce or separation from significant other since last deployment.³⁵

Data analysis

The unweighted study sample selected for this data analysis included results from female and male active duty military personnel > age 18 years ($n=16,146$) deployed at least once to OEF or OIF within the past 3 years ($n=1,425$), for a final sample consisting of either officer (healthcare officer) or enlisted (healthcare specialist) personnel ($n=455$). After correcting for the weights due to the complex survey design, the estimated weighted sample size was $n=23,440$ U.S. service personnel. Presented results include observed number, weighted percent, and weighted 95% confidence intervals (CIs).

For analysis, sampling weights were the inverse probability of being selected for the appropriate sampling unit and cluster. Continuous data are presented as mean and standard error (SE). Categorical data are presented as percent and 95%

CI. Primary statistical comparisons were 2-fold: (1) male officers vs. female officers and (2) male enlisted vs. female enlisted. Student's *t* test and chi-square analyses were used for all between-group comparisons. All analyses were conducted using SPSS (Chicago, IL) and SAS (Cary, NC) to account for the complex sampling design.

Adjustment for multiple comparisons was made to control the type one error rate using Bonferroni techniques. Assuming 50 statistical tests, the new cutoff point for statistical significance was $p < 0.001$. All results presented in which the reported $p < \text{value}$ was NS, $p \leq 0.05$, or $p < 0.01$ were, therefore, nonsignificant, and the remaining parameters in which $p \leq 0.001$ remain significant. Results are presented without Bonferroni correction in order to illustrate as broadly as possible differences between gender within healthcare. This was intentional on our part, as these are the first summary results of a healthcare only, OEF/OIF cohort of survey data performed to date. It is understood that multiple comparisons inflate the test-wise error rate, but final presentation of data was shared for purposes of highlighting gender differences for more targeted future comparisons.

Results

Demographics

Demographic information for the HCP sample, comparing female and male healthcare officers with their enlisted counterparts is shown in Table 1. Healthcare officers and enlisted HCPs differed in age, with officers being about 10 years older. Male officers and their enlisted counterparts were more likely to be married (86.7% and 59.3%, respectively) than female officers and enlisted HCPs (64.7% and 37.0%, respectively). Male and female officers were more likely to be white (87.1% and 83.7%), and a significant proportion of enlisted personnel were black, with many more females than males in this group (42.3% and 24.4%, respectively). Female HCPs were more likely to have been deployed only once in the last 3 years rather than multiple times compared with males.

Deployed healthcare officers and enlisted members were more likely to serve in the Navy than in the Air Force and Army. The large number of deployed Navy HCPs is notable, and multiple hypothesized reasons for this overrepresentation of Navy personnel include the fact that Navy lengths of stay are shorter, and they are, therefore, likely to be deployed more often. Also, they deploy with the U.S. Marine Corps (who do not have indigenous healthcare personnel). However, the large number of Navy HCPs could simply represent a sampling bias.

Psychologic functioning

Measures of psychologic distress are shown in Table 2. A small percentage of the HCPs met the criterion for probable PTSD based on a score of 50 (1.2%–7.5%), with the female officers representing the smallest group. If one used the criterion found in a primary care setting,⁴⁰ the percentages with probable PTSD diagnosis jumped to 35.2% for the female enlisted members and 30.8% for the male enlisted members, who represented the largest groups. Not surprising, these two groups were also more likely to fall into the subsyndromal PTSD category based on PCL item scores of ≥ 3 .

TABLE 1. DEMOGRAPHICS OF HEALTHCARE PROVIDER SAMPLE WITH WEIGHTED POPULATION PROJECTIONS, *N* = 445 (WEIGHTED *N* = 23,440)

Demographics	<i>Specialist</i> <i>n</i> = 292 (18,241)		<i>Officer</i> <i>n</i> = 153 (5,199)	
	<i>Males</i> <i>n</i> = 180 (<i>n</i> = 13,589) ^a	<i>Females</i> <i>n</i> = 112 (<i>n</i> = 4,652) ^a	<i>Males</i> <i>n</i> = 85 (<i>n</i> = 4,043) ^a	<i>Females</i> <i>n</i> = 68 (<i>n</i> = 1,156) ^a
Age (mean)	28.9 ± 0.8	27.5 ± 0.8 NS	40.0 ± 1.7	38.0 ± 1.8 NS
Married (% yes)	114 (59.3%) (50.7-68)	45 (37.0%) (29.0-45.1)***†	75 (86.7%) (83.6-89.9)	44 (64.7%) (45.9-83.5)***†
Race				
White/Caucasian	81 (49.9%) (38.1-61.8)	46 (40.9%) (30.8-51.1)***†	74 (87.1%) (80.9-93.2)	55 (83.7%) (71.9-95.6)*
Black/African American	43 (24.4%) (14.8-33.9)	37 (42.3%) (34.4-50.2)***†	2 (1.9%) (0.0-5.4)	5 (3.6%) (0.1-7.2)*
Asian	16 (10.5%) (5.6-15.3)	4 (11.2%) (6.3-16.2) NS	3 (7.0%) (4.1-9.9)	1 (6.5%) (0.5-12.4) NS
Other	39 (15.2%) (3.3-27.2)	25 (5.6%) (2.3-8.8)***†	6 (4.0%) (0.1-7.9)	7 (6.1%) (0.0-14.3)*
Service				
Army	45 (27.3%) (10.8-43.8)	29 (28.8%) (14.2-43.3) NS	11 (26.3%) (18.7-33.9)	10 (30.5%) (21.6-39.3)*
Navy	95 (50.3%) (29.8-70.9)	57 (40.1%) (26.0-54.3)***†	48 (39.7%) (29.6-49.9)	49 (35.5%) (21.0-50.0) NS
Air Force	39 (22.0%) (8.7-35.4)	26 (31.1%) (12.8-49.4)***†	26 (34.0%) (22.7-45.2)	9 (34.0%) (25.7-42.3) NS
Number of times deployed in past 3 years				
1	110 (64.5%) (55.7-73.3)	90 (80.7%) (68.2-93.2)***†	48 (52.1%) (42.8-61.4)	53 (86.9%) (81.8-91.9)***†
2	44 (23.2%) (15.4-31)	15 (15.0%) (2.8-27.1)***†	28 (33.0%) (22.1-44.2)	12 (9.0%) (4.7-13.4)***†
3	26 (12.3%) (5.7-18.9)	7 (4.3%) (0.0-3-11)***†	9 (14.9%) (10-19.7)	3 (4.1%) (2.3-5.9)***†
When were you last deployed?				
In past 12 months	79 (45.1%) (32.3-57.9)	52 (45.3%) (33.4-57.1) NS	45 (47.5%) (36.3-58.7)	21 (24.7%) (19.8-29.6)***†
Between 12 and 36 months ago	101 (54.9%)	60 (54.7%)	40 (52.5%)	47 (75.3%)

^aObserved *n*; numbers within parentheses equal weighted frequency and weighted 95% confidence interval (CI).

p* < 0.05; *p* < 0.01; ****p* < 0.001; †significant after Bonferroni correction.

NS, not significant.

Screens indicating psychologic stress distress included those for depression, SPD, GAD, and alcohol abuse. A larger percentage of female enlisted members and officers endorsed the need for further depression evaluation (32.2% and 26.2%, respectively). Screening criteria for SPD, GAD, and problem drinking were more likely to be met by female enlisted personnel (11.3%, 17.2%, 61.8%) and officers (4.6%, 19%, 76.4%) than by male enlisted personnel (6.3%, 16%, 41.1%) and officers (3.8%, 9.5%, 67.1%). Screen for harmful drinking or alcohol dependence was more prominent in the male enlisted category (7.0%).

PCL-C symptom endorsement

A breakdown of individual items on the PCL and the percentage endorsed by respondents can be found in Table 3. Symptom endorsement ranged from a low of 0.7% for male officers endorsing the occurrence of recall difficulties to a high of 23.6% for male enlisted members reporting sleep disturbance. Sleep disturbance was the most frequently endorsed symptom by all HCPs in the sample. Across the HCP sample, a greater percentage of male enlisted members experienced all

PCL-C symptoms, with the exception of avoidance activities, recall difficulties, feeling distant, irritable/angry, and hypervigilant, all of which were endorsed by a larger percentage of female enlisted members. Overall, avoidance items, including loss of interest, feeling distant, and emotional numbing, were endorsed more often by male and female enlisted members. However, female officers endorsed the numbing item (19.5%) more than did either group of enlisted members, and they were also more likely to endorse the irritable and angry items than were other respondents (21.9%). A greater percentage of both male and female enlisted members endorsed the hypervigilance item (15.7% and 20%, respectively).

Social functioning

Deployment and military operations had a greater impact on social relationships among female HCP respondents than among males (Table 4). Female enlisted members endorsed a greater percentage of conflict in their relationships after return from their deployments compared with their male counterparts. Similarly, a greater percentage of female enlisted members (19.1%) and officers (17.4%) reported being

TABLE 2. PSYCHOLOGIC DISTRESS INDICES FOR MILITARY HEALTHCARE PROVIDERS, *N*=445 (WEIGHTED *N*=23,440)

Item	Specialist n=292 (n=18,241)		Officer n=153 (n=5,199)	
	Males n=180 (n=13,589) ^a	Females n=112 (n=4,652) ^a	Males n=85 (n=4,043) ^a	Females n=68 (n=1,156) ^a
PCL-C, mean	26.3±1.2	26.3±1.1 NS	23.0±1.4	22.6±1.3 NS
PCL-C≥50 (% yes)	14 (7.5%) (3.3-11.8)	6 (5.4%) (2.0-8.7) NS	3 (4.1%) (2.2-6.1)	1 (1.2%) (0.0-3.4)***†
PCL-C≥28 (% yes)	49 (30.8%) (22.1-39.5)	41 (35.2%) (25.1-45.3)*	16 (14.8%) (8.4-21.3)	9 (24.9%) (21.1-28.7)***†
PCL-C Subsyndromal (% yes)	31 (20.3%) (11.7-28.9)	22 (18.1%) (9.1-27.1) NS	8 (10.1%) (6.2-13.9)	4 (5.7%) (2.0-9.4)***†
SPD, mean	4.4±0.4	4.6±0.5 NS	2.9±0.6	4.2±0.7 NS
SPD≥13 (% yes)	10 (6.3%) (2.8-9.9)	12 (11.3%) (4.9-17.7)***†	3 (3.8%) (1.5-6.2)	2 (4.6%) (2.3-7.0) NS
GAD, (% yes)	22 (16.0%) (11.0-21.0)	19 (17.2%) (8.1-26.3) NS	8 (9.5%) (1.6-17.4)	4 (19.0%) (16.2-21.8)***†
AUDIT, mean	9.7±0.3	9.2±0.4 NS	8.9±0.3	8.7±0.4 NS
AUDIT, 8-15 (% yes)	81 (41.1%) (32.1-50.0)	60 (61.8%) (52.5-71.0)***†	62 (67.1%) (58.2-76.0)	53 (76.4%) (64.7-88.1)***†
AUDIT, >15 (% yes)	10 (7.0%) (2.2-11.7)	5 (4.7%) (0.0-10.2)*	1 (1.9%) (1.5-2.3)	3 (3.6%) (0.0-10.2)*
DEPFlag	141 (22.2%) (15.1-29.3)	81 (32.2%) (19.5-44.9)***†	67 (19.3%) (11.7-27.0)	59 (26.2%) (23.0-29.4)*

^aObserved *n*; numbers within parentheses equal weighted frequency and weighted 95% CI.

p*<0.05; *p*=0.01; ****p*=0.001; †significant after Bonferroni correction.

AUDIT, Alcohol Use Disorders Identification Test; DEPFlag, used to detect depression and dysthymia⁴²; GAD, generalized anxiety disorder; PCL-C, posttraumatic stress disorder checklist-civilian; SPD, serious psychologic distress.

divorced or separated from their significant other since last deployment compared with their male counterparts (enlisted members (14.7%), officers (4.1%). The lowest percentage for divorce and separation (4.1%) was found in male HCP officers.

Discussion

Study results indicate significant differences in patterns of psychologic morbidity for female HCPs who had been deployed to an operational environment compared to their male counterparts. As suggested earlier, gender differences in this sample could be attributed to a number of factors, including a combination of biologic, psychosocial, and societal and military etiologies. The use of retrospective data does not allow one to determine if these differences are due to military life and operations (i.e., combat exposure) or if other factors, such as those related to gender, are more contributory. Social, cultural, and psychologic gender differences impact the way females and males respond, which may be more pronounced in certain situations, with particular populations.⁴⁷

Worse postdeployment mental health was expected for healthcare enlisted personnel, who fulfill more frontline responsibilities than do healthcare officers, but other differences between enlisted HCPs and healthcare officers were also anticipated. Hypothesized factors, such as older age, socioeconomic stability, military and healthcare role experience, and differences in support systems, both within the military and through established family life, positively influenced psychologic screen results for officers in the sample.²⁷⁻²⁹ An interesting finding is that it was the male officers who were least

likely to report a divorce or separation, whereas both female healthcare officers and specialists of both genders reported high rates of separation, with the highest rate being found in the female enlisted group.

Female enlisted HCPs reported significantly more psychologic distress than their male colleagues, although female officers also manifested significant stress reactions. There was a suggestion of postdeployment difficulties in women, as a significant number endorsed possible depression, anxiety, and harmful drinking to a greater extent than did the males in this sample. Comorbid GAD with PTSD occurs with similar frequency among men and women in the general population,⁴⁸ making the presence of PTSD symptoms difficult to accurately diagnose and treat, especially in women, who are more likely than men to be diagnosed with mood and anxiety disorders.⁵ Men suffering from the disorder in the general population are more likely to be diagnosed with substance use disorders or antisocial problems.⁵ Because alcohol misuse in the military is usually more prevalent in males,¹⁵ harmful drinking patterns in female officers and enlisted members is a worrisome finding. Mental health clinicians counseling reintegrating female service members are seeing more alcohol misuse in this group and believe that females, similar to military men, may be using alcohol to self-medicate. The reason for this could be the combination of multiple redeployments, an accumulation of traumatic exposures, and deteriorating mental health over time.

Of note is the fact that similar to other research on military females, the majority of female enlisted members and officers, who were more likely to be African American, were also more likely to be single compared with male

TABLE 3. POSTTRAUMATIC STRESS DISORDER CHECKLIST WITH ≥ 3 RESPONSES, BY GROUP, $N=445$ (WEIGHTED $N=23,440$)

Item	Specialist n = 292 (n = 18,241)		Officer n = 153 (n = 5,199)	
	Males n = 180 (n = 13,589) ^a	Females n = 112 (n = 4,652) ^a	Males n = 85 (n = 4,043) ^a	Females n = 68 (n = 1,156) ^a
Repetitive thoughts	33 (19.5%) (10.9-28)	17 (18.2%) (6.5-29.8) NS	7 (9.8%) (6.7-12.9)	6 (6.4%) (3.3-9.6)**
Dreams	28 (15.9%) (8.5-23.3)	14 (15.4%) (4.8-26.1) NS	5 (3.6%) (0.7-6.5)	3 (2.6%) (0.0-6.8) NS
Flashbacks	21 (12.7%) (5.9-19.5)	7 (3.9%) (1.2-6.6)***†	2 (2.2%) (0.0-5.5)	2 (4.3%) (2.5-6.0)**
Upset at reminders	28 (19.0%) (12.5-25.6)	20 (17.7%) (5.3-30.4) NS	3 (2.0%) (1.6-2.4)	4 (5.0%) (3.3-6.6)***†
Physiologic reactivity	24 (12.5%) (7.6-17.3)	11 (9.3%) (2.8-15.7)*	5 (3.6%) (0.0-7.8)	3 (2.0%) (0.4-3.7)*
Avoid thoughts	29 (18.0%) (9.8-26.1)	20 (15.1%) (8.6-21.6) NS	6 (6.0%) (3.7-8.3)	4 (5.5%) (3.9-7.1) NS
Avoid activities	21 (14.0%) (6.4-21.6)	13 (15.8%) (3.5-28.1) NS	4 (4.4%) (3.5-5.3)	3 (4.6%) (2.8-6.3) NS
Recall difficulty	15 (10.0%) (4.6-15.3)	12 (14.9%) (3.5-26.2)***†	1 (0.7%) (0.0-2.1)	6 (7.6%) (2.3-12.9)***†
Loss of interest	18 (11.8%) (7.5-16.1)	9 (8.9%) (3.1-14.7)*	6 (6.9%) (2.2-11.7)	3 (6.0%) (4.3-7.7) NS
Feels distant	21 (15.3%) (7.8-22.8)	17 (15.8%) (7.9-23.7) NS	7 (6.8%) (2.6-11.0)	1 (1.3%) (0.0-3.6)***†
Numbing	26 (15.9%) (9.6-22.2)	16 (11.4%) (5.8-16.9)**	7 (7.9%) (2.5-13.4)	4 (19.5%) (15.8-23.2)***†
Short future	15 (11.8%) (4.3-19.2)	12 (8.4%) (4.7-12.2)**	7 (7.1%) (2.9-11.4)	2 (4.2%) (2.6-5.8)**
Sleep disturbance	38 (23.6%) (15.8-31.5)	27 (22.2%) (13.0-31.4) NS	14 (19.7%) (12.8-26.6)	8 (22.0%) (18.2-25.7) NS
Irritable and angry	25 (14.9%) (11.2-18.7)	24 (20.7%) (12.7-28.6)***†	10 (12.6%) (6.5-18.8)	8 (21.9%) (19.1-24.7)***†
Decreased concentration	28 (18.8%) (11.8-25.9)	20 (13.6%) (5.8-21.5)**	10 (13.4%) (8.5-18.3)	6 (21.1%) (17-25.1)***†
Hypervigilance	31 (16.7%) (10.2-23.1)	22 (20.0%) (11.0-28.9) NS	8 (8.2%) (5.3-11.2)	4 (2.8%) (0.2-5.4)***†
Startle	21 (12.0%) (5.7-18.4)	16 (10.8%) (6.1-15.6) NS	6 (6.4%) (2.8-10.0)	1 (1.2%) (0.0-3.4)***†

^aObserved n ; numbers within parentheses equal weighted frequency and 95% CI.* $p < 0.05$; ** $p = 0.01$; *** $p = 0.001$; †significant after Bonferroni correction.TABLE 4. RELATIONSHIP WITH SIGNIFICANT OTHER, $N=445$ (WEIGHTED $N=23,440$)

Item	Specialist n = 292 (n = 18,241)		Officer n = 153 (n = 5,199)	
	Males n = 180 (n = 13,589) ^a	Females n = 112 (n = 4,652) ^a	Males n = 85 (n = 4,043) ^a	Females n = 68 (n = 1,156) ^a
Comparing their relationship with significant other before last deployment to now (% reporting increased conflict)	37 (23.6%) ^b (13.6-33.6)	21 (14.8%) (7.0-22.7)**	13 (15.3%) (7.1-23.6)	8 (8.8%) (6.2-11.3)**
Have you divorced or separated from your significant other since last deployment? (% yes)	1 (14.7%) (8.8-20.6)	3 (19.1%) (9.8-28.5)**	0 (4.1%) (0.0-8.6)	1 (17.4%) (0.0-37.3)***†

^aObserved n ; numbers within parentheses equal weighted frequency and 95% CI.^bFrequency and 95% CI.* $p < 0.05$; ** $p = 0.01$; *** $p = 0.001$; †significant after Bonferroni correction.

subgroups.^{8,12,15} The beneficial role of social support and the ability to draw upon social relationships may be considered a protective factor for psychologic distress after a deployment.^{12,30–31} Emotional numbing criteria were endorsed more often in enlisted HCPs and female officers than males. An inability to feel interferes with normal human relations and has the potential to disrupt long-term relations otherwise depended on to successfully manage challenging times. This is of concern because women who serve in a military theater may have a greater risk of separation and divorce than their male counterparts.³¹

It may be expected that female HCP officers, who were least likely to meet the widely used 50 cutoff for probable PTSD on the PCL-C and less likely than the others to have probable subsyndromal PTSD, are resilient to combat stress. However, the DEPFlag and GAD screens showed much greater endorsement from respondents than similar questions on the PCL-C. It is unclear why this might be, but willingness to positively endorse these items (i.e., sleep disturbance, loss of interest, and decreased concentration on DEPFlag) on standard instruments likely to be familiar to HCPs, such as the PCL-C, raise a suspicion that respondents might be underreporting posttraumatic stress symptoms. This endorsement might be providing a clearer self-reported description of the mental health functioning of the respondents than scores on the PCL-C. The overlap of items from the various instruments used in this analysis showed that although female HCPs in this study were similar to those in prior studies in that they more often endorsed psychologic distress, anxiety,^{7,15} depression,^{7,8,14,15} and the use of alcohol,¹² they were less likely to screen positive for customary cutoff scores on the PCL-C. The respondents are believed to be a sophisticated group and may well be familiar with the PCL-C and the implications related to a diagnosis of probable PTSD within a military environment.

Limitations

This study was limited by its descriptive design and the fact that it used secondary data analysis. HCP subgroups were small, perhaps skewing results and making interpretation difficult. The authors further acknowledge limitations involving the inability to make more precise comparisons, such as when deployment to combat areas occurred or other factors that might have contributed to stress responses in these survey respondents (i.e., confounding variables).

Recommendations for future research

Future primary research or research that employs databases similar to those used in the HRB survey should not only identify military occupation, such as HCP, but also allow female respondents to identify significant exposure to traumatic events during deployment, times between deployments, and cumulative effects of multiple deployments. Confirmation of our findings is recommended through hypotheses investigating the likelihood that deployed female HCPs manifest depression and anxiety as opposed to probable PTSD and that their PTSD symptomatology has a unique pattern of endorsement. Also, a closer look at the use of alcohol in female service members is warranted—asking where, when, and why they drink. Targeted prevention and intervention can then be instituted successfully.

Conclusions

The female Vietnam Veteran nurse population suffered chronic symptoms and long-term mental and physical health problems as a result of their exposures.^{18–21} This potential outcome or problem deserves to be addressed with the current cohort of military women. Female HCPs serving in the current military conflicts are reporting significant psychologic distress that may adversely impact their function within the military and in theaters of operations, as well as after deployment.^{31,34} Psychologic comorbid conditions increase the risk for chronic problems in trauma populations and should, therefore, be carefully assessed in returning female service members and HCPs in particular.⁴⁹ Women who belong to the Guard or Reserves are of even greater concern, as diagnostics, treatment, and follow-up are poorly defined.⁵⁰ Attention to resiliency and the care of female HCPs serving in the U.S. military is necessary, essential to ensure the health and well-being of those who care for the military in harm's way.

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