

Posttraumatic Stress Disorder & Depression in Female Service Members: Findings From a 2010 – 2016 Literature Review

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Project AIM

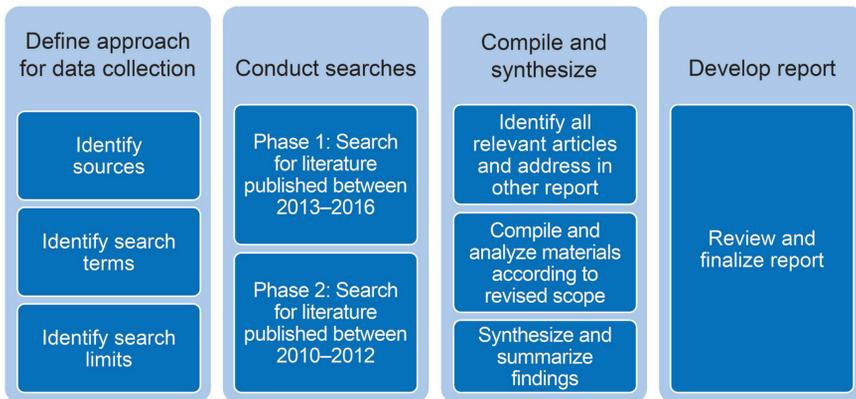
The Psychological Health Center of Excellence (PHCoE) within the Defense Health Agency (DHA) sought to better understand the current state of the science of the unique mental health (MH) needs of female service members, both active duty and veterans, as well as gender differences and disparities in the delivery, effectiveness, barriers and access to mental health treatment and prevention services.

The current report builds upon the Veterans Affairs/Department of Defense Integrated Mental Health Strategy (IMHS) Strategic Action #28 Summary Report of a Literature Review: Female Mental Health Needs and Military Sexual Trauma, Assault, and Harassment among Military Service Members and Veterans of Both Genders. (2013).

Literature Search Methodology

A broad literature search was performed to identify studies that examined the mental health and substance use needs of women service members between 2010 and 2016:

- 354 publications met initial inclusion criteria
- 179 publications were included in this report following review of full text and validation of the primary focus of the papers
- 120 studies were exclusively active duty or veteran women and were emphasized
- 59 additional studies on both male and female service members and veterans that reported results by gender were included to augment the findings



Number of Military Female-specific Studies

The number of studies focused on female service members has increased since the IMHS Strategic Action #28 literature review, particularly on the topics of depressive disorders and posttraumatic stress disorder (PTSD).

Study Topic	Female Active Duty Only	Female Veterans Only	Female Active Duty & Veterans
Incidence & Prevalence	3	2	1
Screening	3	3	–
Depression (not specified)	4	9	–
PTSD	5	14	2
Other Anxiety	3	3	–
Psychotic, Bi-polar, Personality Disorders	3	4	–
Suicide, Suicidal Ideation	0	1	1
SUD	6	15	–
Additional Mental & Physical Health	6	5	–
Intimate & Family Relationship	1	6	–
Treatment & Utilization	1	6	–
Access & Barriers to Care	1	6	2
Prevention	2	2	–

PTSD Findings

Nineteen publications that focused on posttraumatic stress disorder (PTSD) in female active duty (AD) service members (including National Guard/Reserve) and Veterans met the review criteria; an additional four publications examining gender differences in PTSD diagnoses were also included.

- A large cross-sectional study of female Army enlisted ($n = 42,397$) concluded that combat trauma is a risk factor for post-deployment PTSD (Adams et al., 2016); cumulative combat exposure was the factor most likely to predict mental health (MH) problems for both men and women
- Studies examining gender differences and PTSD found that women service members are at higher risk for post-deployment PTSD than their male counterparts (Crumb-Cianflone & Jacobson, 2014; Jacobson, Donoho, Crum-Cianflone & Maguen, 2015)
- Significant predictive relationships between deployment-related traumatic stressors, most notably combat experiences and sexual assault/harassment (SA/SH), and unfavorable PTSD outcomes were reported for AD women (Adams et al., 2016; Cobb Scott et al., 2013; Kelly, Skelton, Patel, & Bradely, 2011; Jacobson et al., 2015; Kintzle et al., 2015; Klingensmith, Tsai, Mota, Southwick, & Pietrzak, 2014; Maguen, Cohen, Ren, et al., 2012; Maguen, Luxton, Skopp, & Madden, 2012; Millegan et al., 2015; Seelig et al., 2012; Stahlman et al., 2015; Street et al., 2013; Walsh et al., 2014; Wooten, 2012)
- A study of MH comorbidities in male and female Veterans with PTSD found that women ($n = 7,255$) were significantly more likely than men ($n = 67,238$) to present with comorbid depression (70 percent), anxiety disorders (32 percent, and eating disorders (2 percent) (Maguen, Cohen, Ren, et al. 2012)
- A study of Veterans ($n = 3,848$) reported that those with chronic pain were more likely to be women with a MH diagnosis, notably PTSD, compared to those without chronic pain (Higgins et al., 2014)
- In a national cross-sectional survey of female Veterans ($n = 3,585$), those with mild and moderate-to-severe alcohol misuse had higher rates of comorbid PTSD; non-users of VA services who were diagnosed with PTSD had a high prevalence of alcohol misuse (Hoggatt, Williams, Der-Martirosian, Yano, & Washington, 2015)
- In surveillance data (2001 – 2010) of all women service members who served in the Army, Air Force, Marine Corps, or Coast Guard, and who completed at least one OEF/OIF deployment, the frequency of PTSD diagnoses increased relative to deployment length and number; PTSD was more frequently diagnosed when deployments were longer than nine months (AFHSC, 2012a)
- There was a paucity of investigations regarding the role gender may play in treatment selection and efficacy of gender-specific treatment modalities
- We identified several small studies examining PTSD treatment approaches in samples of women-only Veterans, but their generalizability is limited, because of methodological flaws in the study design and/or small sample size

2005-2011 Identified Gaps Integrated Mental Health Strategy Strategic Action #28 Summary Literature Review	2010-2016 Identified Gaps Mental Health (MH) and Substance Use Disorder Needs of Female Service Members and Veterans: A Literature Review
<ul style="list-style-type: none"> • Findings regarding gender differences in PTSD prevalence are inconclusive and inconsistent. Inconsistencies may be attributable to different screening and survey instruments used in each study, differences in study sample demographics, and/or the extent and type of trauma experienced by study participants • Few studies examined the relationship between gender and treatment of PTSD; there were no studies of treatment modalities geared specifically toward female Service members • Further research is needed to reconcile apparent inconsistencies across studies, examine gender disparities in PTSD prevalence, and explore interactions between gender and PTSD treatment • The prevalence of PTSD in female and male Veterans are comparable; however, women with PTSD are more likely to carry a greater burden of both mental and physical health comorbidities. Further investigations are needed to better assess these comorbidities, as well as functional deficits associated with PTSD • Potential gender differences in the etiology and severity of PTSD symptoms remain unclear (e.g., the potential differential impact of traumatic exposure type, such as combat or sexual assault) • There is little empirical evidence on the impact of PTSD symptoms on social, family, and/or parenting functioning in female Veterans • Future studies should examine the effects of treatments on symptom reduction or remission, and explore the impact of treatment on health-related quality of life, medical morbidities, and functional status 	<ul style="list-style-type: none"> • Findings regarding gender differences in PTSD prevalence suggest that women may be at greater risk for PTSD; however, four studies found no gender differences in the prevalence or severity of PTSD • Relatively few studies examined the role of deployment and combat stressors on the MH needs of women; thus, less is known about the predictive relationship of combat experience(s) and PTSD in women • There is limited research on mental and physical health comorbidities in women • There are few large-scale investigations of the role gender may play in treatment selection, and the efficacy of gender-specific treatment modalities • Unique stressors associated with PTSD in female service members and Veterans who have deployed in support of OEF/OIF include experiencing direct combat exposure(s), and/or SA/SH during military service

Depressive Disorder Findings

Most studies did not distinguish between mild, moderate, or major depressive disorders. Thirteen publications on depression in AD and Veteran women met the review criteria; an additional 15 publications which presented findings separately by gender were included.

- Depressive disorders were 1.4 to 1.9 times more often diagnosed in AD women compared to AD men, based on the presence of MH-related ICD-9-CM V-codes in the Defense Medical Surveillance System records of AD Service members from 1 January 2001 to 31 December 2011 (AFHSC, 2012b)
- The estimated prevalence of depression among female service members ranged from 4.3 percent to 7.5 percent (Ursano, Wang, et al., 2016)
- In a study of 1,700 Veteran and AD ($n = 346$ women), 46.5 percent of women had a lifetime diagnosis of Major Depressive Disorder (MDD), significantly more than men (36.3 percent) (Curry et al., 2014); there were no gender differences in age of onset or age of assessment
- Female National Guard (NG) soldiers were diagnosed with depression significantly more frequently than men, based on data from a longitudinal study of MH outcomes after OIF deployment (Kehle et al., 2011); depression prevalence was as high as 27 percent in this study, which also examined associations among depressive symptoms, diagnosable depression, deployment and combat exposure
- Data from the Millennium Cohort Study showed a significant positive association between combat exposure during deployment and new-onset depression among 10,178 women service members who had not been previously diagnosed with depression (Wells et al., 2010)
- Women who experienced combat were 1.55 times more likely to report depressive symptoms than those who did not deploy; of note, women who deployed without combat exposure were significantly less likely to be diagnosed with depression than women who had not deployed (Seelig et al., 2012)
- As the level of combat exposure increased, the risk of depression in women increased (Adams et al., 2016)
- A systematic literature review of 10 studies revealed that women with combat experience were at higher risk for depression, while men were at higher risk for substance abuse (Conard & Sauls, 2014)
- The incidence of perinatal depression (PND), which includes both the prenatal and postpartum periods, is estimated to be as high as 24 percent in female service members; similar civilian studies provided incidence rates ranging from 5 to 25 percent (Klaman & Turner, 2016)
- The highest prevalence of PND symptoms (16.6 percent) was found in female service members who had deployed after childbirth and who experienced combat exposure (Nguyen, 2013; Klaman & Turner, 2016)
- In a review of 86 articles on interventions for depression in women Veterans, only 14 reported on gender differences (Duan-Porter et al., 2015)

2005-2011 Identified Gaps Integrated Mental Health Strategy, Strategic Action #28 Summary Literature Review	2010-2016 Identified Gaps Mental Health and Substance Use Disorder Needs of Female Service Members and Veterans: A Literature Review
<ul style="list-style-type: none"> • Although several studies on rates of depression observed in military populations were identified, the review of literature did not find any studies related to treatment of depression in female Service members • The existing evidence indicates significant incidence of co-occurring depression and other mental health disorders among female Veterans, particularly comorbid PTSD and depression, as well as significant levels of comorbid physical health conditions. Across genders, little is known about how treatment for one condition may affect symptoms of other mental or physical health conditions. It is also unknown how many Veterans warrant treatments that separately address each disorder (e.g., PTSD-specific therapy followed by treatment for depression) or whether integrated treatments that address multiple disorders may have greatest benefit. 	<ul style="list-style-type: none"> • The current review included 13 publications on depression in active duty and Veteran women and an additional 15 studies on mixed gender populations that presented separate findings by gender • The majority of research on depression in female Service members and Veterans is on prevalence rates. The relationship between deployment, combat exposure and depressive symptoms is poorly understood, and few studies address psychological and/or physiological comorbidities • Depression in Service members may have unique, military-specific antecedents, but the research is limited • In a literature review that identified 86 review articles that discussed depression interventions in women Veterans (Duan-Porter et al., 2015), only 14 articles reported on gender differences

*The use of the term “female service members” refers to both active duty and veterans