



Epidemiology of psychiatric disability without posttraumatic stress disorder among U.S. Army and Marine Corps personnel evaluated for disability discharge



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ABSTRACT

Psychiatric disorders are a common reason for disability discharge from the U.S. military. Research on psychiatric disorders in military personnel evaluated for disability discharge has historically focused on posttraumatic stress disorder (PTSD), yet 40% of service members evaluated for a psychiatric-related disability do not have PTSD. This study's objective was to describe characteristics and correlates of disability in Army and Marine Corps personnel diagnosed with psychiatric disorders other than PTSD. In this cross-sectional study, the chi-square and Wilcoxon–Mann–Whitney tests compared the distribution of demographic, disability and deployment characteristics between those evaluated for non-PTSD psychiatric disability (N = 9125) versus those evaluated for any other non-psychiatric condition (N = 78,072). Multivariate logistic regression examined associations between disability retirement and demographic and disability characteristics. Results show a significantly higher prevalence of disability retirement, deployment, and comorbidity among Army and Marine Corps personnel evaluated for disability discharge related to a non-PTSD psychiatric disorder. Mood disorders, anxiety disorders and dementia were the most commonly evaluated psychiatric disorders. Characteristics associated with increased odds of non-PTSD psychiatric-related disability retirement includes being in the Marine Corps (OR = 1.24), being black (OR = 1.29) or other race (OR = 1.33), having a combat-related condition (OR = 2.50), and older age. Service members evaluated for a non-PTSD psychiatric disability have similar rates of disability retirement as those evaluated for PTSD, suggesting non-PTSD psychiatric disorders cause a severe and highly compensated disability. Additional research is needed describing the epidemiology of specific non-PTSD psychiatric disorders, such as depression, in service members evaluated for disability discharge.

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1. Introduction

Psychiatric disorders are a major health concern for the U.S. military and are associated with high health care utilization, lost workdays, attrition and disability discharge (Armed Forces Health Surveillance Center, 2012a, 2013b; Cohen et al., 2007 and Gubata et al., 2013a,b). Prevalence of psychiatric disorders in service members increased substantially since beginning military operations in Iraq (Operation Iraqi Freedom, OIF) and Afghanistan (Operation Enduring Freedom, OEF) and is estimated to be between

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11% in service members returning from Afghanistan and 37% in veterans seen at a Department of Veterans Affairs (VA) health care facility (Hoge et al., 2006; Sareen et al., 2007 and Seal et al., 2007, 2009). Over the course of OIF/OEF, Department of Defense and VA health care providers observed steep increases in service members seeking psychiatric-related ambulatory visits and hospitalizations (Armed Forces Health Surveillance Center, 2012c, 2013a,b,c,d; and Wells et al., 2011). Additionally, OIF/OEF veterans with psychiatric disorders have higher utilization rates of non-psychiatric medical services (Cohen et al., 2007). Health care of service members and veterans with psychiatric disorders is not restricted to the Military Health System, as 27%–41% of recent service member hospitalizations occurred in non-military hospitals (Armed Forces Health Surveillance Center, 2013d, 2014). Consequently, both military

and non-military health care services may continue to experience a growing demand for health care from service members or veterans with psychiatric disorders.

Psychiatric disorders in military personnel are often detected through pre- and post-deployment health assessments, hospitalizations, primary care appointments, or psychiatric ambulatory appointments (Hoge et al., 2006; Seal et al., 2007). Common psychiatric disorders diagnosed in military populations include post-traumatic stress disorder (PTSD), depression, alcohol abuse/dependence, adjustment disorder, and anxiety disorder (Armed Forces Health Surveillance Center, 2012c, Felker et al., 2008; Milliken et al., 2007; and Seal et al., 2007). Risk factors associated with psychiatric disorders, mental health care use and attrition in military populations include serving in the Army (relative to other services), combat exposure, and deployment to a combat zone (Armed Forces Health Surveillance Center, 2012c, Hoge et al., 2006; Polusny et al., 2009; Sareen et al., 2007; Vogt et al., 2005; Wells et al., 2010 and Wojcik et al., 2009). Other characteristics associated with higher rates of post-deployment psychiatric disorders include being female, younger than 25 years, enlisted, or active duty component, or having a combat-specific occupation or a pre-deployment diagnosis of a psychiatric disorder, particularly depression or anxiety disorder (Armed Forces Health Surveillance Center, 2007, Armed Forces Health Surveillance Center, 2012b,c; Seal et al., 2009 and Wojcik et al., 2009).

Psychiatric disorders are a common reason for disability discharge in the military. Since the start of OIF/OEF, psychiatric disorders, led by PTSD, mood disorders and anxiety disorders, were ranked within the three most common medical condition types found in service members evaluated for disability in all services (Bell et al., 2008a; Gubata et al., 2013b; and Niebuhr et al., 2011). Psychiatric disorders are a leading cause of discharge for medical conditions found to have existed prior to service, and affective and nonpsychotic psychiatric disorders ranked in the top five conditions diagnosed during disability evaluations occurring within the first year of service (Gubata et al., 2013a). Service members evaluated for a psychiatric disorder disability are more likely to be medically retired or separated, particularly after deployment to a combat zone, than those diagnosed with any other condition type (Bell et al., 2011; Creamer et al., 2006 and Piccirillo et al., 2012). Many of the separations occur within one year of first diagnosis of the psychiatric disorder (Creamer et al., 2006; Hoge et al., 2005).

Prevalence and correlates of psychiatric disorders have been extensively studied in military populations, but historically this research has focused on PTSD or on psychiatric disorders as a whole. Bell et al. (2011) examined risk factors for psychiatric-related disability discharge in Soldiers, but did not differentiate between PTSD and other psychiatric disorders. In comparing disabling conditions of medically retired or separated Army Soldiers during peacetime and war, Patzkowski et al. (2012) found a significantly higher frequency of psychiatric disorders in 2009 than 2001, but did not explain whether the two-fold increase in unfitting psychiatric disorders was driven by the greater than 50-fold increase in PTSD. Another recent study described temporal trends of PTSD-related disability in the Army and Marine Corps, but PTSD accounts for only 60% of all psychiatric-related disability evaluations (Packnett et al., 2012). Little is known on the epidemiology of psychiatric disorders unrelated to PTSD that were severe enough to affect a service member's ability to continue military service.

The objective of this study was to describe characteristics and correlates of disability in Army and Marine Corps personnel diagnosed with non-PTSD psychiatric disorders and to compare this population to those evaluated for disability related to any other non-psychiatric disorder. This study also aims to identify the most common disabilities for both condition categories and to

investigate whether the rate of evaluations for non-PTSD psychiatric disability changes over time. A better characterization of the prevalence and correlates of risk for military disability related to non-PTSD psychiatric disorders is needed in order to understand their burden on both service members and the military health care and disability systems.

2. Methods

2.1. Study design

This cross-sectional study examined disability related to non-PTSD psychiatric disorders among U.S. Army and Marine Corps personnel and was performed under a minimal risk human use protocol approved by the Walter Reed Army Institute of Research Institutional Review Board.

When a service member becomes seriously injured or ill, each military service is responsible for determining whether his medical conditions renders him unfit for military service and for providing compensation equitable to his level of impairment in earning capacity (Under Secretary of Defense, 1996). Upon illness or injury, the service member is referred into the Disability Evaluation System (DES) where he is examined and evaluated by two informal medical boards. If the DES determines the service member can no longer continue military service, the DES assigns a disability medical code to each medical condition based on the Veteran's Administration Schedule for Rating Disabilities (VASRD). Attached to each VASRD is a disability rating, expressed as a percentage between 0% and 100%, reflecting the amount of compensation the service member is entitled. All assigned disability ratings for each individual condition are used to calculate a total disability rating, which is considered when assigning a final disposition. Soldiers receiving a total disability rating of 20% or less are usually separated with a one-time severance payment, while those receiving a rating of 30% or greater are eligible for disability retirement benefits, which include lifetime monthly retirement pay, medical care, and use of military facilities (Under Secretary of Defense, 1996).

2.2. Study population

All Army and Marine Corps personnel evaluated for disability discharge at the Army Physical Disability Agency (PDA) or Secretary of the Navy Council of Review Boards (CORB) between October 1, 2004 and September 30, 2011 (Fiscal Years 2005–2011) were eligible for inclusion. Since Army and Marine Corps personnel evaluated for disability have similar demographic and disability characteristics and deployment exposures relative to Navy and Air Force personnel (Gubata et al., 2013b), the study population was limited to Army and Marine Corps.

Eligible service members were categorized into two groups (non-PTSD psychiatric disorders and All Other non-psychiatric conditions) based on the service member's medical conditions at the disability evaluation. The VASRD was used to identify each service member's medical conditions and general medical condition category (e.g. arthritis) for each condition. Service members within the non-PTSD psychiatric disorder category were identified using VASRD codes for psychiatric disorders (9200–9599), excluding those evaluated for disability related to PTSD (9411). Service members placed into the non-PTSD psychiatric disorder group were evaluated for disability related to one or more conditions within the following categories as identified by the VASRD: dementia, schizophrenia or other psychotic disorder, mood disorders (e.g. depression), anxiety disorders or phobias, somatoform or pain disorders, dissociative disorders, chronic adjustment disorders other than PTSD, and eating disorders (e.g. anorexia). The

nomenclature employed in the psychiatric disorder rating schedule is based on diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders IV (USC, 2011, July). Therefore, presence of a psychiatric disorder VASRD code indicates the PDA or CORB determined the service member was unfit for duty due to a service-connected psychiatric disorder alone or in conjunction with other service-connected medical conditions. The All Other group included service members evaluated for any other medical conditions (e.g., asthma), excluding those evaluated for any psychiatric disorder.

2.3. Data sources

The PDA and CORB provided disability evaluation data on Army and Marine Corps personnel, respectively, and included demographic and service-related characteristics, medical review dates, evaluation results and date, combat-related determinations, VASRD codes and percent disability ratings. Since evaluations resulting in total percent ratings of 30% or greater are eligible for disability retirement, ratings were categorized as 30% or greater and less than 30%. Age was categorized into the following groups: younger than 20 years; between 20 and 29 years; between 30 and 39 years; and, 40 years and older. Race was categorized into white, black and other. Length of time to final disposition was determined as the duration in months between first diagnosis and assignment of final disposition.

If a service member's condition may change in severity over time, he or she may be evaluated for disability more than once. For individuals with multiple evaluations, demographic variables were derived from the record with the earliest date, while final disposition, percent rating and combat-related determination were collected from the most recent disability record. All unique VASRD conditions from all records per service member were included in assessing average number of VASRDs per person and most common disabilities or comorbid conditions. For the non-PTSD psychiatric group, any non-psychiatric disorder present during the disability evaluation was considered a comorbid condition. Since disability records do not identify a primary medical condition, comorbid conditions could not be ascertained in the All Other group.

The Defense Manpower Data Center, Seaside, California, provided service begin and end dates, deployment characteristics, and counts of total military population by year and service. Time in service in years was calculated as the duration between the service member's first entry date and most recent end date. All overseas deployments in support of OIF/OEF between October 1, 2001 and September 30, 2011 were included. Service members were categorized as deployed if deployed at any time during the study period.

2.4. Data analysis

Service-specific incidence rates of non-PTSD psychiatric disability were calculated per 10,000 service members per year based on total military population counts. The Cochran–Armitage test for linear trend was utilized to investigate the relationship between fiscal year and non-PTSD psychiatric disability evaluation.

Frequency distributions were generated to describe demographic, disability and deployment characteristics of the study population, stratified by service and disability condition type. Chi-square and Wilcoxon–Mann–Whitney tests compared the distribution of demographic, disability and deployment characteristics between the two condition categories, stratified by service. Means and standard deviations were calculated to assess average service length, average length from first evaluation date to final determination date, and average number of condition codes.

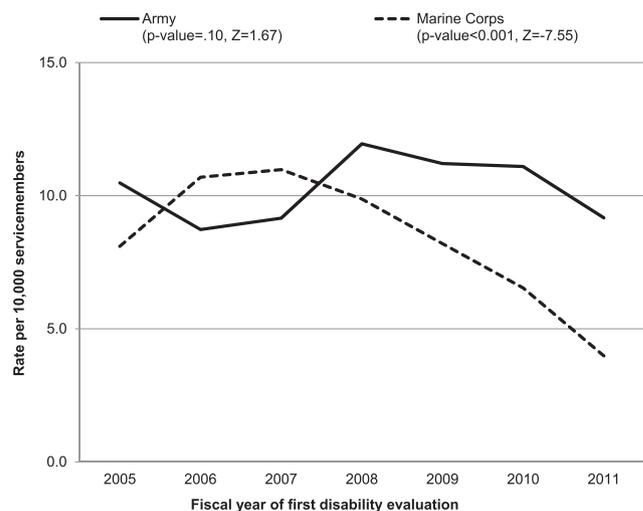
Frequency distributions were also used to identify the most common general medical condition category for each disability category. Service members with more than one condition within the same general medical condition category were counted only once within that category. The chi-square test compared the prevalence rate in the Army with the prevalence rate of the same condition in the Marine Corps.

Bivariate and multivariate logistic regression models computed unadjusted and adjusted odds ratios to assess associations between disability retirement (i.e. permanent or temporary disability retirement) and demographic and disability characteristics stratified by disability condition type. The adjusted model controlled for combat relatedness and the following demographic and service-related characteristics at military entry: age, gender, race, service, rank and component. Statistical analyses were performed using SAS version 9.3 (SAS Institute, Cary, NC).

3. Results

The rate of non-PTSD psychiatric disability evaluation significantly decreased in the Marine Corps during the study period ($Z = -7.6$, $p < 0.001$) ranging from a high of 11.0 per 10,000 Marines in 2007 to a low of 4.0 per 10,000 Marines in 2011 (Fig. 1). The Army's rate of non-PTSD psychiatric disability evaluation did not significantly change during study period ($Z = 1.7$, $p = 0.10$).

The study population was mainly comprised of white enlisted active duty males under the age of 30 at their first evaluation for disability discharge (Table 1). For the Army, distributions for all demographic variables were slightly, yet still statistically, different for those evaluated for a non-PTSD psychiatric disorder versus those with any other non-psychiatric medical condition. A substantially larger proportion of Soldiers evaluated for a non-PTSD psychiatric disability had been deployed (62.3%) when compared to the All Other group (49.6%). For the Marine Corps, only age at first evaluation and deployment status were significantly different between the two condition categories. Substantially fewer Marines under age 20 were evaluated for a non-PTSD psychiatric disorder disability, while a larger proportion of Marines who deployed were evaluated for non-PTSD psychiatric disorder disability (47.7%) than any other disability (38.9%).



* Cochran–Armitage trend test

Fig. 1. Rate of non-PTSD psychiatric disability evaluation by service and fiscal year of first evaluation 2005–2011.

Table 1
Demographic characteristics of the study population by service and disability condition.

Characteristic	Army					Marine Corps						
	Non-PTSD psychiatric disorder		All other		X ²	df	Non-PTSD psychiatric disorder		All other		X ²	df
	(N = 7780)		(N = 67,355)				(N = 1345)		(N = 10,717)			
	N	%	N	%	N	%	N	%				
Gender												
Male	6224	80.1	53,203	79.0	4.47*	1	1220	90.7	9600	89.7	1.31	1
Female	1548	19.9	14097	21.0			125	9.3	1102	10.3		
Age at first evaluation												
<20	125	1.6	2419	3.6	98.04**	3	48	3.6	822	7.7	39.46**	3
20–29	4084	52.5	34,594	51.4			1035	77.2	8189	76.6		
30–39	2112	27.2	16,945	25.2			212	15.8	1452	13.6		
≥40	1455	18.7	13,340	19.8			45	3.4	232	2.2		
Race												
White	5531	71.1	47,994	71.3	57.5**	2	937	70.1	7762	72.6	4.55	2
Black	1428	18.4	1197	20.5			125	9.3	854	8.0		
Other	818	10.5	5556	8.2			275	20.6	2076	19.4		
Rank												
Enlisted	7148	92.2	62,806	93.3	13.44**	1	1302	97.3	10,446	97.7	0.61	1
Officer	604	7.8	4499	6.7			36	2.7	251	2.3		
Component												
Active	6140	78.9	56,744	84.2	144.71**	1	1259	93.6	9879	92.2	3.43	1
Reserve	1639	21.1	10,607	15.8			86	6.4	838	7.8		
Deployed												
Yes	4845	62.3	33,442	49.6	444.80**	1	641	47.7	4169	38.9	38.22**	1
No	2935	37.7	33,913	50.4			704	52.3	6548	61.1		

PTSD, post-traumatic stress disorder. df: degrees of freedom.

*p < 0.05, **p < 0.001, X² test comparing non-PTSD psychiatric disorders to all other disabilities.

Table 2
Characteristics of disability evaluation in the study population by service and disability condition.

Characteristic	Army					Marine Corps						
	Non-PTSD psychiatric disorder		All other		Test statistic	df	Non-PTSD psychiatric disorder		All other		X ²	df
	(N = 7780)		(N = 67,355)				(N = 1345)		(N = 10,717)			
	N	%	N	%	N	%	N	%				
Disposition												
Retired	5379	69.1	16,099	23.9	X ² = 7729.20 ^c	4	935	69.5	3506	32.7	729.93 ^c	4
SWSP	1680	21.6	35,899	53.3			384	28.6	6285	58.7		
SWOB	516	6.6	2226	3.3			0	0.0	747	7.0		
Fit	51	0.7	6092	9.0			0	0.0	2	0.0		
Other ^a	154	2.0	7039	10.5			26	1.9	177	1.6		
Percent rating												
<30	2351	30.3	46,060	74.3	X ² = 6272.33 ^c	1	383	28.5	7098	66.4	731.81 ^c	1
≥30	5402	69.7	15,942	25.7			962	71.5	3587	33.6		
Combat-related												
Yes	1554	20.0	5490	8.2	X ² = 1145.87 ^c	1	275	21.0	1880	17.9	7.42 ^b	1
No	6226	80.0	61,822	91.8			1033	79.0	8601	82.1		
Years in service (mean ± SD)	4.3 ± 2.3		3.8 ± 2.4		Z = 14.70 ^e		3.9 ± 2.0		3.7 ± 2.3		3.69 ^d	
Months to final disposition (mean ± SD)	8.3 ± 13.0		4.5 ± 8.7		Z = 37.74 ^e		13.8 ± 18.1		8.7 ± 14.1		10.91 ^e	
Number of VASRD codes (mean ± SD)	1.9 ± 1.1		1.2 ± 0.9		Z = 61.9 ^e		1.8 ± 1.2		1.2 ± 0.7		22.33 ^d	

PTSD, post-traumatic stress disorder. SWSP, separated with severance pay. SWOB, separated without benefit. VASRD, Veterans Administration Schedule of Rating Disability. DF, degrees of freedom.

^a Other disposition includes administrative termination and transferred to the retired reserve.

^b p < 0.05, X² test comparing non-PTSD psychiatric disability and all other disability.

^c p < 0.001, X² test comparing non-PTSD psychiatric disability and all other disability.

^d p < 0.05, Wilcoxon–Mann–Whitney comparing non-PTSD psychiatric disability and all other disability (Z statistic).

^e p < 0.001, Wilcoxon–Mann–Whitney comparing non-PTSD psychiatric disability and all other disability (Z statistic).

In Table 2, characteristics related to disability evaluation are compared between the non-PTSD psychiatric group and the All Other group for each service. In both services, a substantially larger proportion of individuals evaluated for non-PTSD psychiatric disability were medically retired (69%) and received a percent rating of greater than 30% (Army 69.7%; Marine Corps 71.5%) than those evaluated for any other disability. A larger proportion of

individuals in the non-PTSD psychiatric disorder group (Army 20.0%; Marine Corps 21.0%) had conditions deemed related to combat than the All Other group (Army 8.2%; Marine Corps 17.9%). Individuals evaluated for a non-PTSD psychiatric disability had, on average, slightly more conditions, a longer length of service, and were evaluated for disability longer than the All Other group.

Approximately half of Army and Marine Corps personnel

Table 3
Most common disabilities or comorbid conditions by disability condition and service.

Army			Marine Corps		
Condition	N	%	Condition	N	%
Non-PTSD psychiatric disorder cases					
Mood disorder*	3955	50.8	Mood disorder*	635	47.2
Spinal disease**	1659	21.3	Dementia**	362	26.9
Anxiety disorder**	1628	20.9	TBI and residual effects ^{a, **}	352	26.2
Dementia**	1135	14.6	Anxiety disorder**	124	9.2
TBI and residual effects ^{a, **}	1069	13.7	Schizophrenia**	102	7.6
Total individuals	7780		Total individuals	1345	
All other disability cases					
Spinal disease**	19,925	29.6	Arthritis**	2449	22.8
Arthritis**	16,477	24.5	Limitation of motion of joint ^{b, **}	2219	20.7
Limitation of motion of joint ^{b, **}	7775	11.5	Spinal disease**	1622	15.1
Skeletal deformities*	3006	4.5	Paralysis**	704	6.6
Paralysis**	2855	4.2	Joint disorders or inflammation ^{c, **}	482	4.5
Total individuals	67,355		Total individuals	10,717	

PTSD, post-traumatic stress disorder, TBI, traumatic brain injury.

*p < 0.05, **p < 0.001, X² test comparing disability in the Army to the Marine Corps.

^a The Veteran's Administration Schedule for Rating Disabilities categorized this condition as Residuals of Traumatic Brain Injury, which includes traumatic brain injury as well as any residual effects connected to the injury, including cognitive impairments, emotional/behavioral dysfunction or physical dysfunction.

^b Includes limitation of motion of a joint due to any reason other than arthritis (e.g. shoulder dislocation).

^c Includes fibromyalgia and inflammation within the joint structure, including the bursa, synovial membrane, muscle tissue, tendon or joint cavity.

evaluated for a non-PTSD psychiatric disability had a mood disorder (Table 3). Among those evaluated for a non-PTSD psychiatric disability, the Army had significantly higher rates of spinal disease (21.3%) and anxiety disorders (20.9%), whereas the Marine Corps had higher rates of dementia (26.9%), traumatic brain injury and its residual effects (TBI; 26.2%), and schizophrenia (7.6%). For the All Other group, musculoskeletal conditions and paralysis were the most common conditions in both services, yet the Army (29.6%) had nearly twice the rate of spinal disease than the Marine Corps (15.1%). The non-PTSD psychiatric group (Army 13.7%; Marine Corps 26.2%) had a substantially higher rate of TBI than the All Other group (>2%).

Table 4 presents characteristics associated with increased odds of non-PTSD psychiatric-related disability retirement, which includes being in the Marine Corps (AOR = 1.24; 95% CI = 1.08–1.42), being black (AOR = 1.29; 95% CI = 1.13–1.47) or other race (AOR = 1.33; 95% CI = 1.14–1.55), or having a combat-related condition (AOR = 2.50; 95% CI = 2.19–2.85). Odds of disability retirement related to a non-PTSD psychiatric disorder also increased as age increased, with those aged 40 years or older having three-fold higher odds of disability retirement than service members in their twenties. For those evaluated for a non-PTSD psychiatric disorder, individuals aged 40 years or older or within the black and other race category had higher odds of disability retirement than those within the same age or race category in the All Other group.

4. Discussion

Results of this study show a significantly higher prevalence of disability retirement, deployment, and comorbidity among Army and Marine Corps personnel evaluated for disability discharge related to a non-PTSD psychiatric disorder when compared to those evaluated for any other non-psychiatric condition. Approximately 40% of service members evaluated for a psychiatric-related disability do not have PTSD (Gubata et al., 2013b). In this study, nearly 70% of Army and Marine Corps personnel evaluated for a non-PTSD psychiatric disorder disability were medically retired, which is more than double the proportion medically retired without a psychiatric disorder. In comparison, approximately 80% of Army and Marine Corps personnel evaluated for disability related to PTSD were medically retired (Packnett et al., 2012). Taken

together, these findings suggest a large number of Army and Marine Corps personnel evaluated for a psychiatric-related disability have a psychiatric disorder unrelated to PTSD, and that their psychiatric disorder often causes a severe and highly compensated disability.

The demographic characteristic with the highest odds of non-PTSD psychiatric-related disability retirement are those 40 years or older, who have more than three times the odds of those in their twenties. In addition, odds of disability retirement for those 40 years or older in the non-PTSD psychiatric disability group was double that of service members of the same age evaluated for any other non-psychiatric condition. This is consistent with prior research that found that older service members have higher odds of psychiatric-related disability (Bell et al., 2008a). In addition, although younger service members have higher rates of psychiatric disorders overall (Armed Forces Health Surveillance Center, 2012c and Seal et al., 2009), these higher rates are driven by higher rates of PTSD and drug and alcohol abuse, whereas older service members have higher rates of depression (Seal et al., 2009). Nonetheless, additional research is needed to further explain the high odds of disability retirement in older service members with a non-PTSD psychiatric disorder.

The increased prevalence of psychiatric disorders, particularly depression and anxiety, after deployment or exposure to combat has been well documented (Booth-Kewley et al., 2013; Felker et al., 2008; Sareen et al., 2007; and Wells et al., 2010). This study found similar results as a larger proportion of service members evaluated for a non-PTSD psychiatric disorder disability had been deployed and had a combat-related condition. In addition, there was a strong association between disability retirement and being evaluated for a combat-related condition for both condition groups. These findings highlight the need for continued pre- and post-deployment screenings, as well as interventions and training designed to mitigate the stressors placed on deployed military service members, especially those whom experience combat. Although deployment has been shown to be associated with psychiatric disorders, 38% of Army and 52% of Marine Corps service members evaluated for a non-PTSD psychiatric disability had never been deployed during the study period. Additional research is needed to examine the relationship between demographic characteristics, military occupation, deployment history and psychiatric diagnoses that progress to psychiatric-related disability to target treatments and determine whether mental health care needs differ in those who deploy.

Table 4
Unadjusted and adjusted odds ratios for disability retirement in service members by disability type.

Characteristic	Non-PTSD psychiatric disorder				All other			
	OR	95% CI	AOR ^a	95% CI	OR	95% CI	AOR ^a	95% CI
Service								
Army	1.00	–	1.00	–	1.00	–	1.00	–
Marine Corps	1.02	0.90–1.15	1.24	1.08–1.42	1.55	1.48–1.62	1.67	1.59–1.76
Gender								
Female	1.00	–	1.00	–	1.00	–	1.00	–
Male	0.96	0.85–1.07	0.91	0.80–1.02	1.34	1.28–1.40	1.07	1.03–1.12
Age at first evaluation								
<20	0.39	0.28–0.53	0.43	0.31–0.59	0.43	0.39–0.48	0.43	0.38–0.48
20–29	1.00	–	1.00	–	1.00	–	1.00	–
30–39	1.53	1.37–1.70	1.57	1.41–1.76	1.41	1.36–1.47	1.57	1.50–1.63
≥40	3.24	2.78–3.77	3.53	3.00–4.21	1.54	1.48–1.61	1.75	1.67–1.84
Race								
White	1.00	–	1.00	–	1.00	–	1.00	–
Black	1.37	1.21–1.55	1.29	1.13–1.47	1.05	1.00–1.09	1.07	1.03–1.12
Other	1.50	1.29–1.73	1.33	1.14–1.55	1.18	1.12–1.24	1.04	0.98–1.10
Rank								
Officer	1.00	–	1.00	–	1.00	–	1.00	–
Enlisted	0.87	0.73–1.04	1.15	0.95–1.40	0.80	0.75–0.85	0.94	0.87–1.00
Component								
Reserve	1.00	–	1.00	–	1.00	–	1.00	–
Active	0.65	0.57–0.73	1.05	0.91–1.21	0.69	0.66–0.72	0.78	0.74–0.81
Combat-related								
No	1.00	–	1.00	–	1.00	–	1.00	–
Yes	2.32	2.04–2.63	2.50	2.19–2.85	3.72	3.54–3.90	3.83	3.64–4.03

PTSD, post-traumatic stress disorder. OR, odds ratio. CI, confidence interval. AOR: adjusted odds ratio.

^a Adjusted for all variables listed.

Service members evaluated for a non-PTSD psychiatric disorder were evaluated for significantly more conditions, indicating non-PTSD psychiatric disorders often present with comorbid conditions, similar to PTSD disability (Packnett et al., 2012). For the non-PTSD psychiatric disability group, the most commonly evaluated condition categories were mood disorders, anxiety disorders, and dementia. This finding is consistent with prior studies which found mood and anxiety disorders were common mental health diagnoses in service members seeking mental health care and were common reasons for psychiatric disability (Felker et al., 2008; Gubata et al., 2013b; Milliken et al., 2007; Seal et al., 2007 and Wojcik et al., 2009). Mood and anxiety disorders are also the most common psychiatric disorder types in the general U.S. adult population (Reeves et al., 2011). TBI was also more prevalent in Army and Marine Corps personnel with psychiatric disorders, consistent with prior research indicating mild TBI, or concussion, is associated with psychiatric disorders in service members (Booth-Kewley et al., 2013; Carlson et al., 2010 and Hoge et al., 2008). Further examination of dementia, seen in 15–30% of those evaluated for a non-PTSD psychiatric disability, revealed that the vast majority of dementia in these service members was related to brain trauma (results not shown). Musculoskeletal conditions, particularly spinal disease, arthritis and limitation of motion of joint, are the most common conditions present in Army and Marine Corps personnel evaluated for disability (Gubata et al., 2013b); thus, these conditions were expected to be common among both the non-PTSD group and the All Other group. Identification of the most common psychiatric disorders and comorbidities in this population could be applied by policy makers and health practitioners in improving screening for non-PTSD psychiatric disorders, for example additional psychiatric health screenings in those diagnosed with TBI. In addition, future research on dementia in the military disability population may help in identifying a relationship between psychiatric disorders, TBI, and dementia.

Strengths of this study include the large study population and comprehensive data capture that includes demographic and service-related characteristics spanning the entire study period.

However, several limitations should be considered in interpreting these results. Psychosocial and occupational data as well as indicators for drug and alcohol abuse were not available for this study. Recent research has found psychosocial factors and occupational stressors, including low satisfaction with leadership, lack of social support, and longer than expected deployment length are predictors of psychiatric disorders in military personnel (Booth-Kewley et al., 2013 and Buckman et al., 2011). Further, an individual was categorized as deployed if deployed at any time during the study period and therefore a temporal relationship between deployment and onset of the psychiatric disorder could not be assessed. These results may not be generalizable to the civilian population since this population was largely comprised of young adult white males whom were pre-screened for psychiatric disorders prior to joining the military. In addition, this study identified psychiatric disorders using the VASRD, which was developed to assign compensation based on occupational impairment, and are not clinical diagnoses. However, previous studies found general VASRD condition categories assigned during disability evaluation were often consistent with primary *International Classification of Diseases, Ninth Revision* (ICD-9) condition categories assigned during hospitalizations occurring prior to disability evaluation (Bell et al., 2008b; Hoge et al., 2005).

This study has shown that Army and Marine Corps personnel evaluated for a non-PTSD psychiatric disability have similar rates of disability retirement as those evaluated for PTSD, suggesting that non-PTSD psychiatric disorders often severely impair the military readiness of service members. Therefore, the results of this study may be of interest to both health care providers who serve military and veteran populations and researchers focused on psychiatric conditions as they highlight that the psychiatric disabilities affecting service members and veterans are not limited to PTSD. Additionally, veterans diagnosed with a psychiatric disorder were found to use significantly more VA non-psychiatric health care services than veterans without a psychiatric disorder (Cohen et al., 2010). Consequently, health practitioners at the VA and civilian health care facilities may experience an increase in veterans seeking both

psychiatric and non-psychiatric health care. Psychiatric disorders, not just PTSD, may continue to be a major health concern for the U.S. military and it is crucial continued policies, interventions and treatment programs are implemented to ensure health care needs of service members with psychiatric disorders are met.

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Conflict of interest statement

The authors have declared that there are no conflicts of interest. The views expressed are those of the authors and should not be construed to represent the positions of the Department of the Army or Department of Defense. All authors are employees of or contracted to the United States Army.

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