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Mental health treatment among soldiers with current mental disorders in the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)

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Abstract

A representative sample of 5,428 non-deployed Regular Army soldiers completed a self-administered questionnaire (SAQ) and consented to linking SAQ data with administrative records

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as part of the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). The SAQ included information about prevalence and treatment of mental disorders among respondents with current DSM-IV internalizing (anxiety, mood) and externalizing (disruptive behavior, substance) disorders. 21.3% of soldiers with any current disorder reported current treatment. Seven significant predictors of being in treatment rates were identified. Four of these 7 were indicators of psychopathology (bipolar disorder, panic disorder, PTSD, 8+ months duration of disorder). Two were socio-demographics (history of marriage, not being Non-Hispanic Black). The final predictor was history of deployment. Treatment rates varied between 4.7 and 71.5% depending on how many positive predictors the soldier had. The vast majority of soldiers had a low number of these predictors. These results document that most non-deployed soldiers with mental disorders are not in treatment and that untreated soldiers are not concentrated in a particular segment of the population that might be targeted for special outreach efforts. Analysis of modifiable barriers to treatment is needed to help strengthen outreach efforts.

Keywords

mental health; treatment; military; barriers

BACKGROUND

The US Army suicide rate doubled between 2004–2005 and 2008–2009 and reached an all-time high of 27.9/100,000 person-years in 2012.¹ In response, the Army implemented numerous programs, including mandatory suicide prevention training,² psychological resilience training,³ collaborative care to help primary care providers recognize and treat common mental disorders,⁴ tele-health technologies,⁵ and embedding behavioral health providers in brigade combat teams to increase direct treatment access.⁶ Many of these responses were made in recognition that mental disorders are fundamental causes of suicide,⁷ that the prolonged military operations in Iraq and Afghanistan have led to high rates of mental disorders among soldiers,⁸ and evidence that many soldiers are reluctant to seek treatment for fear of stigmatization.^{9–11} Beginning in 2006, the Department of Defense (DoD) mandated enhanced post-deployment screening to identify soldiers returning from deployment who had behavioral health problems.^{12–14} However, validation studies find substantial under-reporting in post-deployment screening,^{13, 15} although the narrow focus of these surveys makes it impossible either to estimate the extent or correlates of untreated mental disorders.

The current report presents new data on the extent of untreated mental disorders among soldiers based on the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS; www.armystarrs.org), a large, multicomponent epidemiological-neurobiological study of risk and resilience factors for suicide among US Army soldiers.¹⁶ One component of Army STARRS is a de-identified survey carried out in a representative sample of non-deployed Regular Army soldiers exclusive of those in Basic Combat Training to assess prevalence and correlates of common mental disorders. A previous report based on this All Army Study (AAS) documented that soldiers have a substantially higher rate of current mental disorders than socio-demographically matched civilians.¹⁷ However, no treatment

information was presented in that report. The current report presents such data. We focus on patterns and basic socio-demographic and Army career predictors of current treatment among AAS respondents with current mental disorders.

METHODS

Sample

Data come from the Q2–4 2011 AAS. Each of these three quarterly AAS replicates consisted surveys carried out in a stratified (by Army Command-location) probability sample of units selected without replacement with probabilities proportional to authorized unit strength, excluding units of fewer than 30 soldiers (less than 2% of Army personnel) and those deployed to a combat theatre.. All targeted unit personnel were given a duty assignment to attend an informed consent presentation on study purposes, confidentiality, and the voluntary nature of participation before requesting written informed consent for a group self-administered questionnaire (SAQ). SAQ respondents were additionally asked to consent to link Army/DoD administrative records to their SAQs. Identifying information was collected from consenting respondents and kept in a separate secure file. These recruitment, consent, and data protection procedures were approved by the Human Subjects Committees of the Uniformed Services University of the Health Sciences for the Henry M. Jackson Foundation (the primary grantee) and the Institute for Social Research at the University of Michigan (the organization implementing Army STARRS surveys).

The 5,428 respondents considered here are the Regular Army Q2–4 2011 AAS respondents who completed the SAQ and provided consent for administrative data linkage. Activated Army Reserve and National Guard respondents were excluded due to small numbers. Although, as noted above, all unit members were given a duty assignment to attend the informed consent session, 23.5% were absent due to conflicting assignments (e.g., shift work assignments of military medical or police staff, previously-scheduled training assignments). However, 96.0% of attendees consented to the survey, 98.0% of consenters completed the survey, and 69.2% of completers consented to administrative record linkage. Most incomplete surveys were due to logistical complications (e.g., units either arriving late to survey sessions or having to leave early), although some respondents needed more than the allotted 90 minutes to complete the survey. The survey completion-successful-linkage *cooperation* rate was 65.1% (.96x.98x.692) and the *response* rate was 49.8% ([1-.235] x. 651) based on the American Association of Public Opinion Research (2009) COOP1 and RR1 calculation methods. Two weights were used to adjust data for discrepancies between sample and population.¹⁸ Weight 1 (W1) adjusted for discrepancies in survey responses between the survey completers with and without record linkage. Weight 2 (W2) adjusted for discrepancies between multivariate administrative record profiles of weighted (W1) survey completers with record linkage and the target population. Doubly-weighted (W1xW2) data were used in analyses. A more detailed description of AAS weighting is presented elsewhere.¹⁹

Measures

Diagnostic assessment—Respondents completed the Composite International Diagnostic Interview screening scales^{20, 21} and a modified version of the PTSD Checklist²² to assess selected 30-day DSM-IV mental disorders. Internalizing disorders included major depressive disorder (MDD), bipolar I–II or sub-threshold bipolar disorder, generalized anxiety disorder (GAD), panic disorder, and post-traumatic stress disorder (PTSD). Externalizing disorders included attention-deficit/hyperactivity disorder, intermittent explosive disorder, and substance use disorder (SUD; alcohol or drug abuse or dependence). The SUD assessment included both illicit drugs and misused prescription drugs (the latter defined as use “either without a doctor’s prescription, more than prescribed, or to get high, buzzed, or numbed out”) based on evidence that prescription drug misuse is considerably more common than illicit drug use in today’s Army.²³ All disorders other than MDD were assessed without DSM-IV diagnostic hierarchy or organic exclusion rules. The CIDI-SC and PCL both have good concordance with independent clinical diagnoses in the AAS.²¹ Duration of current disorder episodes was determined by asking respondents how many months in the past year they had problems with each current disorder.

Severity—Severity of health-related role impairment in the 30 days before interview was assessed with a revised Sheehan Disability Scale²⁴ that asked respondents how much problems with their physical health, mental health, or alcohol-drug use interfered with their functioning in each of four role domains on a 0–10 visual analogue scale labeled no interference (0), mild (1–3), moderate (4–6), severe (7–9), and very severe interference (10). The four role domains were: *home management*; *quality of work on duty*; *social life*; and *close personal relationships*. Severe role impairment was defined as a 7–10 rating in one or more domains.

Treatment—All AAS respondents who met criteria for any of the above disorders were asked whether at any time in the past 12 months they received “medication, psychological counseling, or spiritual counseling” for “problems with stress, emotions, behavior, family problems, or problems with alcohol or drugs” from each of 11 different kinds of treatment providers. A follow-up question asked “Are you still in treatment or have you stopped treatment?” The analyses reported here focused on respondents in *current* treatment versus all others (i.e., combining those previously in treatment earlier in the year with those who had no past-year treatment).

Consistent with civilian studies,^{25–27} reported treatment was grouped into four sectors. *Mental health specialty* treatment was defined as treatment by a mental health professional in any of three settings: a military facility or a civilian facility where the soldier was referred by the military health system; a Veterans Administration facility; or a civilian facility outside any care received from the military health system. A “mental health professional” was defined as “a psychiatrist, psychologist, drug or alcohol counselor, mental health counselor, social worker, or marriage and family counselor” seen either in one-on-one sessions, group sessions, or telephone sessions.” Treatment in the *general medical sector* was defined as treatment either by a military medic or a general medical doctor, nurse, or physician’s assistant in any of three settings: a military facility or civilian facility where the

soldier was referred by the military health system; a Veterans Administration facility; or a civilian facility outside any care received from the military health system. Treatment in the *human services sector* was defined as counseling by a military chaplain or civilian spiritual advisor. Treatment in the *self-help sector*, finally, was classified as participating in a self-help or support group either at a military facility or associated with the military or in civilian setting. A “self-help or support group” was defined as “a group for people with emotional, family, or substance problems run by the people themselves without a mental health professional running the group (emphasis in original).”

Socio-demographic and Army career variables—The socio-demographic variables considered here include respondent sex, race/ethnicity (Non-Hispanic Black, Non-Hispanic White, Hispanic, Other), and marital status (currently, previously, and never married). The Army career variables include rank (distinguishing lower-ranking [E1–E4] and higher-ranking [E5–E9] enlisted soldiers from officers [W1–W5/O1–O9]), number of deployments to a combat theatre (0, 1, 2, 3+), and Army Command assignment.

Analysis Procedures

AAS data were weighted to adjust for differences in probabilities of selection, differential non-response, and residual differences between sample and population on population characteristics obtained from Army and DoD administrative data sources. Treatment patterns were examined by computing proportions of soldiers with individual disorders in current treatment. Logistic regression²⁸ analysis was used to study socio-demographic and Army career correlates of treatment among respondents with one or more current disorders. Standard errors were estimated using the Taylor series method implemented in SUDAAN Version 8.0.1²⁹ to adjust for weighting and clustering. Multivariate significance tests were made with Wald χ^2 tests based on the Taylor series method. Statistical significance was evaluated using two-sided design-based tests and the .05 level of significance.

RESULTS

Treatment rates among soldiers with mental disorders

Thirty percent (30.1%) of soldiers with an internalizing disorder, 20.6% with an externalizing disorder, and 21.3% with any disorder reported current treatment. (Table 1) The treatment rate among soldiers with internalizing disorders was lowest among those with major depressive disorder (26.6%) and in the range 38.8–41.3% among those with other internalizing disorders. The treatment rate among soldiers with externalizing disorders was lowest among those with substance use disorder (15.4%), higher for intermittent explosive disorder (20.4%), and highest for ADHD (29.8%). A significant dose-response relationship was found between number of disorders and treatment, with 12.6% of soldiers having 1 disorder, 17.4% of those having 2 disorders, and 42.0% of those having 3+ disorders in treatment ($\chi^2_2=45.8$, $p<.001$). Broadly similar between-disorder differences in treatment patterns were found in each treatment sector.

Proportional treatment across service sectors

Three-fourths (76.4%) of soldiers in current treatment were treated in the mental health specialty sector, 56.2% in the general medical sector, 14.4% in the human services sector, and 13.9% in the self-help sector. (Table 2) The sum of these four proportions is 160%, which means that a sizable proportion of soldiers received treatment in multiple sectors. The mental health specialty sector was the dominant sector for each disorder. Proportional treatment in the specialty sector did not vary markedly for internalizing versus externalizing disorders (79.6% vs. 75.1%) but varied across individual disorders from a high of 90.6% for bipolar disorder to a low of 62.7% for substance use disorder. As with the mental health specialty sector, proportional treatment in the general medical sector was similar among soldiers with internalizing (59.7%) and externalizing (55.8%) disorders but varied across individual disorders from a high of 73.5% for panic disorder to a low of 54.1% for substance use disorder. The same general pattern held in the human services and self-help sectors, with comparable proportions of treatment of internalizing and externalizing disorders (13.8% vs. 15.0% in the human services sector; 13.2% vs. 13.6% in the self-help sector) but more substantial variation at the disorder level (from a high of 18.2% for intermittent explosive disorder to a low of 8.7% for ADHD in the human services sector; from a high of 27.6% for bipolar disorder to a low of 12.1% for ADHD in the self-help sector).

Effects of disorder duration

Two-thirds (64.7%) of soldiers with current disorders reported that at least one of their disorders had a duration of at least 8 months. (Table 3) This proportion increased with number of disorders (from 47.2% for soldiers with 1 disorder to 95.0% for soldiers with 3+ disorders). Consistently significant monotonic associations were found between probability of treatment and disorder duration, from a high treatment rate of 26.4% among soldiers with a disorder of long duration (8+ months) to a low of 10.7% among soldiers with a disorder of short duration (1–4 months ($\chi^2_2=24.8$, $p<.001$)). (Table 3) Similar patterns were found separately for internalizing and externalizing disorders, with treatment rates by duration in the range 15.5–38.8-% ($\chi^2_2=30.8$, $p<.001$) for internalizing and 13.1–26.6% ($\chi^2_2=24.7$, $p<.001$) for externalizing. A dose-response relationship between treatment and number of disorders continued to exist after adjusting for duration, leading to treatment rates ranging from a high of 42.8% among soldiers with 3+ disorders and long duration to a low of 9.0% among soldiers with 1 disorder and short duration.

Effects of severity of role impairment

Consistently positive associations were found across disorders between current severe role impairment and current treatment. Among all soldiers with current disorders, 32.0% of those with severe role impairment were in treatment compared to 16.4% of those without severe role impairment ($\chi^2_1=28.1$, $p<.001$). (Table 4) Comparable patterns were found among soldiers with internalizing (37.0% vs. 25.2% in treatment; $\chi^2_1=7.7$, $p=.005$) and externalizing (33.0% vs. 15.0% in treatment; $\chi^2_1=26.3$, $p<.001$) disorders. The dose-response relationship between number of disorders and treatment persisted both in the presence and absence of severe role impairment, although the relationship was weaker among soldiers with severe role impairment. Among soldiers with exactly 1 disorder, 21.3%

of those who reported severe role impairment were in treatment compared to 11.0% of those without severe role impairment ($\chi^2_1=6.7$, $p=.001$). As the number of disorders increased, the rates of treatment among those with versus without severe role impairment converged (21.0% vs. 15.6% among soldiers with 2 disorders, $\chi^2_1=.7$, $p=.40$; 43.5% vs 40.1% among soldiers with 3+ disorders, $\chi^2_1=.7$, $p=.42$).

Socio-demographic and Army career predictors of treatment

After controlling type, duration, and severity of disorders, treatment was significantly more likely among currently or previously married than never married soldiers and among those with a history of 1–2 deployments than the never deployed. (Table 5) Odds-ratios were 2.0–2.4 in the total sample and similar in separate subsamples of soldiers with internalizing (OR=2.3–3.1) and externalizing (OR=2.1–2.2) disorders. Non-Hispanic Blacks were significantly less likely to be in treatment than Non-Hispanic Whites, although not among soldiers with externalizing disorders. Treatment was unrelated to soldier gender, rank, and command. Three internalizing disorders – PTSD, panic disorder, and bipolar disorder –were associated with elevated odds of treatment (OR=1.7–5.5) in the model that included socio-demographic and Army career predictors. Interestingly, these same three internalizing disorders were significant predictors of treatment among soldiers with externalizing disorders. Severity of role impairment was not a significant predictor of treatment when controlling for socio-demographics and type-duration of disorders.

A composite score to predict probability of treatment

We attempted to determine whether the predictors considered here can be used to define a relatively small segment of soldiers who account for a high proportion of untreated cases by creating a summary variable with a range between 0 and 7 that assigned one point to each of the significant predictors noted above (i.e., currently or previously married, history of deployment, diagnoses of bipolar disorder and panic disorder one point each, having any disorder with long duration, and giving two points for PTSD because of its higher odds-ratio than any of the other predictors). Not surprisingly, a strong dose-response relationship was found between scores on this variable and current treatment. (Table 6) The less obvious finding, though, is that the range of treatment rates was striking: from a high of 71.5% among soldiers with scores of 6–7 to a low of 4.7% among soldiers scores of 0–1. Only 7.7% of soldiers with current disorders had scores of 6–7 and the majority (63.1%) had scores of 0–3. One-fourth (25.7%) of soldiers in treatment came from those with scores of 6–7, while only 29.9% of soldiers in treatment came from those with scores of 0–3.

CONCLUSIONS

Four limitations are noteworthy. First, external validity of results was reduced by the exclusion of soldiers in BCT and deployed and by the 65.1% cooperation rate. The weighting used to correct for incomplete cooperation¹⁹ does not guarantee absence of sample bias. Second, smaller Commands, while represented, had small sample sizes, resulting in low power to detect treatment differences. Third, respondents might have under-reported mental disorders, although methodological studies show this bias to be reduced by using the confidential self-administration procedures used in the AAS³⁰ and no evidence of

under-reporting was found in blinded clinical reappraisal interviews.²¹ Fourth, independent corroborating evidence about treatment is not yet available, although such evidence will become available once AAS data are linked to administrative data. Methodological studies in civilian samples based on such comparisons suggest that self-reported treatment somewhat overestimate actual treatment.^{31, 32}

Within the context of these limitations, the finding of a 21.3% current treatment rate suggests that the vast majority of soldiers with current mental disorders are not currently in treatment. We did not examine how many of those currently not in treatment were in previous treatment but dropped out, but this will be the focus of a subsequent AAS analysis. It is impossible to compare our estimates of treatment rates with previous Army studies, as no previous studies assessed the same range of disorders as the AAS. Previous studies have been inconsistent in their conclusions about whether treatment patterns are high or low among soldiers compared to civilian rates. At one extreme, the DoD *Health Related Behaviors Among Active Duty Military Personnel* survey found that 21% of all the soldiers surveyed (not 21% of the soldiers with current mental disorders, but of *all* soldiers) reported receiving some type of treatment for mental health problems in the 12 months before the survey.³³ A similar conclusion was reached in a recent study of mental disorder treatment in the Canadian military.³⁴ Other research, though, suggests that the current treatment rate is quite low in the US Army. For example, a recent follow-up study of soldiers who screened positive for mental health problems after returning from combat deployment found that only 13% received any treatment for these problems in the subsequent year.³⁵

None of these studies, though, assessed *continuity* of treatment. We know from civilian studies that many people drop out of treatment of mental disorders³⁶ and that only a small proportion of patients receive adequate treatment because of this high dropout rate.³⁷ Our results are more akin to those civilian findings in that our focus on current treatment under-represents soldiers who made only a small number of treatment visits in the past year and then dropped out. As noted above, future analyses of these data will compare predictors of dropping out of treatment to predictors of never being in treatment.

Our finding that a higher proportion of soldiers with current internalizing (30.1%) are currently in treatment than those with externalizing (20.6%) disorders is consistent with civilian data.³⁸ This is most plausibly interpreted as due to externalizing disorders being associated with lower perceived need for treatment than internalizing disorders.^{39, 40} The comparatively high treatment rates associated with panic disorder, bipolar disorder, PTSD and GAD among the internalizing disorders might reflect higher levels of psychological distress associated with those disorders than the other internalizing disorders we considered. It is also possible that the symptoms of these disorders are more accepted by soldiers than those of other disorders as understandable consequences of military life and legitimate reasons for seeking treatment.⁴¹ Our findings that persistence and severity are related to treatment are also consistent with civilian studies.³⁷

Our findings that gender, rank, and Army Command are unrelated to current treatment when controlling for the other variables in the model are striking given that previous studies of treatment in military populations have found consistently that women and lower-ranking

personnel have elevated treatment rates.^{33, 34} It is noteworthy, though, that those studies used a past-year treatment time reference, did not assess the full range of disorders assessed in the AAS, and in most cases did not adjust for differences in disorder prevalence in examining gross associations of these predictors. At the same time, we found that race-ethnicity (only for soldiers with internalizing disorders), marital status, and deployment history are all significant predictors of current treatment even when controlling type of mental disorder. While other studies have not found a significant relationship between race/ethnicity and treatment, marital status has been shown to be a significant predictors of treatment in many previous studies,^{33, 34} perhaps reflecting the importance of spouses in facilitating professional help-seeking.

We also found that soldiers with mental disorders who deployed once or twice were significantly more likely to be in current treatment than those that never deployed. This association held up even when controlling for type, duration, and severity of disorders, indicating that the effect of deployment history is not due to greater need for treatment. The effect of *number* of deployments has not been highlighted in previous studies, although one previous study found a positive association between number of combat exposures and perceived need for treatment.⁴² Soldiers with multiple deployments presumably were exposed to more deployment-related stressors and, in recent cohorts, more post-deployment health screenings than those with only one deployment. In addition, the Army has worked hard to legitimize the notion that mental health check-ups after deployment are normative, possibly reducing the sense of stigma associated with treatment among the previously-deployed.

Analysis of our summary 0–7 count measure documented a wide range of variation in treatment rates based on multivariate predictor profiles. Only 3.6% of the severely impaired soldiers with scores of 0–1 were in current treatment compared to 73.6% of those with scores of 6–7. Importantly, the distribution of the count variable was skewed toward the low end of the range (63.1% of soldiers had scores of 0–1). This means that we cannot use the predictors considered here to define a relatively small segment of soldiers who represent the vast majority of untreated cases. It is conceivable that future research with more extensive predictors will achieve this goal, in which case special targeted outreach efforts could be focused on that small segment of the population. Indeed, investigation of this possibility will be a major aim of AAS analyses once the full sample is available. In the interim, the most promising line of investigation to address the problem of untreated mental disorders is likely to be to focus on modifiable barriers to initiating treatment and, separately, on barriers to staying in treatment (i.e., not dropping out of treatment) in epidemiological studies⁸ as well as in qualitative studies of pathways to care,⁴³ possibly with a focus on the joint effects of multiple barriers and variation in distributions of barriers across important segments of the population.

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Additional Contributions

The Army STARRS Team consists of Co-Principal Investigators: Robert J. Ursano, MD (Uniformed Services University of the Health Sciences) and Murray B. Stein, MD, MPH (University of California San Diego and VA San Diego Healthcare System) Site Principal Investigators: Steven Heeringa, PhD (University of Michigan) and Ronald C. Kessler, PhD (Harvard Medical School). National Institute of Mental Health (NIMH) collaborating scientists: Lisa J. Colpe, PhD, MPH and Michael Schoenbaum, PhD. Army liaisons/consultants: COL Steven Cersovsky, MD, MPH (USAPHC) and Kenneth Cox, MD, MPH (USAPHC). Other team members: Pablo A. Aliaga, MA (Uniformed Services University of the Health Sciences); COL David M. Benedek, MD (Uniformed Services University of the Health Sciences); K. Nikki Benevides, MA (Uniformed Services University of the Health Sciences); Paul D. Bliese, PhD (University of South Carolina); Susan Borja, PhD (NIMH); Evelyn J. Bromet, PhD (Stony Brook University School of Medicine); Gregory G. Brown, PhD (University of California San Diego); Christina Buckley, BA (Uniformed Services University of the Health Sciences); Laura Campbell-Sills, PhD (University of California San Diego); Catherine L. Dempsey, PhD, MPH (Uniformed Services University of the Health Sciences); Carol S. Fullerton, PhD (Uniformed Services University of the Health Sciences); Nancy Gebler, MA (University of Michigan); Robert K. Gifford, PhD (Uniformed Services University of the Health Sciences); Stephen E. Gilman, ScD (Harvard School of Public Health); Marjan G. Holloway, PhD (Uniformed Services University of the Health Sciences); Paul E. Hurwitz, MPH (Uniformed Services University of the Health Sciences); Sonia Jain, PhD (University of California San Diego); Tzu-Cheg Kao, PhD (Uniformed Services University of the Health Sciences); Karestan C. Koenen, PhD (Columbia University); Lisa Lewandowski-Romps, PhD (University of Michigan); Holly Herberman Mash, PhD (Uniformed Services University of the Health Sciences); James E. McCarroll, PhD, MPH (Uniformed Services University of the Health Sciences); James A. Naifeh, PhD (Uniformed Services University of the Health Sciences); Tsz Hin Hinz Ng, MPH (Uniformed Services University of the Health Sciences); Matthew K. Nock, PhD (Harvard University); Rema Raman, PhD (University of California San Diego); Holly J. Ramsawh, PhD (Uniformed Services University of the Health Sciences); Anthony Joseph Rosellini, PhD (Harvard Medical School); Nancy A. Sampson, BA (Harvard Medical School); LCDR Patcho Santiago, MD, MPH (Uniformed Services University of the Health Sciences); Michaelle Scanlon, MBA (NIMH); Jordan W. Smoller, MD, ScD (Harvard Medical School); Amy Street, PhD (Boston University School of Medicine); Michael L. Thomas, PhD (University of California San Diego); Patti L. Vegella, MS, MA (Uniformed Services University of the Health Sciences); Leming Wang, MS (Uniformed Services University of the Health Sciences); Christina L. Wassel, PhD (University of Pittsburgh); Simon Wessely, FMedSci

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Table 1

Prevalence of current mental health treatment by sector among soldiers with a 30-day DSM-IV mental disorder in the Army STARRS Q2–4 2011 All Army Study (AAS) (n = 1,521)

Mental disorders	n ¹	Type of current mental health treatment											
		Population prevalence		Any current treatment		Mental health specialty ⁴		General medical ⁵		Human services ⁶		Self-help ⁷	
		% ²	(se)	% ³	(se)	% ³	(se)	% ³	(se)	% ³	(se)	% ³	(se)
I. Internalizing disorders													
Major depressive disorder (MDD)	295	4.8	(0.4)	26.6	(2.0)	19.4	(1.6)	17.1	(2.0)	3.4	(1.2)	3.0	(1.0)
Bipolar disorder (BPD)	213	3.3	(0.4)	41.3	(3.9)	37.4	(3.7)	25.0	(2.9)	6.7	(1.6)	11.4	(1.9)
Generalized anxiety disorder (GAD)	351	5.7	(0.4)	38.8	(2.8)	31.2	(2.7)	22.9	(3.7)	5.8	(1.5)	5.3	(1.2)
Panic disorder (PD)	219	3.8	(0.3)	46.9	(5.1)	37.7	(5.8)	34.5	(5.2)	5.4	(1.7)	6.9	(2.1)
Post-traumatic stress disorder (PTSD)	498	8.6	(0.7)	39.1	(1.7)	30.7	(1.9)	22.7	(2.4)	5.5	(1.5)	5.9	(0.9)
Any internalizing disorder	901	15.0	(0.7)	30.1	(2.0)	23.9	(1.7)	18.0	(1.7)	4.2	(0.9)	4.0	(0.5)
II. Externalizing disorders													
Attention-deficit/hyperactivity disorder (ADHD)	381	7.0	(0.6)	29.8	(2.5)	24.8	(2.2)	17.0	(2.1)	2.6	(0.9)	3.6	(1.4)
Intermittent explosive disorder (IED)	753	11.2	(0.7)	20.4	(2.9)	15.6	(2.3)	11.5	(2.2)	3.7	(1.2)	3.3	(1.1)
Substance use disorder (SUD)	284	0.5	(0.4)	15.4	(1.8)	9.7	(2.1)	8.3	(1.3)	1.7	(1.0)	3.1	(1.2)
Any externalizing disorder	1,128	18.4	(0.8)	20.6	(2.2)	15.5	(1.8)	11.5	(1.4)	3.1	(0.8)	2.8	(0.7)
III. Total (internalizing and externalizing)													
Any of the above disorders	1,521	25.1	(0.8)	21.3	(1.8)	16.2	(1.4)	12.0	(1.1)	3.1	(0.6)	3.0	(0.5)
Number of disorders													
1	838	14.0	(0.8)	12.6	(2.8)	8.5	(2.2)	6.4	(1.4)	2.0	(0.6)	1.1	(0.5)
2	292	4.4	(0.4)	17.4	(3.0)	14.5	(2.6)	11.9	(2.5)	1.6	(0.4)	4.0	(1.5)
3+	391	6.7	(0.7)	42.0	(2.0)	33.7	(1.9)	23.5	(2.8)	6.2	(1.6)	6.3	(1.1)
χ^2				45.8*		40.3*		32.9*		9.8*		16.5*	

¹ Unweighted number of AAS respondents within each row.

² Population prevalence percentages are doubly-weighted (Weight 1 × Weight 2) to adjust for discrepancies between the sample and the target Army population. Weight 1 adjusts for discrepancies in survey responses among survey completers with and without administrative record linkage. Weight 2 adjusts for discrepancies between multivariate administrative record profiles of weighted survey completers with record linkage (Weight 1) and the target population.

³ Weighted row percentages denoting the proportion of AAS respondents within each row who are currently receiving each type of mental health treatment.

- ⁴ Mental health specialty defined as treatment by a psychiatrist, psychologist, drug or alcohol counselor, mental health counselor or social worker, or marriage and family counselor.
- ⁵ General medical defined as treatment either by a military medic or by a general medical doctor, nurse, or physician's assistant.
- ⁶ Human services defined as counseling by a military chaplain or by a civilian minister, priest, rabbi, or other spiritual advisor.
- ⁷ Self-help defined as participating in a self-help or support group (without a mental health professional running the group) either at a military facility or associated with the military, or in a civilian self-help or support group.

* Significant association between number of disorders and probability of treatment based on a .05-level two-sided test.

Proportions of cases treated in each treatment sector among soldiers with a 30-day DSM-IV mental disorder who are currently in treatment in the Army STARRS Q2–4 2011 All Army Study (AAS) (n = 324)

Table 2

Mental disorders	n ¹	Type of current mental health treatment							
		Specialty ³		General medical ⁴		Human services ⁵		Self-help ⁶	
		% ²	(se)	% ²	(se)	% ²	(se)	% ²	(se)
I. Internalizing disorders									
Major depressive disorder (MDD)	88	73.0	(4.7)	64.2	(5.7)	12.8	(3.8)	11.4	(3.4)
Bipolar disorder (BPD)	82	90.6	(2.4)	60.5	(3.5)	16.2	(3.5)	27.6	(3.6)
Generalized anxiety disorder (GAD)	138	80.5	(3.6)	59.1	(6.2)	15.0	(3.5)	13.6	(2.8)
Panic disorder (PD)	91	80.5	(4.5)	73.5	(5.2)	11.6	(3.0)	14.8	(3.8)
Post-traumatic stress disorder (PTSD)	183	78.5	(3.0)	58.1	(5.0)	14.0	(3.1)	15.0	(1.8)
Any internalizing disorder	261	79.6	(2.6)	59.7	(3.6)	13.8	(2.5)	13.2	(1.6)
II. Externalizing disorders									
Attention-deficit/hyperactivity disorder (ADHD)	119	83.2	(2.8)	57.0	(5.3)	8.7	(2.7)	12.1	(3.9)
Intermittent explosive disorder (IED)	150	76.6	(3.6)	56.2	(6.2)	18.2	(3.9)	16.2	(3.7)
Substance use disorder (SUD)	55	62.7	(6.8)	54.1	(5.6)	11.1	(5.7)	20.0	(7.2)
Any externalizing disorder	236	75.1	(2.7)	55.8	(4.3)	15.0	(3.0)	13.6	(2.6)
III. Total (internalizing and externalizing)									
Any of the above disorders	324	76.4	(2.1)	56.2	(3.5)	14.4	(2.2)	13.9	(1.7)
Number of disorders									
1	105	67.2	(3.1)	51.2	(5.4)	15.8	(4.0)	8.4	(2.0)
2	60	83.3	(3.3)	68.6	(7.9)	9.5	(2.1)	22.8	(4.2)
3+	159	80.3	(3.2)	56.0	(4.5)	14.9	(4.0)	14.9	(2.6)
χ^2		9.4*		2.7		1.0		4.8	

¹ Unweighted number of AAS respondents within each row who are currently receiving any mental health treatment.

² Weighted row percentages denoting the proportion of AAS respondents within each row who are currently receiving each type of mental health treatment.

³ Mental health specialty defined as treatment by a psychiatrist, psychologist, drug or alcohol counselor, mental health counselor or social worker, or marriage and family counselor.

⁴ General medical defined as treatment either by a military medic or by a general medical doctor, nurse, or physician's assistant.

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⁵ Human services defined as counseling by a military chaplain or by a civilian minister, priest, rabbi, or other spiritual advisor.

⁶ Self-help defined as participating in a self-help or support group (without a mental health professional running the group) either at a military facility or associated with the military, or in a civilian self-help or support group.

* Significant association between number of disorders and proportional treatment in the sector based on a .05-level two-sided test

Table 3

Prevalence of current mental health treatment by duration of disorder among soldiers with a 30-day DSM-IV mental disorder in the Army STARRS Q2-4 2011 All Army Study (AAS) (n = 1503)

Mental disorders	Duration of mental disorder												χ^2			
	8-12 months			5-7 months			1-4 months									
	n ¹	% ²	(se)	% ³	Any current treatment	(se)	% ²	(se)	% ³	Any current treatment	(se)	% ²	(se)	Any current treatment	(se)	
I. Internalizing disorders																
Major depressive disorder (MDD)	143	50.5	(5.2)	37.1	(3.1)	75	26.4	(2.9)	23.2	(7.5)	60	23.2	(4.0)	10.3	(1.4)	7.7*
Bipolar disorder (BPD)	33	21.0	(2.1)	49.2	(2.6)	45	17.4	(1.7)	29.8	(3.8)	120	61.6	(2.8)	41.5	(4.7)	3.1
Generalized anxiety disorder (GAD)	215	67.5	(4.0)	41.8	(2.7)	69	15.0	(3.0)	29.7	(4.1)	62	17.5	(2.7)	38.1	(9.7)	1.9
Panic disorder (PD)	91	43.3	(4.8)	61.9	(4.6)	57	26.5	(3.2)	47.9	(2.0)	67	30.2	(5.1)	22.5	(5.4)	21.2*
Post-traumatic stress disorder (PTSD)	143	40.5	(1.2)	47.7	(4.5)	81	17.4	(1.3)	39.4	(5.7)	170	42.1	(2.0)	21.1	(4.1)	15.6*
Any internalizing disorder	512	59.3	(2.2)	38.8	(2.8)	188	19.9	(1.8)	21.0	(3.6)	182	20.8	(1.8)	15.5	(2.9)	30.8*
II. Externalizing disorders																
Attention-deficit/hyperactivity disorder (ADHD)	381	100.0	–	29.8	(2.5)	–	–	–	–	–	–	–	–	–	–	–
Intermittent explosive disorder (IED)	261	38.6	(2.0)	23.7	(5.1)	155	19.6	(1.8)	19.6	(3.1)	316	41.8	(2.5)	18.1	(4.3)	1.1
Substance use disorder (SUD)	55	16.8	(1.8)	30.4	(5.3)	46	20.2	(3.2)	12.7	(1.0)	165	63.0	(4.0)	13.7	(2.1)	3.4
Any externalizing disorder	612	60.1	(2.4)	26.6	(2.7)	143	10.3	(1.1)	11.7	(1.7)	347	29.5	(1.8)	13.1	(2.6)	24.7*
III. Total (internalizing and externalizing)																
Any of the above disorders	921	64.7	(2.3)	26.4	(2.3)	238	12.5	(1.3)	16.4	(1.9)	344	22.8	(1.5)	10.7	(2.8)	24.8*
Number of disorders																
1	354	47.2	(2.5)	15.3	(4.2)	168	17.3	(1.5)	14.8	(1.9)	298	35.5	(2.6)	9.0	(3.0)	4.0*
2	205	72.6	(1.7)	16.6	(2.6)	48	10.5	(1.8)	22.7	(4.9)	39	16.9	(1.7)	17.6	(8.2)	0.6
3+	362	95.0	(1.5)	42.8	(1.9)	22	4.1	(1.4)	19.3	(1.9)	7	1.0	(0.5)	61.1	–	6.1*

¹ Unweighted number of AAS respondents within each cell corresponding to the row heading and specified duration of disorder. 18 respondents did not report duration of disorder and are omitted from the analysis. Consequently, the sums of the three n's in each row do not match all n's reported in Table 1 under I. Internalizing disorders: MDD (n = 278 of 295), BPD (198 of 213), GAD (346 of 351), PD (215 of 219), PTSD (394 of 498), any internalizing disorder (882 of 901); II. Externalizing disorders: ADHD (381 of 381), IED (732 of 753), SUD (266 of 284), any externalizing disorder (1,102 of 1,128); and III. Total (internalizing and externalizing): any disorder (1,503 of 1,521), 1 disorder (820 of 838), 2 disorders (292 of 292), 3+ disorders (391 of 391).

² Weighted row percentages denoting the proportion of AAS respondents within each row reporting a disorder of the specified duration.

Weighted *row* percentages denoting the proportion of AAS respondents within each row and specified duration of disorder who are currently receiving any type of mental health treatment.

* Significant association between duration of disorder and probability of treatment based on a .05-level two-sided test.

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Table 4
Current mental health treatment by severity of role impairment among soldiers with a 30-day DSM-IV mental disorder in the Army STARRS Q2–4 2011 All Army Study (AAS) (n = 1521)

Mental disorders	Severity of mental disorder						χ^2_1				
	Severe role impairment			Not severe							
	n ¹	% ²	(se)	n ¹	% ²	(se)	% ³	(se)	% ³	(se)	
I. Internalizing disorders											
Major depressive disorder (MDD)	180	61.0	(4.4)	29.2	(3.3)	115	39.0	(4.4)	22.6	(3.4)	1.1
Bipolar disorder (BPD)	123	54.6	(3.9)	46.9	(5.1)	90	54.4	(3.9)	34.6	(3.1)	5.6*
Generalized anxiety disorder (GAD)	218	58.4	(3.5)	43.8	(4.7)	133	41.6	(3.5)	31.8	(5.0)	2.2
Panic disorder (PD)	107	48.7	(5.1)	59.4	(7.1)	112	51.3	(5.1)	35.1	(2.6)	5.7*
Post-traumatic stress disorder (PTSD)	213	39.3	(2.7)	52.0	(3.3)	285	60.7	(2.7)	30.7	(3.3)	12.4*
Any internalizing disorder	394	41.5	(2.9)	37.0	(2.9)	507	58.5	(2.9)	25.2	(2.6)	7.7*
II. Externalizing disorders											
Attention-deficit/hyperactivity disorder (ADHD)	196	46.3	(3.3)	38.8	(4.1)	185	53.7	(3.3)	22.1	(3.6)	7.5*
Intermittent explosive disorder (IED)	232	27.0	(3.2)	33.7	(4.9)	521	73.0	(3.2)	15.5	(2.8)	19.6*
Substance use disorder (SUD)	117	35.4	(2.6)	18.1	(2.6)	167	64.6	(2.6)	14.0	(2.6)	0.9
Any externalizing disorder	384	31.2	(2.1)	33.0	(3.0)	744	68.7	(2.1)	15.0	(2.4)	26.3*
III. Total (internalizing and externalizing)											
Any of the above disorders	517	31.4	(2.2)	32.0	(2.6)	1,004	68.6	(2.2)	16.4	(2.0)	28.1*
Number of disorders											
1	180	18.6	(1.8)	21.3	(6.4)	658	81.4	(1.8)	11.0	(2.1)	6.7*
2	102	33.4	(4.0)	21.0	(3.6)	190	66.6	(4.0)	15.6	(3.4)	.7
3+	235	57.0	(3.5)	43.5	(3.1)	156	43.0	(3.5)	40.1	(2.3)	.7

¹ Unweighted number of AAS respondents within each cell corresponding to the row heading and specified severity of disorder.

² Weighted row percentages denoting the proportion of AAS respondents within each row reporting the specified severity of disorder.

³ Weighted row percentages denoting the proportion of AAS respondents within each row and specified severity of disorder who are currently receiving any type of mental health treatment.

* Significant association between severity of role impairment and probability of treatment based on a .05-level two-sided test.

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Table 5

Associations of socio-demographic, Army career, and mental disorder characteristics with current treatment among soldiers with a 30-day DSM-IV disorder in the Army STARRS Q2-4 2011 All Army Study (AAS) (n = 1,503)

	<u>Any Disorder (n = 1,503)</u>		<u>Internalizing (n = 882)</u>		<u>Externalizing (n = 1,102)</u>		<u>Any Disorder controlling for Positive Predictors (n = 1,503)</u>	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
I. Socio-demographic characteristics								
a. Gender								
Male	0.6	(0.3-1.4)	0.7	(0.3-1.8)	0.5	(0.2-1.0)	0.6	(0.3-1.2)
Female	1.0	-	1.0	-	1.0	-	1.0	-
χ^2_1	1.2		0.5		3.5		1.8	
b. Race/Ethnicity								
Non-Hispanic White	1.0	-	1.0	-	1.0	-	1.0	-
Non-Hispanic Black	0.5*	(0.3-1.0)	0.4*	(0.2-0.8)	0.4*	(0.2-0.9)	0.7	(0.4-1.3)
Hispanic	1.2	(0.7-1.9)	1.0	(0.6-1.8)	1.3	(0.7-2.4)	1.1	(0.7-1.8)
Other	0.8	(0.4-1.7)	0.8	(0.4-1.9)	0.7	(0.3-1.8)	0.8	(0.4-1.6)
χ^2_3	6.1		7.8*		7.7		3.1	
c. Marital status								
Currently married	2.0*	(1.4-2.8)	2.3*	(1.7-3.0)	2.2*	(1.2-4.0)	1.3	(0.9-1.9)
Previously married	2.4*	(1.3-4.5)	3.1*	(1.6-5.7)	2.2	(0.8-5.7)	1.5	(0.7-3.4)
Never married	1.0	-	1.0	-	1.0	-	1.0	-
χ^2_2	19.0*		39.7*		6.8*		2.0	
II. Army career characteristics								
a. Rank								
Lower-ranking enlisted (E1-E4)	1.1	(0.4-3.2)	1.3	(0.3-6.2)	1.0	(0.4-2.0)	1.1	(0.4-3.1)
Higher-ranking enlisted (E5-E9)	0.9	(0.3-2.5)	0.8	(0.2-3.4)	1.2	(0.6-2.6)	0.9	(0.3-2.5)
Officer (W1-5/O1-9)	1.0	-	1.0	-	1.0	-	1.0	-
χ^2_2	1.2		4.7		0.9		1.0	
b. Number of deployments								
0	1.0	-	1.0	-	1.0	-	1.0	-
1	2.1*	(1.4-3.1)	2.3*	(1.4-3.5)	2.1*	(1.1-4.1)	1.4	(0.9-2.2)

	Any Disorder (n = 1,503)			Internalizing (n = 882)			Externalizing (n = 1,102)			Any Disorder controlling for Positive Predictors (n = 1,503)		
	OR	(95% CI)		OR	(95% CI)		OR	(95% CI)		OR	(95% CI)	
2	2.0*	(1.1–3.7)	2.4*	1.6	(0.8–3.0)	1.5	1.8	(0.8–4.1)	1.4	1.4	(0.8–2.4)	
3+	1.5	(0.8–3.0)	1.9	1.9	(0.8–4.8)	1.2	1.2	(0.5–2.6)	1.1	1.1	(0.6–2.0)	
χ^2_3	14.3*		13.2*	7.9*		7.9*			2.7			
c. Command												
Forces Command (FORSCOM)	2.0	(1.0–4.2)	1.6	1.6	(0.8–3.0)	1.5	1.8	(0.6–4.2)	1.8	1.8	(0.7–5.1)	
Area Commands ¹	1.0	–	1.0	1.0	–	1.0	1.0	–	1.0	1.0	–	
Special Operations Command (USASOC)	3.3	(0.6–17.8)	4.1	4.1	(0.8–20.8)	1.6	2.6	(0.3–10.5)	2.6	2.6	(0.4–16.5)	
Medical Command (MEDCOM)	2.4	(0.8–6.8)	2.1	2.1	(0.7–5.7)	1.6	2.3	(0.5–4.9)	2.3	2.3	(0.7–7.7)	
Training and Doctrine Command (TRADOC)	1.2	(0.6–2.2)	0.9	0.9	(0.5–1.9)	0.7	1.0	(0.2–2.3)	1.0	1.0	(0.4–2.5)	
All other Commands ²	1.4	(0.4–4.5)	1.6	1.6	(0.5–5.5)	0.6	1.4	(0.1–2.5)	1.4	1.4	(0.3–5.6)	
χ^2_5	9.6		7.1	6.7		6.7	8.4		8.4			
III. Mental disorder characteristics												
a. Internalizing disorders												
Major depressive disorder (MDD)	1.2	(0.8–1.8)	1.1	1.1	(0.7–1.9)	1.5	1.2	(0.9–2.5)	1.2	1.2	(0.8–1.8)	
Bipolar disorder (BPD)	1.8*	(1.1–2.8)	1.7*	1.7*	(1.0–2.7)	1.9*	1.1	(1.0–3.3)	1.1	1.1	(0.6–1.9)	
Generalized anxiety disorder (GAD)	1.1	(0.7–1.8)	1.0	1.0	(0.6–1.8)	1.6	1.2	(0.8–3.1)	1.2	1.2	(0.7–2.2)	
Panic disorder (PD)	2.4*	(1.3–4.4)	2.2*	2.2*	(1.2–4.0)	2.6*	1.4	(1.5–4.5)	1.4	1.4	(0.7–2.8)	
Post-traumatic stress disorder (PTSD)	3.6*	(2.4–5.5)	3.3*	3.3*	(1.9–5.7)	5.5*	1.6	(3.0–9.9)	1.6	1.6	(0.6–3.8)	
χ^2_5	51.0*		22.4*	55.9*		55.9*	7.5		7.5			
b. Externalizing disorders												
Attention-deficit/hyperactivity disorder (ADHD)	1.1	(0.7–1.7)	1.4	1.4	(0.9–2.1)	0.7	0.9	(0.4–1.5)	0.9	0.9	(0.6–1.4)	
Intermittent explosive disorder (IED)	1.1	(0.7–1.6)	1.1	1.1	(0.7–1.6)	0.6	1.1	(0.3–1.3)	1.1	1.1	(0.7–1.5)	
Substance use disorder	0.8	(0.5–1.2)	0.6	0.6	(0.3–1.2)	0.6	0.8	(0.4–1.0)	0.8	0.8	(0.5–1.2)	
χ^2_3	1.5		4.2	5.7		5.7	1.7		1.7			
c. Duration of disorder												
8–12 months	2.3*	(1.4–3.9)	2.4*	2.4*	(1.4–4.2)	1.1	1.6	(0.6–2.1)	1.6	1.6	(0.9–2.8)	
5–7 months	1.2	(0.7–2.0)	1.4	1.4	(0.8–2.4)	0.8	1.3	(0.3–1.9)	1.3	1.3	(0.7–2.4)	
1–4 months	1.0	–	1.0	1.0	–	1.0	1.0	–	1.0	1.0	–	

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	Any Disorder (n = 1,503)		Internalizing (n = 882)		Externalizing (n = 1,102)		Any Disorder controlling for Positive Predictors (n = 1,503)	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
χ^2_2	16.2*		9.7*		1.2		4.0	
d. Severity of disorder								
Severe role impairment	1.4	(1.0–2.1)	1.4	(0.9–2.2)	1.3	(0.8–1.9)	1.4	(1.0–2.1)
Not severe	1.0	–	1.0	–	1.0	–	1.0	–
χ^2_1	3.2		2.2		1.1		3.7	
IV. Count of positive predictors								
6–7								
4–5							13.7	(1.1–170.3)
2–3							3.9	(0.7–18.7)
0–1							1.8	(0.6–4.8)
χ^2_4							1.0	–
								5.6

¹ Area Commands include Africa (USARAF), Central (USARCENT), North (USARNORTH), South (USARSO), Europe (USAREUR), and Pacific (USARPAC).

² Other Commands include Materials Command (AMC), all other Service Component Commands (ASCC), and all other Direct Reporting Units (DRU). See <http://www.army.mil/info/organization/> for a complete description of the U.S. Army Command Structure.

* Significant at the .05 level, two-sided test.

Table 6

Distribution of positive predictors of treatment by severity of role impairment among soldiers with a 30-day DSM-IV mental disorder in the Army STARRS Q2–4 2011 All Army Study (AAS) (n = 1,521)

Count of positive predictors ¹	Severe role impairment (n = 517)			Not severe role impairment (n = 1,004)			Total (n = 1,521)		
	% of sample	Prevalence of treatment in sub-sample	Proportion of all treatment in sub-sample	% of sample	Prevalence of treatment in sub-sample	Proportion of all treatment in sub-sample	% of sample	Prevalence of treatment in sub-sample	Proportion of all treatment in sub-sample
	(se)	(se)	(se)	(se)	(se)	(se)	(se)	(se)	(se)
6–7	15.3	73.6	35.1	4.2	68.0	17.3	7.7	71.5	25.7
4–5	32.1	37.7	37.8	28.0	29.3	50.2	29.3	32.2	44.3
2–3	42.3	19.6	25.9	55.0	8.5	28.5	51.0	11.4	27.2
0–1	10.4	3.6	1.2	12.8	5.1	4.0	12.1	4.7	2.7
Total	100.0	32.0	100.0	100.0	16.4	100.0	100.0	21.3	100.0

¹The count includes predictors found to be significant in the multivariate logistic regression reported in Table 4: currently or previously married (1 point); not Non-Hispanic Black (1 point); history of deployment (1 point); diagnoses of bipolar disorder (1 point), panic disorder (1 point), and PTSD (2 points, due to its higher odds-ratio than any other predictor); and having a disorder with long duration (1 point).