Brief Report

SUBSYNDROMAL POSTTRAUMATIC STRESS DISORDER IS ASSOCIATED WITH HEALTH AND PSYCHOSOCIAL DIFFICULTIES IN VETERANS OF OPERATIONS ENDURING FREEDOM AND IRAQI FREEDOM

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Background: *This study examined health and psychosocial correlates of subsyndromal/partial posttraumatic stress disorder (PTSD) and full PTSD in veterans of Operations Enduring Freedom and Iraqi Freedom (OEF/OIF).* **Methods:** *Five hundred and fifty-seven OEF/OIF veterans in Connecticut completed measures of PTSD and health and psychosocial functioning.* **Results:** *A total 22.3% of the sample met screening criteria for partial PTSD and 21.5% for full PTSD. Veterans with partial PTSD reported an intermediate level of impairment (e.g., health ratings, work problems, relationship problems) relative to veterans without PTSD and veterans with full PTSD.* **Conclusions:** *These results suggest that subsyndromal/partial PTSD is associated with significant health and psychosocial difficulties and underscore the importance of assessing for partial PTSD in OEF/OIF veterans. Depression and Anxiety 26:739–744, 2009.*

Key words: *posttraumatic stress disorder; partial PTSD; veterans; psychosocial; depression*

INTRODUCTION

Recent mental-health surveys of Operations Enduring Freedom and Operations Iraqi Freedom (OEF/OIF) veterans have found high rates of posttraumatic stress disorder (PTSD) and related conditions.[1–3] Although it is well known that PTSD is associated with impairments in general health, and psychosocial functioning and quality of life in veteran populations,[4] trauma survivors with subthreshold or partial PTSD (i.e., symptoms below threshold for *Diagnostic and Statistical Manual* [DSM-IV[5]]-based diagnosis of PTSD) may also experience impairment in general health, and social, work, interpersonal, and physical functioning.[6]

Although partial PTSD is not a formal diagnosis, it has been used in research to characterize survivors who report clinically significant trauma-related symptoms but who do not meet full diagnostic criteria for PTSD.[7] Partial PTSD is identified when an individual meets criteria for cluster B (re-experiencing) and criteria for either cluster C (avoidance) or cluster D (arousal), or if they met criteria for cluster B and endorsed at least

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one symptom from cluster C and one from cluster D.[6,8] Studies of partial PTSD in veterans,[6,8–12] ambulance workers,[13] and survivors of toxic chemical exposures, disasters, and other traumas[14–22] have found intermediate levels of psychosocial impairment and quality of life relative to individuals without PTSD and those with full/threshold PTSD.

To date, only one study has examined correlates of subthreshold/partial PTSD in OEF/OIF veterans.[23] This study found that partial PTSD was associated with greater anger and hostility than non-PTSD, but less anger and hostility compared to full PTSD in a sample of 108 OEF/OIF veterans. Both the partial and full PTSD groups endorsed more aggression than the non-PTSD group, but the differences between the partial and full PTSD groups were not statistically significant. Although this study provides a preliminary understanding of some emotional correlates of partial PTSD, it is not clear whether these findings extend to health and psychosocial functioning. An examination of correlates of partial PTSD in OEF/OIF veterans is important, as this population may not be identified by recommended screening cut-offs even though they may have clinically significant problems and require resources and treatment. Thus, the purpose of this study was to examine self-reported health ratings and psychosocial difficulties associated with partial and full PTSD in a survey sample of predominantly older, reserve/National Guard OEF/OIF veterans. We hypothesized that veterans who met screening criteria for partial PTSD would report an intermediate level of health and psychosocial impairment relative to veterans with no PTSD and those with full PTSD.

METHOD

SAMPLE

Participants were drawn from the Connecticut OEF/OIF Veterans Needs Assessment Survey. Two waves of survey data were collected. The first wave of the survey was mailed in 07/2007. One thousand and fifty veterans who served between 01/01/2003 and 03/01/2007 were identified alphabetically from a review of copies of discharge papers (DD-214s) by the Connecticut Department of Veterans Affairs. To maintain confidentiality, surveys were addressed and mailed by the Connecticut Department of Veterans Affairs; they were returned to Central Connecticut State University. A reminder postcard was sent 1 week after the surveys were initially mailed. After 4 weeks, a second reminder was sent to all veterans who had not returned the survey. As of 09/24/2007, 229 completed surveys (22%) were returned; 10% were returned as undeliverable (no respondents returned their survey stated that they chose not to participate). A second wave of the survey (shorter than the first survey: 116 versus 205 questions) was mailed in 10/2007 to a new sample of 1,000 veterans who had served between 01/01/2003 and 03/01/2007; efforts were made to update mailing addresses on those returned as undeliverable using phone directories and a statewide voter registration list. As of 02/2008, 272 Wave I surveys and 285 Wave II surveys were returned for an overall return rate of 28.6%. Respondents were older than nonrespondents with respect to age (34.9 versus 31.3 years, $t(2,048) = 7.37$, $P<.001$); Wave I respondents were older than Wave II respondents (36.6 versus 33.4 years, $t(555) = 3.74$, $P<.001$), but did not differ on other demographics. Institutional review boards of Yale University, Central Connecticut State University, and the VA Connecticut Healthcare System approved the study.

ASSESSMENTS

The Posttraumatic Stress Disorder Checklist—Military Version (PCL-M[24]) is a 17-item self-report instrument based on DSM-IV criteria for PTSD. Probable full PTSD (hereafter "full PTSD") was identified by total PCL-M scores ≥ 50 and endorsement of each of three DSM-IV criteria for PTSD. Probable partial PTSD (hereafter "partial PTSD") was identified if a participant met criterion B and either the C or D criterion or if cluster B was met and at least one symptom from the C criterion and one symptom from the D criterion were endorsed.[6] Cronbach's α on PCL-M items was .96.

Demographic and general health assessment. A demographic questionnaire assessed age, sex, race/ethnicity, education, and marital status. This questionnaire also contained questions pertaining to self-reported general health ("How would you rate your overall health in the past month?" rated "Excellent," "Very Good," "Good," "Fair," and "Poor"; responses on this variable were combined to "Excellent/Very Good/Good" and "Fair/Poor" for analyses) and self-reported general health compared to before deployment ("Compared to your health *before* your last deployment, how would you rate your health now?" rated "Better," "Same," or "Worse").

Psychosocial Difficulties Scale (PDS). The PDS is a 23-item questionnaire developed by two of the authors (M. B. G., J. C. M.), which assesses psychosocial functioning in areas such as family and peer relationships (e.g., "have difficulty connecting emotionally with family and/or friends"), and work, school, and financial functioning (e.g., "have difficulty finding employment," "have difficulty paying bills," "have difficulty seeking employment because do not have discharge papers (DD-214s)."). Ratings on these items are "Not a concern," "A slight concern," "A moderate concern," and "A major concern N/A." Ratings of "moderate concern" or "major concern" were combined for analysis. Higher scores indicate greater psychosocial difficulties. In this sample, PDS scores correlated positively with measures of traumatic stress (PCL-M; $r = .65$, $P<.001$) and depressive symptoms (Patient Health Questionnaire—9 [PHQ-9[25]]; $r = .60$, $P<.001$). Cronbach's α on PDS items was .89.

DATA ANALYSIS

Nonnormally distributed data (e.g., PCL-M scores) were transformed using logarithmic base 10 transformations prior to analysis. Demographic variables were compared using univariate analyses of variance (ANOVAs) for continuous data and χ^2 tests for categorical data. Health variables and endorsement of psychosocial concerns on the PDS were compared using χ^2 and logistic regression analyses with demographic variables that differed by PTSD status entered as covariates. Scores on the PDS were compared using multivariate analysis of covariance (MANCOVA). When PTSD status was significantly associated with a dependent variable, subsequent post hoc tests were conducted to compare groups.

RESULTS

Mean time between return from deployment to OEF/OIF and survey completion was 26.9 months ($SEM = 0.7$), and did not differ by PTSD status ($F(2, 544) = 1.26$, $P = .29$). Three hundred and thirteen (56.2%) veterans did not meet screening criteria for partial or full PTSD, 124 (22.3%) met screening

criteria for partial PTSD, and 120 (21.5%) met screening criteria for full PTSD. Demographic variables by PTSD status are given in Table 1. Compared to the no PTSD group, the partial and full PTSD groups were younger, less likely to be in a relationship, and more likely to be active duty than National Guard/reserve; other variables did not differ by group. The partial and full PTSD groups did not differ demographically.

Table 2 shows health variables. In logistic regressions adjusting for age, relationship status, and duty type, odds of endorsing fair/poor health in the month prior to completing the survey and worse health postdeployment were significantly higher for both the partial and full PTSD groups compared to the no PTSD group; the partial and full PTSD groups did not differ.

Table 3 shows scores on the PDS. There was a "dose–response" association between PTSD level and total scores on the PDS, as well as on the family, work, financial, relationship, and school difficulties subscales, with the partial PTSD group reporting intermediate severity of difficulties relative to the no PTSD and full PTSD groups, and veterans with PTSD reporting more difficulties than veterans with no PTSD and partial PTSD. Compared to the no PTSD group, the partial PTSD group was more likely to report concern about problems with their spouse/partner, difficulty connecting emotionally with their family, being unhappy with their job, not getting along with their coworkers, being unsure about how to manage/invest money, relating better to veterans than civilians, civilian friends not understanding them, and not

TABLE 1. Demographic and characteristics by PTSD status

	No PTSD	Partial PTSD	Full PTSD	F or χ^2	P
N	313	124	120		
Age*	37.1 (0.5)[a,b]	31.9 (0.9)[a]	32.5 (0.9)[b]	17.88	<.001
Sex (% male)	86.6%	93.3%	91.5%	2.76	.25
Race/ethnicity				6.34	.39
White	84.0%	87.9%	78.3%		
Black	4.8%	4.8%	9.2%		
Hispanic	5.4%	4.8%	6.7%		
Other	5.8%	2.5%	5.8%		
Education				8.44	.08
High school	15.1%	15.3%	25.2%		
Some college/college graduate	72.8%	76.6%	66.4%		
Graduate school	12.2%	8.1%	8.4%		
Married/living w/partner*	64.4%[a,b]	46.8%[a]	54.2%[b]	12.39	.002
Service duty*				11.75	.003
Active duty	22.0%[a,b]	40.0%[a]	31.2%[b]		
Reserve/National Guard	77.4%	56.9%	67.5%		

Note: Values with the same superscript differ significantly, $P<.05$; *groups differ, $P<.01$. PTSD, posttraumatic stress disorder.

TABLE 2. Self-reported health variables by PTSD status

						Logistic regression	
	No PTSD	Partial PTSD	Full PTSD	χ^2	P	No PTSD versus partial PTSD	No PTSD versus full PTSD
N	313	124	120				
Self-reported health in past month				110.08	<.001		
Excellent/good	91.4%	70.7%	44.0%				
Fair/poor	8.6%[a,b]	29.3%[a,c]	56.0%[b,c]			OR = 4.91*, 95%CI = 2.55–9.44	OR = 13.63*, 95%CI = 7.25–25.60
Self-reported health after deployment				10.81	.004		
Better health	15.8%	11.7%	4.2%				
Worse health	84.2%[a]	88.3%[b]	95.8%[a,b]			OR = 2.53*, 95%CI = 1.09–5.86	OR = 3.87*, 95%CI = 1.45–10.35

Note: Values with the same superscript differ significantly, $P<.05$; *group differs relative to no PTSD control group. Logistic regression analyses adjusted for age, relationship status, and service duty type (active versus reserve/National Guard). PTSD, posttraumatic stress disorder.

TABLE 3. Psychosocial functioning variables by PTSD status ($N = 557$)

						Logistic regression			
						No PTSD versus partial PTSD		No PTSD versus PTSD	
	No PTSD	Partial PTSD	PTSD	F or χ^2	P	OR	95%CI	OR	95%CI
Psychosocial difficulties (total score)*	39.6 (0.9)[a,b]	45.6 (1.7)[a,c]	54.9 (1.2)[b,c]	54.8	<.001				
Family problems (total score)*	6.3 (0.1)[a,b]	7.3 (0.3)[a,c]	9.3 (0.2)[b,c]	78.3	<.001				
Spouse/partner and I have problems	13.0%[a]	21.5%[b]	40.1%[a,b]	47.2	<.001	2.59*	1.20–5.63	4.86*	2.85–8.29
Problems with children	4.3%[a]	4.6%[b]	18.0%[a,b]	27.9	<.001	0.67	0.08–5.66	6.48*	2.80–15.00
Problems living with parents	4.6%[a,b]	10.8%[a]	18.0%[b]	23.4	<.001	1.44	0.48–4.32	3.71*	1.67–8.25
Can't connect emotionally with family	8.9%[a,b]	27.7%[a,c]	60.5%[b,c]	150.3	<.001	3.49*	1.59–7.65	15.37*	8.70–27.18
Problems arranging daycare	3.4%	3.1%	5.4%	1.3	.52	0.00	0.00–0.00	3.84*	1.05–13.99
Would like help with family problems	10.3%[a]	15.6%	29.9%[a]	17.9	<.001	1.44	0.37–5.65	4.39*	2.04–9.43
Have sought help for family problems	13.3%[a]	21.6%	37.1%[a]	20.6	<.001	2.45	0.82–7.32	4.94*	2.37–10.29
Work problems (total score)*	11.1 (0.3)[a,b]	12.6 (0.6)[a,c]	15.5 (0.4)[b,c]	35.6	<.001				
Problem finding job	16.9%[a]	35.4%[a]	40.7%	35.5	<.001	1.47	0.72–2.99	2.31*	1.39–3.85
Unhappy with job	24.7%[a,b]	43.1%[a,c]	60.5%[b,c]	61.1	<.001	2.19*	1.15–4.16	3.43*	2.16–5.45
Don't get along with boss	12.3%[a]	16.9%[b]	30.5%[a,b]	24.6	<.001	1.33	0.56–3.16	2.59*	1.49–4.48
Don't get along with coworkers	5.5%[a,b]	16.9%[a]	24.1%[b]	36.2	<.001	3.57*	1.48–8.61	4.27*	2.20–8.30
Job not as satisfying as before	22.2%[a]	32.3%[b]	51.5%[a,b]	43.5	<.001	1.82	0.93–3.56	3.14*	1.96–5.02
Little chance for advancement	24.6%[a]	29.2%[b]	49.7%[a,b]	31.9	<.001	1.37	0.69–2.72	2.84*	1.79–4.53
Earning less than before	14.2%[a]	21.5%[b]	36.5%[a,b]	32.5	<.001	1.32	0.61–2.86	2.83*	1.67–4.79
Would like help with work problems	12.0%[a,b]	30.2%[a]	43.9%[b]	40.0	<.001	3.33*	1.31–8.43	5.67*	2.87–11.20
Have sought help for work problems	14.0%[a]	9.8%	34.3%[a]	20.2	<.001	0.45	0.10–2.10	3.40*	1.72–6.72
Financial problems (total score)*	4.9 (0.1)[a,b]	5.5 (0.2)[a,c]	6.4 (0.2)[b,c]	29.4					
Bills piled up while gone	10.5%[a]	13.8%[b]	25.7%[a,b]	19.9	<.001	0.77	0.25–2.36	2.79*	1.55–5.01
Facing bankruptcy, foreclosure, or repossession	0.6%[a]	3.1%	10.2%[a]	27.9	<.001	3.24	0.28–37.86	17.18*	3.71–79.45
Unsure how to manage/invest money	9.5%[a,b]	26.2%[a]	32.3%[b]	41.3	<.001	2.72*	1.24–5.98	3.69*	2.07–6.59
Can't get employment because no DD-214	0.6%	0.0%	1.8%	2.4	.30	0.00	0.00–0.00	2.17	0.34–14.00
Would like help with financial problems	11.6%[a,b]	22.7%[a]	32.8%[b]	19.6	<.001	1.42	0.52–3.93	3.14*	1.58–6.25
Have sought help for financial problems	6.5%[a]	7.0%	15.2%[a]	5.9	<.05	1.57	0.37–6.64	3.18*	1.22–8.25
Relationship problems (total score)*	5.2 (0.1)[a,b]	6.5 (0.3)[a,c]	8.4 (0.2)[b,c]	75.9	<.001				
Relate better to veterans than civilians	18.8%[a,b]	44.6%[a,c]	62.9%[b,c]	97.3	<.001	3.09*	1.59–5.99	6.22*	3.80–10.18
Civilian friends don't understand me	21.2%[a,b]	44.6%[a,c]	70.1%[b,c]	112.1	<.001	4.12*	2.15–7.89	8.34*	5.09–13.64
Don't share interests with civilian friends	16.0%[a,b]	30.8%[a,c]	61.1%[b,c]	104.4	<.001	2.25*	1.11–4.58	8.36*	5.05–13.85
Have sought help for relationship problems	3.8%[a,b]	13.6%[a]	26.7%[b]	85.8	<.001	4.24*	1.41–12.78	6.44*	2.84–14.63
Would like help for relationship problems	5.0%[a]	11.1%	28.7%[a]	35.0	<.001	2.33	0.64–8.44	7.15*	3.08–16.61
School problems (total score)*	6.9 (0.2)[b]	7.2 (0.4)[c]	9.3 (0.4)[b,c]	26.5	<.001				
Hard to navigate admissions and/or registration process	9.0%[a]	13.8%	21.6%[a]	15.2	<.001	1.28	0.53–3.10	2.00*	1.09–3.69
Hard to pay fees	19.4%[a]	29.2%	33.5%[a]	12.6	<.01	1.06	0.51–2.16	1.39	0.83–2.33
Hard to manage paperwork to get GI benefits	15.7%[a]	23.1%	35.9%[a]	25.6	<.001	1.38	0.66–2.89	2.34*	1.40–3.91
Don't fit in well with nonveteran students	5.9%[a,b]	15.4%[a,c]	32.9%[b,c]	63.0	<.001	1.73	0.68–4.39	5.43*	2.87–10.29
Had conflicts with instructors	3.1%[a]	7.7%	11.4%[a]	13.6	<.001	1.44	0.41–5.10	2.55*	1.04–6.26
Have sought help for school problems	10.9%	9.1%	19.8%	4.2	.12	0.78	0.19–3.11	1.73	0.75–3.98
Would like help for school problems	16.8%[a]	28.1%	39.6%[a]	15.5	<.001	2.05	0.77–5.47	2.59*	1.30–5.19

Note: Values with the same superscript differ significantly, $P < 0.05$. Multivariate analyses of the Psychosocial Difficulties Scale total and subscale scores and logistic regression analyses adjusted for age, relationship status, and service duty type (active versus reserve/National Guard). *Groups differ, $P < 0.05$. PTSD, posttraumatic stress disorder.

sharing interests with their civilian friends. They were also more likely to want help for work-related problems and to have sought help for relationship problems. Compared to the no PTSD group, the full PTSD group was more likely to report concern about all of the psychosocial areas assessed, except having difficulty seeking employment because they did not have DD-214s and having difficulty paying school fees. They were more likely to have sought and to want help for all of the functional domains assessed except for school-related problems. Compared to the partial PTSD group, the full PTSD group was more likely to report concern about connecting emotionally with family, arranging daycare, bills piling up while away, and not sharing interests with civilian friends; these groups did not differ with respect to whether they sought or wanted help for any of the psychosocial domains assessed.

DISCUSSION

This study extends the results of an earlier study[23] to suggest that partial PTSD is associated with health and psychosocial difficulties in OEF/OIF veterans. A "dose–response" relationship was noted between PTSD status and self-reported health and psychosocial difficulties. These findings are consistent with previous studies of veteran and civilian samples, which found that partial PTSD is associated with an intermediate level of impairment relative to no PTSD and full PTSD.[4,6,8,10–22] They also extend previous research on OEF/OIF veterans[1–3] to suggest that full PTSD is associated with health and psychosocial difficulties. Because partial PTSD is not a diagnostic classification and may not be routinely identified as part of PTSD screenings, clinicians may underestimate the magnitude of impairment associated with partial PTSD in OEF/OIF veterans, which may decrease mental-health treatment seeking in this population, negatively affect health and psychosocial functioning, and delay successful reintegration into civilian life.

This study had some methodological limitations. First, the survey response rate was relatively low, and thus generalizability of results may potentially be limited to predominantly older White reserve/National Guard soldiers. Nevertheless, demographic, deployment, and clinical characteristics of the sample surveyed in this study were generally comparable to those of a nationally representative sample of OEF/OIF veterans,[1] with the current survey sample consisting of older and predominantly White Army reserve/National Guard veterans. Second, because self-report screening instruments were used, exaggeration or minimization of symptoms and ratings of health and psychosocial functioning may bias results. More research is needed to examine the generalizability of these results in larger, more representative samples of OEF/OIF veterans using interview-based diagnostic instruments.

These limitations notwithstanding, results of this study have a number of clinical and public health implications. First, because full PTSD was associated with a broad range of difficulties, clinicians and public health officials should direct their attention and resources to more than PTSD alone. Problems related to finances, personal relationships, occupation/education, physical health, and co-morbid psychiatric disorders are of great concern and can be disabling for many veterans with PTSD.[1–3] Second, results of this study indicate that subsyndromal/partial PTSD is also associated with health and psychosocial difficulties, which suggests that this subpopulation of OEF/OIF veterans may also require resources and treatment. Third, veterans with both partial and full PTSD reported that they wanted help with problems related to psychosocial difficulties. This suggests that current screening and diagnostic criteria for PTSD may be too restrictive for the purposes of public health, resource allocation, clinical intervention, medicolegal claims, and personal well-being. More research is needed to examine the prevalence and health and psychosocial correlates of clinician-confirmed partial and full PTSD in other, more representative samples of OEF/OIF veterans, and to evaluate preventive and clinical interventions for these conditions in this population.

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