Psychiatry Research 206 (2013) 33–36

Contents lists available at SciVerse ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Impact of combat and non-military trauma exposure on symptom reduction following treatment for veterans with posttraumatic stress disorder

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ARTICLE INFO

Article history:
Received 5 April 2012
Received in revised form
4 July 2012
Accepted 20 September 2012

Keywords:
Veterans
PTSD
Trauma
Group treatment

ABSTRACT

Military veterans with posttraumatic stress disorder (PTSD) frequently report exposure to multiple other traumas in addition to their military experiences. This study aimed to examine the impact of exposure-related factors for military veterans with PTSD on recovery after participation in a group-based treatment program. Subjects included 1548 military veterans with PTSD participating in specialist veterans' PTSD programs across Australia. The study included measures of PTSD, depression, anxiety and alcohol use. Analyses of variance found higher combat exposure was associated with more severe PTSD at intake. No differences in PTSD intake severity were evident in those with additional non-military trauma. Severity of combat exposure did not affect treatment outcomes, although those with low combat exposure and additional non-military trauma (which included high rates of molestation) did report reduced symptom improvement. These findings have implications for considerations of optimal interventions for those with lower levels of combat exposure and additional non-military trauma.

1. Introduction

Posttraumatic stress disorder (PTSD) affects up to 30 percent of combat veterans (Richardson et al., 2010). The high prevalence rates are affected by a range of factors, particularly and perhaps most saliently, the level of exposure to combat (Ferrier-Auerbach et al., 2010; Hoge et al., 2004; Rona et al., 2009). Thus interventions for combat veterans are likely to focus primarily on the impact of military service on PTSD symptoms. However, veterans frequently report exposure to multiple other traumas experienced prior to combat and military service, with up to 90 percent of veterans reporting some exposure to non-military trauma, and with a significant proportion reporting such exposure prior to enlistment (Clancy et al., 2006; Dedert et al., 2009). This exposure to non-military trauma (NMT) increases the risk of PTSD developing following deployment. For example, Dedert and his colleagues found that veterans exposed to accident or disaster trauma or childhood physical assault were more than twice as likely to be diagnosed with PTSD than veterans without such exposure (Dedert et al., 2009), while Marines with two or more prior exposures to violence have been reported to be at three times the risk of developing PTSD (Phillips et al., 2010). Conversely, Dickstein et al. (2010) reported that a resilient symptom trajectory in the months following deployment was associated with lower levels of pre-military trauma.

The relationship between combat exposure, non-military trauma and PTSD, however, appears to be a complex one, with some studies indicating that some forms of non-military trauma, such as childhood trauma, are associated with more severe PTSD in veterans with lower levels of combat exposure than those with higher exposure (Owens et al., 2009; Stein et al., 2005). While research to date has focused on the development of the disorder, little research has investigated the influence of military and non-military trauma exposure in the recovery from PTSD following treatment. Therefore, this article seeks to examine the impact of exposure-related factors (both military and non-military) on recovery after participation in a group-based veteran PTSD treatment program. This research has the potential to inform clinical decision making and tailoring of programs to optimize outcomes.

2. Methods

2.1. Participants

Participants comprised 1548 male veterans attending a specialist veterans' PTSD program. On average, participants were aged 54.9 years on entry to the program (S.D.=8.68) and had 8.9 years of military service (S.D.=8.38). The majority of participants had served in Vietnam (92%), with the remainder reporting deployments such as the first Gulf War, East Timor, Somalia, Rwanda, Iraq and Afghanistan. A detailed description of the treatment program is provided by Creamer et al. (2006). PTSD diagnoses were confirmed using the Clinician

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http://dx.doi.org/10.1016/j.psychres.2012.09.037

Table 1
Number and percentage of veterans with low and high combat exposure endorsing non-military trauma items.

Trauma	Low combat exposure ($n=788$)	High combat exposure ($n=808$)	P
Life threatening accident	367 (47%)	345 (45%)	0.250
Fire/flood/natural disaster	307 (39%)	325 (42%)	0.088
Witness someone being badly injured/killed	444 (56%)	447 (58%)	0.189
Raped	10 (1%)	5 (1%)	0.166
Molested	57 (7%)	38 (5%)	0.041
Physically attacked/assaulted	175 (22%)	179 (23%)	0.306
Threat with weapon/held captive/kidnapped	161 (20%)	145 (20%)	0.485
Physically abused as a child	74 (9%)	76 (10%)	0.386
Neglected as a child	37 (5%)	42 (5%)	0.274
Serious illness/medical procedure	150 (19%)	142 (18%)	0.454
Shock from event happening to someone close	267 (34%)	230 (30%)	0.048
Other terrible experience	289 (37%)	251 (34%)	0.059

Administered PTSD Scale (CAPS; Blake et al., 1995) administered by trained clinical staff. The CAPS is a structured clinical diagnostic interview that is one of the most widely used tools for diagnosing PTSD. It has excellent reliability and validity (Weathers et al., 2001). The mean CAPS severity score was 71.72 (S.D.=19.17) reflecting moderate PTSD. Comorbid diagnoses in the sample (as rated by the assessing clinician using a non-structured psychiatric clinical interview) were common, including substance abuse/dependence (41%), major depression (37%), and another anxiety disorder (7%). Current pharmacotherapy was common, with approximately 44% of participants receiving pharmacotherapy for a mental health condition at the commencement of the program. On average, participants had taken an average of 2.8 psychiatric medications (S.D.=2.45) in the month prior to beginning the program.

2.2. Measures

Upon entering the PTSD program, participants completed the Combat Exposure Scale (CES; Keane et al., 1989). The CES is a widely used seven-item self-report measure using a Likert type response scale. The measure has demonstrated high levels of internal consistency (alpha coefficient=0.85) and test–retest reliability (0.97) over a 1-week interval. In addition, participants responded in yes/no fashion to having experienced any of a list of 12 additional potentially traumatic events outside of their military service. The list of items (seen in Table 1) was drawn from the non-military trauma items included in the War Stress Inventory (Johnson et al., 1996).

At intake to the program and at 9 months posttreatment participants completed the PTSD Checklist (PCL; Weathers et al., 1993), a 17-item checklist of PTSD symptoms based on the DSM-IV criteria. The PCL has demonstrated high levels of diagnostic accuracy when evaluated against "gold standard" structured interview measures such as the PTSD component of the Structured Clinical Interview for DSM-IV (SCID; Spitzer et al., 1995) and the CAPS, both at a single time point and over the course of treatment and follow up (Forbes et al., 2001). The Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983) and the Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 1989) were used to assess comorbidity. The HADS is a 14-item scale with seven items relating to anxiety and seven items relating to depression. It has strong psychometric properties, with high internal consistency (alpha=0.90 for depression and 0.93 for anxiety) and a robust two-factor structure. The AUDIT is a 10-item scale developed by the World Health Organization as a screening instrument for hazardous and harmful alcohol consumption. The scale has demonstrated strong internal reliability (0.86).

2.2.1. Treatment

The group treatment program was primarily cognitive-behavioral in orientation and was of 12-weeks' duration. Each group comprised approximately six to eight veterans. Treatment included psychoeducation, symptom management (anxiety, anger, depression), group based trauma focused interventions addressing trauma-related themes, alcohol relapse prevention, and attention to health and lifestyle issues. In addition to the group-based interventions, all veterans received individual therapy throughout the program, and veterans taking medication were provided regular medication reviews. For more information on the treatment programs, see Creamer et al. (2006). Participants returned for assessment 12 months following the commencement of treatment (9 months posttreatment).

2.3. Data analysis

All analyses were conducted using SPSS version 17.0.2 (SPSS Inc., 2009). Given the potential non-linear relationship between combat exposure, non-military trauma exposure and PTSD identified in the literature to date, the first step in this data analysis was to divide the sample using median split on the basis of combat exposure severity. The high and low exposure groups were then compared on PTSD severity using analysis of variance (ANOVA). Each of the high and low combat exposure groups was then divided into two further groups based on whether they had or had not experienced additional non-military trauma. This resulted in a total of four categories for all subsequent analyses (High combat exposure/Non-military trauma; High combat exposure/No non-military trauma; Low combat exposure/Non-military trauma and Low combat exposure/No non-military trauma). The four groups were then compared using ANOVA on differences in intake PTSD, anxiety, depression and alcohol use severity. This was followed by the use of repeated measures ANOVAs and effect size analyses examining changes between the groups in their PTSD symptoms and comorbidity from baseline to 9 months' posttreatment.

3. Results

The mean score on the CES was 19.3 (S.D.=8.48), indicating a moderate level of combat exposure. The sample was subsequently divided into two groups using median split of high (CES > 19; $n=788$) and low (CES < =19; $n=808$) combat exposure. A one-way ANOVA showed the high military trauma exposure group to have significantly higher PTSD symptom severity scores at intake [$F(1, 1594)=27.28$, $p<0.000$].

The majority of the sample (85%) reported experiencing at least one non-military trauma; there were no differences in PTSD severity scores at intake between those who did and did not report non-military trauma [$t(1546)=0.05$, n.s.]. The high and low military exposure groups were further divided on the basis of whether they had reported experiencing non-military trauma or not, resulting in a total of four categories for all subsequent analyses: Group 1: Low military trauma/no non-military trauma (Low CES/No NMT; $n=120$); Group 2: Low military trauma/non-military trauma (Low CES/NMT; $n=668$); Group 3: High military trauma/no non-military trauma (High CES/No NMT; $n=115$), and Group 4: High military trauma/non-military trauma (High CES/NMT; $n=644$). Chi square analyses indicated there were no differences between the High CES/NMT and Low CES/NMT groups on number of non-military traumatic experiences ($M=2.5$ and 2.4 respectively), or on the type of trauma experienced (see Table 1), with the exception of the Low CES/NMT group reporting higher rates of molestation and shock from an event happening to someone else.

Mean CES (and S.D.) scores for the four groups at intake and mean PCL (and S.D.) scores at intake and 9 months posttreatment can be seen in Table 2 and in Fig. 1. ANOVA testing showed significant differences between PCL scores of the four groups at intake to the treatment program [$F(3, 1543)=7.86$, $p<0.000$], with post-hoc tests revealing this was due to participants with High CES/NMT (Group 4) scoring significantly higher than Low CES/NMT ($p<0.001$). No other differences were significant.

For the sample overall, significant treatment gains were evident [$F(1, 1543)=361.26$, $p<0.000$], [Intake mean 66.91 (S.D.: 9.65); 9 months posttreatment mean 59.63 (S.D.: 11.55)] reflecting a