

COMBAT & OPERATIONAL STRESS

Research Quarterly

A RESEARCH PUBLICATION DESIGNED FOR PROVIDERS

Predictors of posttraumatic growth in OEF/OIF veterans

Key findings: Nearly three-quarters of a sample of Operations Enduring Freedom or Iraqi Freedom (OEF/OIF) veterans reported significant posttraumatic growth (positive changes and outlook following trauma) an average of two years after deployment. Younger age, greater PTSD symptoms, increased effort/perseverance and perceived unit member support were associated with posttraumatic growth.

Study type: Self-report survey assessment

Sample: 272 predominantly older Reservist/National Guard OEF/OIF veterans from Connecticut

Implications: Results of this study support and extend previous findings, and suggest that interventions to bolster unit support and enhance perceived effort or perseverance may help heighten posttraumatic growth in OEF/OIF veterans.

Pietrzak, R.H., Goldstein, M.B., Malley, J.C., Rivers, A.J., Johnson, D.C., Morgan, C.A. 3rd, et al. (in press). Posttraumatic growth in veterans of Operations Enduring Freedom and Iraqi Freedom. *Journal of Affective Disorders*.

IN THIS EDITION:

Predictors of posttraumatic growth in OEF/OIF veterans.....1	PTSD linked to increased physical disease in OEF/OIF veterans.....5
PTSD and depression affecting many Army OIF veterans.....2	Prolonged exposure a highly effective, enduring treatment for PTSD.....5
Childhood abuse and combat exposure predict mental health problems following deployment.....2	Active-duty soldiers with mental health problems less likely than National Guard soldiers to seek care.....5
Changes in substance use and mental health rates in active-duty personnel.....3	Internet-based cognitive behavior therapy effective for PTSD.....6
Mental health disorders common and detrimental in National Guard combat veterans.....3	Delayed-onset PTSD common among combat veterans, linked to multiple factors6
PTSD and substance abuse among female OEF/OIF veterans...3	Association of coping processes with PTSD modified by combat exposure.....6
Iraq and Afghanistan veterans want more help reintegrating after deployment.....3	Imaginal exposure therapy underutilized by mental health professionals.....7
Imagery rehearsal therapy effective for the treatment of trauma-related nightmares in veterans4	Resilience protective against mental and physical health symptoms7
Predictors of emotional distress among combat-deployed soldiers.....4	PTSD predicts completed suicide.....8
Dysphoria strongly related to psychosocial functioning in OEF/OIF veterans.....5	Test your knowledge!.....8

The *Combat & Operational Stress Research Quarterly* is a compilation of recent research on combat and operational stress, including relevant findings on the etiology, course and treatment of Posttraumatic Stress Disorder (PTSD). The intent of this publication is to facilitate translational research by providing busy clinicians with up-to-date findings, with the potential to guide and inform evidenced-based treatment.

Published by:
Naval Center for Combat & Operational Stress Control (NCCOSC)
34960 Bob Wilson Dr., Suite 400
San Diego, CA 92134-6400

All issues of the Combat & Operational Stress Research Quarterly are available online at:
www.nccosc.navy.mil

Editorial Members:

Editor/Writer:
Kimberly Schmitz, MS

Writer:
Stephanie Raducha, BA

Content Assistance:
Shiva Ghaed, PhD

Copy Editor:
Margery Farnsworth, BA

Email us!

To receive this publication in your inbox, or if you have an article or other submission you would like to have included in a subsequent edition, please contact us at nmcsd.nccosc@med.navy.mil. Also, please contact us if you need assistance pursuing a research study involving combat and operational stress, or if you would like to comment on this publication. Thank you.

PTSD and depression affecting many Army OIF veterans

Key Findings: Prevalence rates for PTSD and/or depression with at least some functional impairment in soldiers following combat deployment ranged from 23% to 31%, depending on time of assessment. Approximately half of these soldiers with PTSD and/or depression also reported alcohol misuse or aggressive behavior. Prevalence rates for PTSD and/or depression increased over time for

National Guard soldiers while rates remained fairly stable for active-component soldiers.

Study type: Population-based, self-report survey assessment

Sample: 13,226 active U.S. Army OIF veterans from four active-component and two National Guard infantry brigade combat teams

Implications: Up to 31% of active Army OIF veterans (active-component or National Guard) developed PTSD and/or depression with functional impairment one year post-deployment, with approximately half of those cases also having alcohol or aggression problems. These findings highlight the need for comprehensive mental health screenings post-deployment, and increases in PTSD/depression prevalence among National Guard soldiers indicate a need for greater efforts to treat these veterans.

Thomas, J.L., Wilk, J.E., Riviere, L.A., McGurk, D., Castro, C.A. & Hoge, C.W. (2010). Prevalence of mental health problems and functional impairment among active component and National Guard soldiers 3 and 12 months following combat in Iraq. *Archives of General Psychiatry*, 67 (6), 614-623.

Childhood abuse and combat exposure predict mental health problems following deployment

Key Findings: Childhood physical abuse and combat exposure were both predictors of anxiety, depression and PTSD in combat veterans when examined in models together, but there were no additive effects between these predictors. However, childhood abuse and combat exposure were not predictors of alcohol use in this sample.

Study type: Retrospective review of intake screening questionnaires

Sample: 1,045 veterans of OEF/OIF attending an outpatient behavioral health clinic

Implications: Although a history of childhood abuse did not affect the known association between combat exposure and psychiatric symptoms, both of these factors are important predictors of mental health difficulties in OEF/OIF veterans and should be assessed by mental health providers.

Fritch, A.M., Mishkind, M., Reger, M.A. & Gahm, G.A. (2010). The impact of childhood abuse and combat-related trauma on postdeployment adjustment. *Journal of Traumatic Stress*, 23 (2), 248-254.

Changes in substance use and mental health rates in active-duty personnel

Key Findings: Recent data showed a decreasing trend in tobacco use among military personnel. However, there were increases compared to previous years in prescription drug misuse, heavy alcohol use, stress, PTSD and suicidal attempts. In addition, deployment worsened some of these problem behaviors.

Study type: Population-based, self-report survey assessments over multiple years

Sample: 28,546 U.S. military personnel who responded to the 2008 Department of Defense Health Related Behavior Surveys, along with survey respondents from previous years

Implications: The military has made progress in reducing cigarette smoking, but the increases in prescription drug misuse, heavy alcohol use, PTSD and suicide attempts demonstrate other areas that need attention. Intervention and prevention programs need to be further developed to address these issues.

Bray, R.M., Pemberton, M.R., Lane, M.E., Hourani, L.L., Mattiko, M.J. & Babeu, L.A. (2010). Substance use and mental health trends among U.S. military active duty personnel: key findings from the 2008 DoD Health Behavior Survey. *Military Medicine*, 175 (6), 390-399.

Mental health disorders common and detrimental in National Guard combat veterans

Key Findings: Nearly 40% of National Guard combat veterans in the sample were diagnosed with a mental health disorder after deployment to Iraq. The most common disorders diagnosed were depressive disorders, non-PTSD anxiety disorders and alcohol-use disorders. Those who did have mental health diagnoses showed poorer functioning and quality of life. Social functioning and quality of life were most strongly associated with PTSD.

Study type: Self-report survey and clinical interview assessment

Sample: 348 National Guard soldiers deployed to OIF from March 2006 to July 2007

Implications: Although the majority of soldiers in the study did not qualify for a psychiatric diagnosis post-deployment, the rate of those who did was higher than that of the general population. PTSD

was relatively uncommon in this sample, but it is a particularly debilitating disorder that can have devastating effects for soldiers and the people around them if left untreated. These findings emphasize the need to identify and treat a range of mental health problems in returning soldiers.

Kehle, S.M., Reddy, M.K., Ferrier-Auerbach, A.G., Erbes, C.R., Arbisi, P.A. & Polusny, M.A. (in press). Psychiatric diagnoses, comorbidity, and functioning in National Guard troops deployed to Iraq. *Journal of Psychiatric Research*.

PTSD and substance abuse among female OEF/OIF veterans

Key Findings: Nearly one-third (31%) of a small sample of female veterans of OEF/OIF screened positive for PTSD and almost half (47%) screened positive for high-risk drinking upon initial enrollment at a Veterans Affairs Medical Center. Alcohol and drug use were both predictors of PTSD symptomatology in the sample.

Study type: Self-report survey assessment

Sample: 36 female OEF/OIF veterans and reservists newly enrolled with a Veterans Affairs Medical Center

Implications: The findings suggest there may be a relationship between substance abuse and PTSD among female OEF/OIF veterans. Future research should focus on larger populations of female OEF/OIF veterans and the need for gender-specific mental health interventions.

Nunnink, S.E., Goldwaser, G., Heppner, P.S., Pittman, J.O., Nievergelt, C.M. & Baker, D.G. (2010). Female veterans of the OEF/OIF conflict: concordance of PTSD symptoms and substance misuse. *Addictive Behaviors*, 35 (7), 655-659.

Iraq and Afghanistan veterans want more help reintegrating after deployment

Key Findings: Approximately 25% to 56% of Iraq and Afghanistan combat veterans receiving care from a Department of Veterans Affairs (VA) facility reported at least some difficulty in social functioning, productivity, community involvement and self-care. At least one-third reported increased substance use, divorce, dangerous driving and increased anger-control problems since deployment.

Nearly all (96%) expressed interest in services to help readjust to civilian life. Forty-one percent screened positive for PTSD, and those patients were more likely to report more readjustment difficulties and expressed interest in more types of services, including mental health services.

Study type: Self-report survey assessment

Sample: 754 Iraq and Afghanistan combat veterans who received care at any VA facility and responded to a mailed survey

Implications: Iraq and Afghanistan combat veterans receiving VA care reported multiple reintegration problems and expressed a desire for services and information to help with readjustment. Those with probable PTSD were particularly troubled by these problems. Providing reintegration services through the mail and Internet needs to be further explored.

Sayer, N.A., Noorbaloochi, S., Frazier, P., Carlson, K., Gravelly, A. & Murdoch, M. (2010). Reintegration problems and treatment interests among Iraq and Afghanistan combat veterans receiving VA medical care. *Psychiatric Services*, 61 (6), 589-597.

Imagery rehearsal therapy effective for the treatment of trauma-related nightmares in veterans

Key findings: Imagery rehearsal therapy (IRT) was effective in significantly reducing trauma-related nightmare frequency and intensity, insomnia severity and daytime PTSD symptoms in veterans who completed the entire treatment.

Study type: Retrospective chart review (symptoms measured with sleep scales/logs and the Posttraumatic Stress Disorder Checklist [PCL])

Sample: 58 veterans who had completed a course of IRT for recurrent trauma-related nightmares

Implications: IRT may be an effective treatment for trauma-related nightmares and other PTSD symptoms among veterans who complete the entire treatment. IRT may also be an acceptable adjunct treatment for veterans undergoing PTSD treatment.

Nappi, C.M., Drummond, S.P., Thorp, S.R. & McQuaid, J.R. (2010). Effectiveness of imagery rehearsal therapy for the treatment of combat-related nightmares in veterans. *Behavior Therapy*, 41 (2), 237-244.

Predictors of emotional distress among combat-deployed soldiers

Key Findings: Rates of PTSD and depression among soldiers while in a combat zone were 7% and 9%, respectively. Trauma-specific emotional distress was predicted by female gender, younger age, combat exposure and such attitudinal factors as a lack of support from leadership and not having enough contact with home. Generalized emotional distress (symptomatic of depression) was predicted by female gender, recent deployment and feeling unprepared or not supported, but was not predicted by combat exposure.

Study type: Self-report survey assessment completed in-theater

Sample: 2,677 National Guard soldiers deployed as part of OIF in 2006-07

Implications: These predictors of emotional distress in the combat zone, especially the attitudinal variables of unit and home support, provide opportunities to target interventions to reduce deployment-related distress and increase resilience in deployed troops.

Ferrier-Auerbach, A.G., Erbes, C.R., Polusny, M.A., Rath, C.M. & Sponheim, S.R. (2010). Predictors of emotional distress reported by soldiers in the combat zone. *Journal of Psychiatric Research*, 44 (7), 470-476.

REVIEWS TO PERUSE

Hassija, C.M. & Gray, M.J. (2010). **Are cognitive techniques and interventions necessary? A case for the utility of cognitive approaches in the treatment of PTSD.** *Clinical Psychology*, 17 (2), 112-127.

Dickstein, B.D., Vogt, D.S., Handa, S. & Litz, B.T. (2010). **Targeting self-stigma in returning military personnel and veterans: a review of intervention strategies.** *Military Psychology*, 22 (2), 224-236.

Griffith, J. (2010). **Citizens coping as soldiers: a review of deployment stress symptoms among reservists.** *Military Psychology*, 22 (2), 176-206.



Dysphoria strongly related to psychosocial functioning in OEF/OIF veterans

Key Findings: A four-factor dysphoria model of PTSD symptoms was most representative of PTSD symptom structure in the veterans of OEF/OIF who participated in the study. This model consists of separate re-experiencing, avoidance, dysphoria and hyperarousal symptom clusters. Re-experiencing symptoms were associated with alcohol problems; avoidance symptoms were associated with increased psychosocial difficulties and decreased social support; and dysphoria symptoms were associated with many different psychosocial factors.

Study type: Self-report survey assessment

Sample: 272 OEF/OIF veterans in Connecticut

Implications: Dysphoria symptoms were strongly related to a broad range of psychosocial measures and may be particularly relevant in the assessment and treatment of OEF/OIF veterans presenting with these symptoms.

Pietrzak, R.H., Goldstein, M.B., Malley, J.C., Rivers, A.J. & Southwick, S.M. (2010). Structure of posttraumatic stress disorder symptoms and psychosocial functioning in Veterans of Operations Enduring Freedom and Iraqi Freedom. *Psychiatry Research*, 178, 323-329.

PTSD linked to increased physical disease in OEF/OIF veterans

Key Findings: PTSD was associated with increased prevalence and earlier onset of physical disease among veterans of OEF/OIF in the first five years following deployment. Increased prevalence and earlier onset were found for nervous system, musculoskeletal, circulatory, hypertensive and digestive diseases in veterans with PTSD.

Study type: Retrospective chart review

Sample: 4,416 OEF/OIF veterans

Implications: PTSD is linked to increased physical disease prevalence in OEF/OIF veterans. The growing number of OEF/OIF veterans developing PTSD following deployment could be a predictor of increases in physical disease and healthcare utilization for these veterans in the coming years.

Andersen, J., Wade, M., Possemato, K. & Ouimette, P. (2010). Association between posttraumatic stress disorder and primary care provider-diagnosed disease among Iraq and Afghanistan veterans. *Psychosomatic Medicine*, 72 (5), 498-504.

Prolonged exposure a highly effective, enduring treatment for PTSD

Key Findings: A meta-analysis of the effectiveness of prolonged exposure (PE) therapy for the treatment of PTSD showed a large effect for PE vs. control on both primary (PTSD) and secondary (depression, anxiety, quality of life) outcome measures, which remained fairly strong at follow-up. There was no significant difference between PE and other active treatments, such as cognitive processing therapy, eye movement desensitization and reprocessing, or stress inoculation training.

Study type: Meta-analytic review of the effectiveness of PE for PTSD

Sample: 13 studies with a total sample size of 675 participants meeting PTSD criteria

Implications: PE is a highly effective treatment for PTSD and general trauma-related distress (depression, anxiety or lowered quality of life/social adjustment), with effects that are maintained over time. Although it was significantly more effective than control conditions, PE was not more effective than other active treatment conditions. The large effect sizes demonstrated in the study support PE as a first line treatment for PTSD.

Powers, M.B., Halpern, J.M., Ferenschak, M.P., Gillihan, S.J. & Foa, E.B. (in press). A meta-analytic review of prolonged exposure for posttraumatic stress disorder. *Clinical Psychology Review*.

Active-duty soldiers with mental health problems less likely than National Guard soldiers to seek care

Key Findings: Active-duty soldiers were more likely than National Guard soldiers to report at least one type of mental health problem three months and 12 months after a combat deployment. National Guard soldiers who had mental health problems were more likely to utilize mental health care 12 months after deployment, compared to active-duty soldiers with mental health problems. Active-duty soldiers also endorsed more mental health stigma compared to National Guard soldiers.

Study type: Cross-sectional, self-report survey assessment administered three and 12 months after combat deployment in Iraq

Sample: 10,386 active-duty and National Guard soldiers

Implications: Low mental healthcare utilization and high stigma in active-duty soldiers with mental health problems post-deployment show a need for this population to be targeted in efforts to reduce stigma and increase utilization.

Kim, P.Y., Thomas, J.L., Wilk, J.E., Castro, C.A. & Hoge, C.W. (2010). Stigma, barriers to care, and use of mental health services among active duty and National Guard soldiers after combat. *Psychiatric Services*, 61 (6), 582-588.

Internet-based cognitive behavior therapy effective for PTSD

Key Findings: PTSD patients who were treated with a 10-week, therapist-assisted cognitive behavior therapy (CBT) Internet intervention showed significant improvement on PTSD severity ratings and related PTSD symptomatology, with 69% of participants no longer meeting criteria for clinical diagnosis of PTSD at post-treatment and 77% no longer meeting criteria at three-month follow-up assessments. Sixty-nine percent of participants were satisfied with overall treatment, participant treatment compliance was fairly high, and the average total therapist time required was just over three hours per patient. Therapeutic alliance ratings were high, indicating an online treatment did not hamper building a therapeutic relationship.

Study type: Open trial therapy evaluation

Sample: 22 Australian patients with a primary clinical diagnosis of PTSD

Implications: An Internet-facilitated CBT intervention for PTSD appears to be an effective treatment modality. This is particularly useful for patients for whom it is difficult to receive a treatment in person, due to remote location or other reasons. However, this treatment did not seem to greatly reduce treatment barriers for men, as only one-third of the sample was male. This treatment requires much less therapist time, is less costly and is more readily available than traditional in-person treatment, but additional research must be conducted to determine efficacy compared to controls and standard of care.

Klein, B., Mitchell, J., Abbott, J., Shandley, K., Austin, D., Gilson, K., et al. (2010). A therapist-assisted cognitive behavior therapy internet intervention for posttraumatic stress disorder: pre-, post- and 3-month follow-up results from an open trial. *Journal of Anxiety Disorders*, 24 (6), 635-644.

Delayed-onset PTSD common among combat veterans, linked to multiple factors

Key Findings: Roughly 17% of combat veterans in the sample were found to have delayed-onset PTSD. Shorter delays in PTSD onset were associated with combat stress reactions on the battlefield, a higher number of pre- and post-war stressful life events, more severe subjective battle exposure, greater perceived danger during combat and a more stressful military position. Also, more recent life events were stronger predictors of PTSD onset compared to less recent events.

Study type: Prospective clinical interview assessments conducted one, two and 20 years after the 1982 Lebanon War

Sample: 675 Israeli veterans from the 1982 conflict, 369 of whom experienced a combat stress reaction on the battlefield

Implications: A substantial number of combat veterans were found to have delayed-onset PTSD. Given that traumatic life events before, during and after the war were found to affect the timing of PTSD onset, mental health professionals should not only examine the original trauma, but also other stressful events in the patient's life. Awareness of combat stress reactions at the time of the traumatic event may also help mental health professionals identify those at high risk for PTSD.

Horesh, D., Solomon, Z., Zerach, G. & Ein-Dor, T. (in press). Delayed-onset PTSD among war veterans: the role of life events throughout the life cycle. *Social Psychiatry and Psychiatric Epidemiology*.

Association of coping processes with PTSD modified by combat exposure

Key Findings: Among previously deployed National Guard veterans, problem-focused coping (taking action to alter the stressor) was not related to PTSD symptoms. However, emotion-focused coping (EFC), defined as avoiding or regulating emotions after a stressful event, was linked to more severe PTSD symptoms. Interestingly, the level of combat exposure acted as a curvilinear moderator of this relationship, so that at low levels of combat exposure, EFC was not associated with PTSD symptom severity; at moderate levels, it was slightly associated with higher levels of PTSD; and

at extremely high levels, it was associated with lower PTSD severity.

Study type: Self-report survey assessment

Sample: 218 National Guard/Reserve veterans deployed overseas since 2001

Implications: The association between emotion-focused coping and psychological outcomes, such as PTSD, may be moderated by the type and severity of combat exposure. Future research should focus on understanding the nature of this modification and the most effective form of coping according to the level of combat exposure.

Rodrigues, C.S. & Renshaw, K.D. (in press). Associations of coping processes with posttraumatic stress disorder symptoms in National Guard/Reserve service members deployed during the OEF-OIF era. *Journal of Anxiety Disorders*.

Imaginal exposure therapy underutilized by mental health professionals

Key Findings: When trauma experts presented with four hypothetical cases of patients with PTSD were asked to choose among four treatment plans, imaginal exposure (IE) was an underutilized choice. The treatment most preferred for each PTSD case was eye movement desensitization and reprocessing (EMDR) therapy. In patients with co-morbid depression, IE was less frequently preferred than medication. However, IE was more likely to be suggested if patients requested trauma-focused treatment than if such a request was not made, but IE still was chosen less often than EMDR in this case. Most therapists were also found to be undertrained in IE.

Study type: Explorative survey of mental health professionals

Sample: 255 mental health professionals attending a psychotrauma conference

Implications: The underutilization of IE emphasizes the need for more exposure therapy training for professionals treating trauma patients. Training should address misperceptions that exist about IE, including low credibility and barriers to the treatment.

van Minnen, A., Hendriks, L. & Olff, M. (2010). When do trauma experts choose exposure therapy for PTSD patients? A controlled study of therapist and patient factors. *Behavior Research and Therapy*, 48 (4), 312-320.

Resilience protective against mental and physical health symptoms

Key Findings: Resilience, defined as the capacity to tolerate the effects of trauma exposure or successfully manage following a challenge or setback, was found to be a protective factor against the development of PTSD in combat veterans with a lifetime history of trauma exposure. Higher levels of resilience were more protective in individuals with high combat exposure. Resilience was also associated with decreased suicidality, reduced alcohol problems, lower depressive symptom severity and fewer current health complaints and lifetime medical problems.

Study type: Self-report survey and clinical interview assessment (resilience measured with the Connor-Davidson Resilience Scale)

Sample: 497 OEF/OIF veterans with a lifetime trauma exposure

Implications: This study suggests that resilience is a key factor in the occurrence of PTSD and other mental or physical symptoms in combat veterans. With PTSD and suicide increasing in the military, focusing on increasing resilience in service members is of utmost importance.

Green, K.T., Calhoun, P.S., Dennis, M.F., the Mid-Atlantic Mental Illness Research, Education and Clinical Center Workgroup & Beckham, J.C. (in press). Exploration of the resilience construct in posttraumatic stress disorder severity and functional correlates in military combat veterans who have served since September 11, 2001. *Journal of Clinical Psychiatry*.

NEW REPORT AVAILABLE ONLINE

A new report on resilience is now available on the For Providers/Researchers section of our website: www.nccosc.navy.mil.



PTSD predicts completed suicide

Key Findings: PTSD was strongly associated with a completed suicide, with an odds ratio of 9.8, which remained fairly strong (odds ratio=5.3) after adjusting for psychiatric and demographic confounders. Depression modified the association between PTSD and completed suicide, as people with both of the disorders had a higher suicide rate than expected based on the effects of each condition alone.

Study type: Population-based, case-control study

Sample: 9,612 suicide cases and 199,306 controls from the Danish health and administrative registries

Implications: Although previous research has demonstrated strong associations between PTSD and suicidal behavior, the study confirms that PTSD predicts completed suicide in the general population. In addition, people with both PTSD and depression have an even higher risk of suicide than would be expected if the effects of each were combined. Future research should focus on expanding knowledge of this association in military populations.

Gradus, J.L., Qin, P., Lincoln, A.K., Miller, M., Lawler, E., Sørensen, H.T., et al. (2010). Posttraumatic stress disorder and completed suicide. *American Journal of Epidemiology*, 171 (6), 721-727.

TEST YOUR KNOWLEDGE!

According to the summary “Resilience protective against mental and physical health symptoms” (pg. 7), higher resilience scores were associated with which of the following:

- A. Decreased risk of PTSD and suicidality, but only when combat exposure levels are low
- B. Decreased risk of PTSD, alcohol abuse, depression and lifetime medical problems
- C. Decreased risk of PTSD and immune system disorders, increased social functioning
- D. Decreased risk of PTSD, drug abuse and cardiovascular disease

Answer to last edition’s question: C

Any opinion(s) expressed in this publication are those of the respective author(s) and do not reflect upon the official policy of the Bureau of Medicine and Surgery (BUMED), U.S. Navy, or the Department of Defense. The appearance of the previously published material does not constitute endorsement by the Bureau of Medicine and Surgery (BUMED), U.S. Navy, or the Department of Defense for a commercial or private organization.

WWW.NCCOSC.NAVY.MIL

