



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Neurocognitive and Psychological Health Outcomes Post-Concussion Symptoms in Veterans with and without Blast Exposure, Mild traumatic Brain Injury, and Posttraumatic Stress Disorder

Researchers affiliated with the U.S. Department of Veterans Affairs (VA) Portland Health Care System (Portland, Oregon), VA San Diego Health Care System (San Diego, California), and the headquarters of the Defense and Veterans Brain Injury Center (Silver Spring, Maryland) examined symptom-reporting related to the 10th Edition of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) criteria for Post-concussive Syndrome (PCS) in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) Veterans (O'Neil *et al.* 2017). The aims of the study were to examine relationships among PCS by identifying potential subscales of the British Columbia Postconcussion Symptom Inventory (BC-PSI) and to examine group differences in BC-PSI items and subscales in Veterans with and without blast exposure, mild traumatic brain injury (mTBI), and posttraumatic stress disorder (PTSD).

Participants included three groups of Veterans: with blast-related mTBI history (n = 47), with blast exposure but no mTBI history (n = 20), and without blast exposure (n = 23). Overall, 37 Veterans had PTSD, and 53 did not. Researchers examined differences in BC-PSI subscale scores by blast exposure, mTBI history, and PTSD by conducting an exploratory factor analysis (EFA). BC-PSI factors were interpreted as cognitive, vestibular, affective, anger, and somatic. Items and factor scores were highest for Veterans with blast-related mTBI history and lowest for controls (no blast exposure). Vestibular, affective, and somatic factors were significantly higher for Veterans with blast-related mTBI history than for controls, but not significantly different for those with blast exposure but no mTBI. These results remained significant when PTSD symptom severity was included as a covariate. Cognitive, anger, and somatic subscales were significantly higher for veterans with PTSD, although there was no interaction effect of PTSD and mTBI or blast history. Additionally, this is the first study to compare these items and factors across groups of OEF/OIF Veterans with differential exposure to blast.

In conclusion, EFA-derived subscales of the BC-PSI differentiated Veterans based on blast exposure, mTBI history, and PTSD.

The VHA requires mandatory screening for residual symptoms and problems that might be caused in whole or part by a past mTBI. Moreover, the VHA recently adopted the ICD-10 (World Health Organization, 1992) as its clinical and administrative diagnostic system. Therefore, it is likely that ICD-10 diagnostic criteria PCS will now be more widely used.





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