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Objective: Few concussion studies have investigated the psychological domain of concussions. Of the 22 postconcussion symptoms assessed on the Graded Symptom Checklist of the SCAT-5, five do not overlap with core symptoms of anxiety and depression. 43% of patients report at least one psychiatric symptom, the median is four after injury. Previous studies focus on total scores and not individual items; furthermore, few consider resilience as part of psychological factors that impact recovery. This research aims to describe general and specific characteristics of psychological functioning in males/females ages 12-18 after concussion to help guide treatment. We compared total scores for each measure between males/females and looked at the differences between the genders for individual items in each measure.

Participants and Methods: Participants were evaluated at an outpatient concussion clinic participating in the North Texas Concussion Registry (ConTex; N=1238, 53% female, mean age=15.4 years, SD=1.16 years). The Generalized Anxiety Disorder 7-item Scale (GAD-7), the Patient Health Questionnaire-8 (PHQ-8), the Brief Resilience Scale (BRS), and the Pittsburgh Sleep Quality Index (PSQI) were used to determine levels of anxiety, depression, resilience, and sleep quality.

Results: Utilizing Mann-Whitney U tests (median, interquartile range) to examine group distributions for the GAD-7, PHQ-8, and BRS, females had significantly higher scores than males for the GAD ($p<0.001$; Female: 4, 1-9 v. Male: 2, 0-5) and PHQ ($p<0.001$; Female: 5, 2-10 v. Male: 3, 1-7). For the BRS, total scores for females were significantly lower than males ($p<0.001$; Female: 3.67, 3-4 v. Male: 3.83, 3.21-4.33). The PSQI media score was significantly different between males and females: item 2, $p=.016$ and item 4 $p=.007$ using an exact sampling distribution for U. Pearson Chi square tests were used to examine sex differences for each item of the psychological measures. Items 1-7 within the GAD-7 were significant between sexes (i.e. male or female). The seven items assess (1) Feelings of nervousness, (2) Inability to stop/control worry, (3) Worrying too much about different things, (4) Trouble relaxing, (5) Inability to sit still due to restlessness, (6) Irritability, and (7) Feeling afraid. Items 2-8

within the PHQ were significant between sexes. The items assess (2) Feeling down/depressed/hopeless, (3) Trouble falling/staying asleep, (4) Feeling tired/no energy, (5) Appetite changes, (6) Lowered/poor self-esteem, (7) Concentration issues, and (8) Feeling slowed down or unable to be still. There was a statistically significant difference between genders and Items 2 and 4 within the BRS were significant between sexes. The items assess (2) Difficulty surviving hard times and (4) Difficulty snapping back from something bad.

Conclusions: Like other studies, this study found females have higher levels of negative affect (i.e., depressive and anxious symptoms). Females displayed lower resilience and reported poorer sleep. By analyzing psychiatric measures, treatment protocols can be tailored to address specific problems, and mental health difficulties can be mitigated by teaching specific coping techniques. These results suggest clinicians should consistently be providing education on depression, anxiety, sleep, and resilience, particularly to female patients, who appear at greater risk for psychological distress.

Categories: Concussion/Mild TBI (Adult)

Keyword 1: concussion/ mild traumatic brain injury

Keyword 2: depression

Keyword 3: anxiety

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51 Impact of Blast Exposures on the Cognitive Abilities of Warfighters

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Objective: There is growing evidence to indicate that blast exposure military personnel experience throughout their career can have a negative impact on their brain health. The majority of research in the area of blast related

neurotrauma has been focused on traumatic brain injury (TBI); however, the blast exposure may often be independent of TBI. It is common in both active duty military and veterans to report years of blast exposure from combat and training. The objective of this study was to explore the relationship between blast exposure and cognitive functioning in military personnel seeking treatment for a mild TBI.

Participants and Methods: Participants were recruited from a military hospital while enrolled in a multidisciplinary treatment program for TBI. All patients had at least one diagnosed mTBI as well as persistent cognitive complaints. Exclusion criteria included invalid performance on a performance validity test and a symptom validity test. 97 participants were included in the analysis with an average age of 34.0 (SD = 7.9) and average 4.0 combat deployments (SD = 3.6). Blast exposure history was measured by the overall score from the Blast Exposure Threshold Survey (BETS) which assessed the frequency and duration of use of various blast sources.

Outcomes included the Neurobehavioral Symptom Inventory (NSI) and the Global Deficit Scale (GDS) an objective measure of cognitive deficiency. GDS was calculated from seven measures: Hopkins Verbal Learning Test-Revised Total and Delayed Recall (HVLTR and HVLTR-DR); DKEFS System Color-Word Condition 3 Inhibition (CW3), Color-Word Condition 4 Switching (CW4) and Trail Making Condition 3 Letter Sequencing (TM3), Paced Auditory Serial Addition Test (PASAT), and the Symbol Digit Modality Test (SDMT). Demographically corrected t-scores (M=50, SD = 10) were converted to deficit scores and averaged to calculate GDS. To adjust for non-normal distributions, non-parametric statistics were examined.

Results: The BETS was not related to GDS ($\rho = -.055$); however, there was a significant correlation between higher levels on the BETS and better performance on measures of selective attention (PASAT $\rho = .307$) and processing speed (SDMT $\rho = .218$). The correlation between BETS and the other neuropsychological measures were not meaningful (all ρ 's $< .10$). Those with an impaired GDS, did not differ from others on the BETS. BETS was also not associated with neurobehavioral symptoms ($\rho = .125$). BETS had moderate correlations with number of combat deployments ($\rho = .483$), severity of combat exposure ($\rho = .556$). It was not related

to education ($\rho = .004$) or pre-morbid intelligence ($\rho = -.029$).

Conclusions: The BETS was not related to GDS ($\rho = -.055$); however, there was a significant correlation between higher levels on the BETS and better performance on measures of selective attention (PASAT $\rho = .307$) and processing speed (SDMT $\rho = .218$). The correlation between BETS and the other neuropsychological measures were not meaningful (all ρ 's $< .10$). Those with an impaired GDS, did not differ from others on the BETS. BETS was also not associated with neurobehavioral symptoms ($\rho = .125$). BETS had moderate correlations with number of combat deployments ($\rho = .483$), severity of combat exposure ($\rho = .556$). It was not related to education ($\rho = .004$) or pre-morbid intelligence ($\rho = -.029$).

Categories: Concussion/Mild TBI (Adult)

Keyword 1: traumatic brain injury

Keyword 2: assessment

Keyword 3: cognitive functioning

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52 Developing and Calibrating a Sex-Specific Psychiatric Screener within the Post-Concussion Symptom Scale

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Objective: Pre- and post-morbid mental health conditions can prolong recovery from concussion and are generally detrimental to athletic performance and quality of life. If psychiatric conditions can be identified in athletes at the time of baseline testing, psychological/psychiatric intervention can be implemented to prevent these complications. Given the time constraints on neuropsychological baseline testing, it is important to have time-efficient screening measures. As such, the purpose of this study