

no significant associations between the metacognitive tasks, or between either metacognitive task and EF, attention, or anxiety. **Conclusions:** For older adults sustaining TBI, tasks of error detection and tasks using retrospective confidence judgments measured an overlapping construct, with both having an association with executive functioning and only the error detection task being associated with attention. Interestingly, these associations were not found in a healthy control sample of older adults. Both metacognitive tasks have been used in the literature to measure errors of awareness, but this study provides insight that these tasks are measuring different domains of metacognitive ability in older individuals with TBI. Use of multiple tasks of metacognitive ability in this population can help to describe where the deficits of awareness occur following TBI.

**Categories:** Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

**Keyword 1:** metacognition

**Keyword 2:** traumatic brain injury

**Keyword 3:** neuropsychological assessment

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## 8 Incident TBI among a Nationwide Cohort of US Older Adults

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**Objective:** Traumatic brain injury (TBI), very common in the United States (US) and occurring at highest rates in older adulthood, is a documented risk factor for cognitive impairment and dementia. However, the full scope of the problem is unknown, as comparative incidence of TBI among older adults is poorly characterized. Moreover, the effect of demographics (race/ethnicity, sex) and cognitive and medical status, as well as education, socioeconomic status, and other social determinants of health (SDOH) on TBI risk is not well understood. We aimed to explore the impact of demographics, cognitive and medical

status, and SDOH on vulnerability to new TBIs among older adults.

**Participants and Methods:** Enrollees 65 and older in the nationally representative Health and Retirement Study (HRS) who consented to have their survey data linked to Medicare claims and had not experienced a head injury prior to HRS enrollment were studied. We used claims data 2000-2018 to obtain incident TBI diagnoses and harnessed the detailed demographic, cognitive, medical, and SDOH information available in the HRS. Incident TBI was defined using inpatient and outpatient International Classification of Disease (ICD 9 and 10) codes received the same day as an emergency room (ER) visit code and a computed tomography (CT) scan code, occurring after the enrollee's baseline HRS interview. We calculated descriptive statistics and bivariate associations for TBI status with demographic and SDOH characteristics measured at baseline using sample weights to account for the complex survey design.

**Results:** Of respondents meeting inclusion criteria (n=9273) during the study follow-up period of 18 years, 8.9% received emergency room treatment for a TBI. Older adults who experienced TBI during the study period were more likely to be female (p=0.0006), and white (p=0.0001), to have normal cognition (vs. cognitive impairment or dementia, p=0.0011), higher education (p<0.0001), and higher income (p=0.01). Having lung disease (p=0.0003) or functional impairment (p=0.03) at baseline were protective against experiencing a TBI.

**Conclusions:** Our results suggest that almost 9% of US older adults received ER treatment for a new TBI during the 18-year study period, and that race, sex, and SDOH factors may increase risk for, or be protective against, TBI. This novel investigation into the impact of demographics and SDOH on incident TBI suggests access to care may impact who gets treatment for TBI. Further study is indicated and may lead to opportunities for both targeted intervention (e.g., primary TBI prevention) to groups most at risk as well as identification and mollification of the most relevant structural and contextual factors (e.g., access to care) to reduce risk of TBI among older adults.

**Categories:** Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

**Keyword 1:** traumatic brain injury

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## 9 Serum Neurofilament is Associated with Diffusion Kurtosis Imaging in Chronic Mild-Moderate Traumatic Brain Injury

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**Objective:** To determine the association between blood markers of white matter injury (e.g., serum neurofilament light and phosphorylated neurofilament heavy) and a novel neuroimaging technique measuring microstructural white matter changes (e.g., diffusion kurtosis imaging) in regions (e.g., anterior thalamic radiation and uncinate fasciculus) known to be impacted in traumatic brain injury (TBI) and associated with symptoms common in those with chronic TBI (e.g., sleep disruption, cognitive and emotional disinhibition) in a heterogeneous sample of Veterans and non-Veterans with a history of remote TBI (i.e., >6 months).

**Participants and Methods:** Participants with complete imaging and blood data (N=24) were sampled from a larger multisite study of chronic mild-moderate TBI. Participants ranged in age from young to middle-aged (mean age = 34.17,

SD age = 10.96, range = 19-58) and primarily male (66.7%). The number of distinct TBIs ranged from 1-5 and the time since most recent TBI ranged from 0-30 years. Scores on a cognitive screener (MoCA) ranged from 22-30 (mean = 26.75). We performed bivariate correlations with mean kurtosis (MK) in the anterior thalamic radiation (ATR; left, right) uncinate fasciculus (UF; left, right), and serum neurofilament light (NFL), and phosphorylated neurofilament heavy (pNFH). Both were log transformed for non-normality. Significance threshold was set at  $p < 0.05$ .

**Results:** pNFH was significantly and negatively correlated to MK in the right ( $r = -0.446$ ) and left ( $r = -0.599$ ) UF and right ( $r = -0.531$ ) and left ( $r = -0.469$ ) ATR. NFL showed moderate associations with MK in the right ( $r = -0.345$ ) and left ( $r = -0.361$ ) UF and little to small association in the right ( $r = -0.063$ ) and left ( $r = -0.215$ ) ATR. In post-hoc analyses, MK in both the left ( $r = 0.434$ ) and right ( $r = 0.514$ ) UF was positively associated with performance on a frontally-mediated list-learning task (California Verbal Learning Test, 2nd Edition; Trials 1-5 total).

**Conclusions:** Results suggest that serum pNFH may be a more sensitive blood marker of microstructural complexity in white matter regions frequently impacted by TBI in a chronic mild-moderate TBI sample. Further, it suggests that even years after a mild-moderate TBI, levels of pNFH may be informative regarding white matter integrity in regions related to executive functioning and emotional disinhibition, both of which are common presenting problems when these patients are seen in a clinical setting.

**Categories:** Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

**Keyword 1:** traumatic brain injury

**Keyword 2:** neuroimaging: structural

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## 10 Accuracy of Chronic Traumatic Encephalopathy Knowledge Across Three Diverse Samples

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