

# Risk of Traumatic Brain Injury Among Children, Adolescents, and Young Adults With Attention-Deficit Hyperactivity Disorder in Taiwan

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J Adolesc Health. 2018 Jun 30. pii: S1054-139X(18)30136-8.

doi: 10.1016/j.jadohealth.2018.02.012.

## Abstract

### PURPOSE:

Previous studies suggested that patients with attention-deficit hyperactivity disorder (ADHD) were prone to health-risk behaviors and accidents. However, the relationship of ADHD with the risk of traumatic brain injury (TBI) remained uncertain.

### METHODS:

Using the Taiwan National Health Insurance Research Database, 72,181 children (aged 3-11 years), adolescents (12-17 years), and young adults (18-29 years) with ADHD and 72,181 age-/sex-matched controls were enrolled between 2001 and 2009, and followed up to the end of 2011 in our study. Those who developed any TBI during the follow-up period were identified.

### RESULTS:

Children, adolescents, and young adults with ADHD had a higher incidence of developing any TBI (9.8% vs. 2.2%,  $p < .001$ ), such as skull fracture (.2% vs. .1%,  $p < .001$ ) and concussion (4.3% vs. 1.0%,  $p < .001$ ), than the controls did. Cox regression analysis with the adjustment of demographic data, psychiatric comorbidities, and ADHD medications showed that ADHD was related to an increased risk of subsequent TBI (hazard ratio: 4.57, 95% confidence interval: 4.31-4.85), and indicated that long-term use of ADHD medication was associated with a reduced likelihood of subsequent TBI (hazard ratio: .93, 95% confidence interval: .87-.99).

### CONCLUSIONS:

Patients with ADHD had an increased risk of developing any TBI compared with the controls. Long-term use of ADHD medications would reduce this risk. Our findings suggested that the public health government and clinicians should pay more attention to the TBI risk among patients with ADHD, and further indicated the importance of the optimal treatment for ADHD.