Acute Depression and Anxiety Symptoms following Concussion in an Adolescent Outpatient Population

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Acute Depression and Anxiety Symptoms following Concussion in an Adolescent Outpatient Population

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Concussion affects a large number of youth each year.

Mixed results regarding depression/anxiety sx in youth following concussion.

Few studies:
- Describe the presence/severity of depression and anxiety symptoms during the acute phase following a concussion in adolescents.
• **Research Question**
  - Compare dep/ anx symptoms in concussed (cases) and non-concussed (controls) adolescents using validated measures of dep and anx.
    • 1) Are more anx/dep sxs **endorsed** in our concussed cohort vs. healthy controls?
    • 2) Will the proportion of cases above **normal limits** of anx/dep differ from controls?

• **Hypothesis**
  - Concussed adolescents will have more dep and anx sxs than healthy controls, and the proportion of cases above normal limits of dep/anx will be greater than controls
Approach & Results

- **Study design:**
  - Case-control study

- **Participants:**
  - Adolescents, age 13-18 years.
    - **Cases:** Adolescent patients at CHOP with a concussion diagnosis (n=114)
    - **Controls:** Healthy, non-concussed sports participants from a private, Philadelphia high school (n=170)

- **Variables:**
  - **Independent:** Concussed vs non-concussed
  - **Dependent:** Anxiety/ Depression sx Severity

- **Data Source/ Measures:**
  - Patient-Reported Outcomes Measurement Information System (PROMIS) Depression and Anxiety forms for sx severity.

- **Rationale for Approach:**
  - Allows us to directly compare our healthy and concussed groups (age, sex-matched)
• **Analysis**
  – Sociodemographic characteristics of cases and controls:
    • Chi-Square tests (categorical variables)
    • Wilcoxon rank sum tests (continuous variables)
  – Proportion of cases and controls who had anxiety and depression scores above normal limits to those within normal limits
    • Chi-Square tests
  – Kernel density plots were used to display the distribution of t-scores by cases and controls on the anxiety and depression measures.

• **Findings**
  – Avg depression t-scores were higher in cases post-injury compared to controls.
    • No sig diff in avg anxiety t-scores
  – The proportion of **cases** above normal limits (>50 t-score) on the anx and dep measures was significantly greater than **controls**.
**Figure 1.** Kernel Density Plot for PROMIS Anxiety T-Scores by Case/Control

**Figure 2.** Kernel Density Plot for PROMIS Depression T-Scores by Case/Control
Conclusions

• **Conclusion:**
  - Concussed adolescents have greater acute depressive, but not anxiety, sx compared to controls.
  - % of cases above normal limits on the PROMIS Anx and Dep scales is significantly greater than controls

• **Impact:**
  - Adds to concussion literature by focusing on adolescents in the acute timeframe post-concussion

• **Implication:**
  - We suggest clinicians make anx and dep screening a regular component of concussion care and treatment
Future Directions

- Manuscript being finalized
- Submission within the next month
• No disclosures
• We are grateful to the students and parents from the Shipley School and families at the Children’s Hospital of Philadelphia for their participation in this research study