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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**

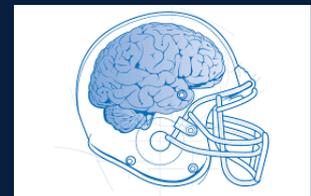
Research Question & Hypothesis

- **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





- 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)

Approach & Results

- **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

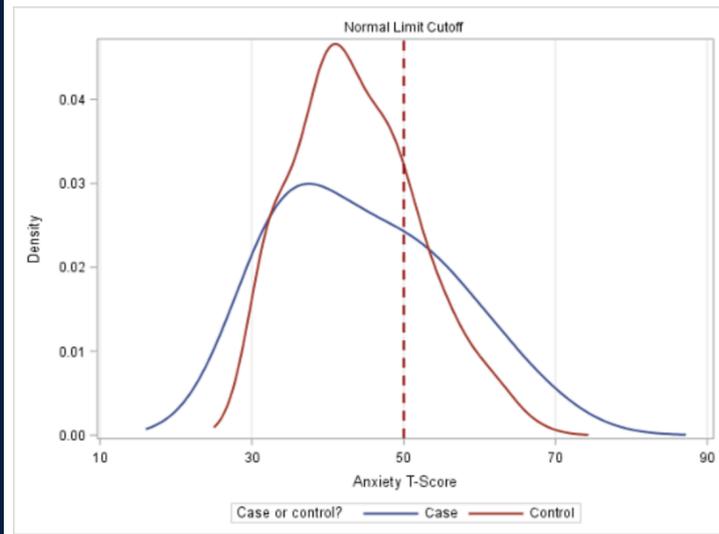
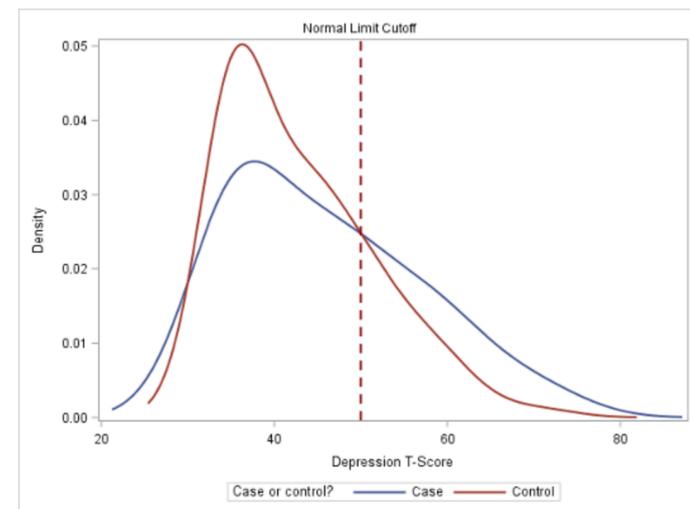


Figure 2. Kernel Density Plot for PROMIS Depression T-Scores by Case/Control





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

Disclosures & Acknowledgements

- No disclosures
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