Social Connectedness in Pediatric Brain Cancer Survivors

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Poor social connectedness is often a significant challenge for pediatric brain tumor survivors (PBTS). PBTS have fewer friends, lower peer acceptance, and more social isolation than peers. However, the factors contributing to these difficulties are unclear and little is known about how domains of social connectedness influence health-related quality of life (HRQL) and well-being over time in survivors. Our conceptual model (Figure 1) suggests that cancer-related brain injury causes physical and neurodevelopmental sequelae that impact social information processing (SIP) and social behavior and lead to deficits in social connectedness, which in turn contribute to poor HRQL and well-being.

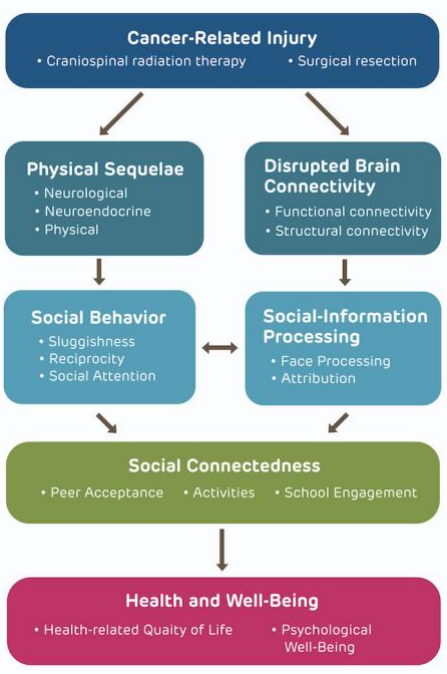

Figure 1. Conceptual Model

The objectives of this longitudinal study are to 1) compare domains of social connectedness among survivors of malignant brain tumors to survivors of non-malignant brain tumors; 2), assess the influence of social connectedness on HRQL and well-being; and 3) evaluate risk and mechanistic factors for the trajectory of social connectedness to identify intervention targets. At each study visit, participants complete measures of social connectedness, HRQL, and psychological well-being, as well as assessments of cognitive functioning, body composition, neuroendocrine function, hearing, brain connectivity (e.g., MRI), SIP and social behavior.

Study accrual began in September 2022. This abstract offers early descriptive data and concurrent associations between select variables. 34 survivors (*M*age = 12.15 $\pm$ 1.93 years; *M*age at diagnosis = 6.07 $\pm$ 3.14 years; 55.9% male) have completed Time 1 (38.2% medulloblastoma; 17.6% craniopharyngioma; 44.2% pilocytic astrocytoma). Mean scores on measures of social functioning were within the average range with 23 - 40% demonstrating concerns in social functioning, depending on the measure. On the PROMIS Pediatric Fatigue Short Form, 20% endorsed moderate concerns. Additionally, 26.7% of survivors endorsed moderate concerns on both the PROMIS Pediatric Anxiety and Depression Short Forms.

Better facial expression recognition on a laboratory measure of SIP was related to fewer social impairments on the Social Responsiveness Scale-2 (SRS-2; $r = .41$, $p < .05$) and better connectedness with friends on the Hemingway Measure of Adolescent Connectedness (HMAC; $r = .39$, $p < .05$). Higher levels of self-reported fatigue were associated with more social impairments on the SRS-2 ($r = .58$, $p < .01$), worse peer relationships on the PROMIS Pediatric Peer Relationships Short Form ($r = .58$, $p < .01$), and reduced connectedness with friends ($r = .39$, $p < .05$) and peers ($r = .47$, $p < .01$) on the HMAC. Increased depressive symptoms were related to more social impairments (SRS-2; $r = .46$, $p < .05$), worse peer relationships (PROMIS; $r = .57$, $p < .01$), and reduced connectedness with friends ($r = .39$, $p < .05$) and peers ($r = .48$, $p < .01$) on the HMAC. More anxiety was related to more social impairments (SRS-2; $r = .55$, $p < .01$), worse peer relationships (PROMIS; $r = .47$, $p < .01$), and less connectedness (HMAC) with friends ($r = .41$, $p < .05$) and peers ($r = .47$, $p < .01$).

Future work will focus on longitudinal analyses to determine the factors affecting the trajectory of social connectedness and well-being in survivors of pediatric brain cancer. Such knowledge will inform intervention efforts aimed at improving these vital outcomes in survivors.