Translating the impact of Mindfulness-Based Stress Reduction (MBSR) among breast cancer survivors with chronic neuropathic pain: A preliminary look at structural connectivity of the brain

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Introduction
Some studies have indicated that Mindfulness Based Stress Reduction (MBSR) can be an effective treatment for neuropathic pain, ameliorating physical and psychosocial symptoms. Such results are promising given that well-established treatment interventions for individuals in this population have proven elusive. The purpose of this study was to determine if, using structural diffusion tensor imaging, MBSR had an effect on structural connectivity of the brain in a sample of women with neuropathic pain after treatment for breast cancer.

Methods
Participants were recruited from cancer centres in Ottawa, Canada as part of a randomized controlled trial (RCT). A total of 20 participants were selected forming two groups: MBSR vs. wait-list control. Voxelwise whole-brain analysis of functional anisotropy (FA) data was carried out using Tract-Based Spatial Statistics (TBSS v1.2). Statistical maps were inspected at $p < .05$ uncorrected for multiple comparisons. Testing protocol was conducted prior to and after an 8-week MBSR intervention

Results
No statistically significant group differences were found in functional anisotropy (FA) values at Time 2, or within the MBSR group at Time 1 and Time 2.

Conclusion
Though some studies indicate that individuals who have neuropathic pain have altered structural connectivity of the brain, this study suggests that an MBSR intervention does not improve the negative impact of neuropathic pain on white matter integrity. Notably, some functional measures in this same study reflected significant changes in emotional reactivity. The results of diffusivity analyses may be reflective of limited program duration, or intervals between scanning that were too short to identify such changes in the brain. Future directions will include analysis of Mean Diffusivity (MD), resting state and functional connectivity in this sample.

Recent Publications

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Biography

Aziza Byron-Alhassan is a Ph.D. student in clinical psychology at the University of Ottawa in Ottawa, Canada. Her areas of research include using functional magnetic resonance imaging (fMRI) to study the neural correlates of brain injury and loss of neurocognitive function. Ms. Byron-Alhassan is trained to perform clinical interventions and neuropsychological assessments, and works with individuals in the areas of clinical, health, and rehabilitation psychology.