

Belmont University

Belmont Digital Repository

Science University Research Symposium
(SURS)

Special Events

Winter 12-1-2022

Sex Differences in the Disease Progression of FTD vs AD

Abigail Mitchell

Belmont University, abigail.mitchell@bruins.belmont.edu

Danielle Frances

Belmont University, danielle.frances@bruins.belmont.edu

Chase Metzger

Belmont University, chase.metzger@bruins.belmont.edu

Follow this and additional works at: <https://repository.belmont.edu/surs>



Part of the [Neurosciences Commons](#)

Recommended Citation

Mitchell, Abigail; Frances, Danielle; and Metzger, Chase, "Sex Differences in the Disease Progression of FTD vs AD" (2022). *Science University Research Symposium (SURS)*. 38.

<https://repository.belmont.edu/surs/38>

This Oral Presentation is brought to you for free and open access by the Special Events at Belmont Digital Repository. It has been accepted for inclusion in Science University Research Symposium (SURS) by an authorized administrator of Belmont Digital Repository. For more information, please contact repository@belmont.edu.

Abigail Mitchell, Danielle Frances, Chase Metzger

Sex Differences in the Disease Progression of FTD vs AD.

Abstract

Neurodegenerative diseases are on the rise in aging populations due to the upper tier of the population getting larger in that age group (Zheng & Chen, 2022). Knowing this, there is great benefit in more accurate and early diagnosis of conditions like frontotemporal dementia (FTD) and Alzheimer's disease (AD). Particularly, it is important to understand which variables may contribute to differences in disease burden and progression of associated sequelae, with one of those variables being biological sex. The current study investigated sex differences in the disease progression of Frontotemporal dementia (FTD) versus Alzheimer's (AD) over time. All data for this study was extracted from open datasets provided by the National Alzheimer's Coordinating Center (NACC). Disease progression is quantified by deficits in cognitive ability as well as volumetric loss in the brain. In particular, voxel-based morphometry analyses on high-resolution T1 MRI scans extracted whole grey matter volumes (GM) at 2 timepoints, separated by years, as well as regionally-specific volumetric measures of the insula for FTD, hippocampus for AD and the cingulate cortex for both conditions. Coping ability outcomes, measured by traditional clinical assessments at matching timepoints to the MRI acquisitions include the Clinical Dementia Rating scale sum of boxes (CDRsb), Mini-mental state exam (MMSE), and Montreal cognitive assessment (MOCA). The current study expects to replicate existing findings in the field, with FTD and AD female patients revealing faster disease progression than males, as measure by volumetric analyses. However, it is expected that FTD females will reveal better coping abilities compared to males, and that AD females will have worse coping abilities in a similar sex comparison. The data is currently being analyzed and the results will be presented at

the conference. Understanding sex differences is important for clinical considerations in order to provide more accurate diagnoses and tailor clinical interventions for better clinical outcomes.