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Longitudinal Depression-Cognition Interactions in Parkinson's Disease

Background

Parkinson's Disease (PD) is a neurodegenerative disease characterized by the onset of motor and non-motor symptoms. Among the latter, depression and cognitive impairment are common. Although both have been studied individually, increasingly attention has been directed toward their potential longitudinal interaction, as depressive symptoms may influence or reflect changes in cognitive function over time. Screening assessments, such as the Symbol Digit Modalities test (SDMT) and the Center for Epidemiologic Studies Depression Scale (CES-D) are staple tools used in the field of neurodegenerative diseases for characterizing cognitive impairment and depression, respectively.

Objective

To evaluate the relationship between depressive severity and cognitive function in patients with PD, with a focus on whether changes in depressive symptom burden are associated with changes in cognitive function.

Methods

This study utilized a prospective case-control model of a 28-adult cohort with clinically established PD recruited from a multispecialty clinic neurology practice in the Gulf South. The cohort is compared based on the SDMT T-score and CES-D score. Regression models were also run based on demographic variables that may influence cognitive performance, such as age, gender, duration of time with PD, and years of education. Those with neurological comorbidities (e.g. stroke) and baseline cognitive impairment severe enough to preclude participation in testing were excluded. Participant inclusion was based on the completion of both the SDMT and CES-D throughout multiple follow-up visits. Results were analyzed using correlation models on JASP, with depression set as the dependent variable and SDMT T-scores as the independent variable. Each of these measures is just a one time assessment right now.

Results

The PD cohort was composed of 17 females and 11 males. Depression scores were inversely correlated with SDMT T-scores ($R = -0.589$, $p = .001$, $R^2 = .347$). Gender was not correlated with depression scores ($R = -0.012$, $p = 0.951$), nor were disease duration ($R = -0.231$, $p = 0.238$), age ($R = 0.036$, $p = 0.854$), or years of education ($R = 0.194$, $p = 0.321$).

Conclusion

Correlation analysis implies a decline in cognitive function more strongly increases depression severity compared to other factors. Demographic variables showed weak correlation with depression; however, this experiment was limited by its small sample and its small percentage of people from minoritized groups. Future experiments can explore the relationship between race and depression and cognitive function in patients with PD.