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"The Symbol Digit Modalities Test and Cognition in Parkinson's Disease"

Even though it is diagnosed by characteristic motor features, Parkinson's Disease (PD) can be accompanied by mild cognitive impairment. The Montreal Cognitive Assessment (MoCA) has been proven to be a valid test used by clinicians to identify mild cognitive impairment in patients with PD. The MoCA tests involves 30 questions that assess an individual's short-term memory, orientation, attention, abstraction, executive function, and language abilities; however, the time it takes to complete the MoCA test has been seen as a problem.

The aim of this study is to determine if the Symbol Digit Modalities Test (SDMT) can correctly predict the classification of cognitively impaired and cognitively normal in patients with PD. The SDMT is a short test where there is a symbol key at the top of the page that pairs each unique symbol with a single digit ranging from 1-9. Below the key, there are rows of the symbol only, and patients are asked to orally report the correct number for each corresponding symbol. The oral version was administered to prevent for any interference from motor impairment that would affect the written version. The score was recorded as the number of correct responses in 90 seconds.

For this study, we recruited 32 patients with PD and 58 controls. We administered both the MoCA test and the SDMT to each participant. Since the MoCA is sensitive to detecting mild cognitive impairment in PD, a score below 26 classifies a participant as impaired while a score of 26 or higher classifies a participant as not impaired.

We used one-way analysis of variance (ANOVA) to determine that participants with PD performed significantly worse on the MoCA (p-value=0.007) and the SMDT (p-value<0.001) compared to the controls. Binomials logistic regression analyzed the ability of the SDMT to correctly predict impairment in PD based on classification by the MoCA. The SDMT correctly classified 90.6% of PD patients (p-value=0.038). We ran a Receiver Operating Characteristics (ROC) curve to determine the sensitivity of the SDMT screening and calculated an area under the curve value of 0.80. Based on these results, the SDMT is a brief assessment that may be an effective test used to detect mild cognitive impairment in PD.