

Introduction

- Cognitive decline has been seen with advanced age for many generations.
- The rate of cognitive decline was found to vary between individuals throughout adulthood and old age (Lövdén et al, 2020).
- Lövdén also found the amount of formal educational years completed to be positively correlated with their cognitive function throughout adulthood.
- Parkinson's Disease (PD) is a neurodegenerative brain disorder found to be age-related, affecting 3% of individuals aged 65 and up to 5% of individuals over 85 years of age (Cerri et al, 2019).
- This study aimed to understand the impact of age and educational level in cognitive impairment assessments of patients with Parkinson's Disease in the Greater New Orleans area.

Methods

- Participants diagnosed with Parkinson's Disease (PD) were enrolled in our study to assess cognitive performance.
- They underwent cognitive assessment using the Montreal Cognitive Assessment (MoCA) and the Symbol Digit Modalities Test (SDMT).
- Healthy controls were also enrolled in our study and underwent the same cognitive assessments using the MoCA and SDMT.

Hypothesize

We hypothesize that individuals 65 years of age or older and those having 12 years of education or less diagnosed with PD will result in lower cognitive scores than seen in the comparison groups.

Results

Figure 1: Parkinson's vs Controls Before Bonferroni Correction

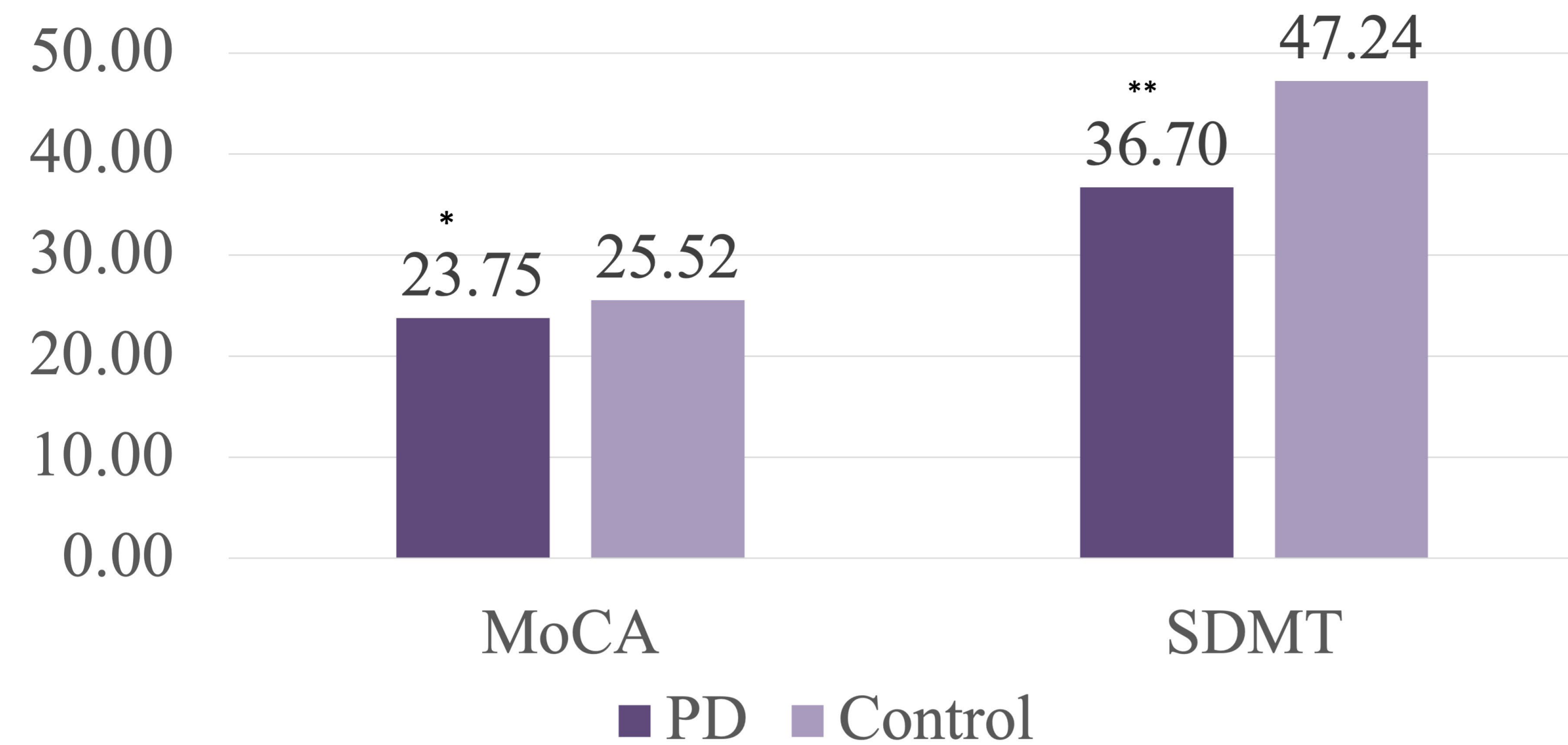
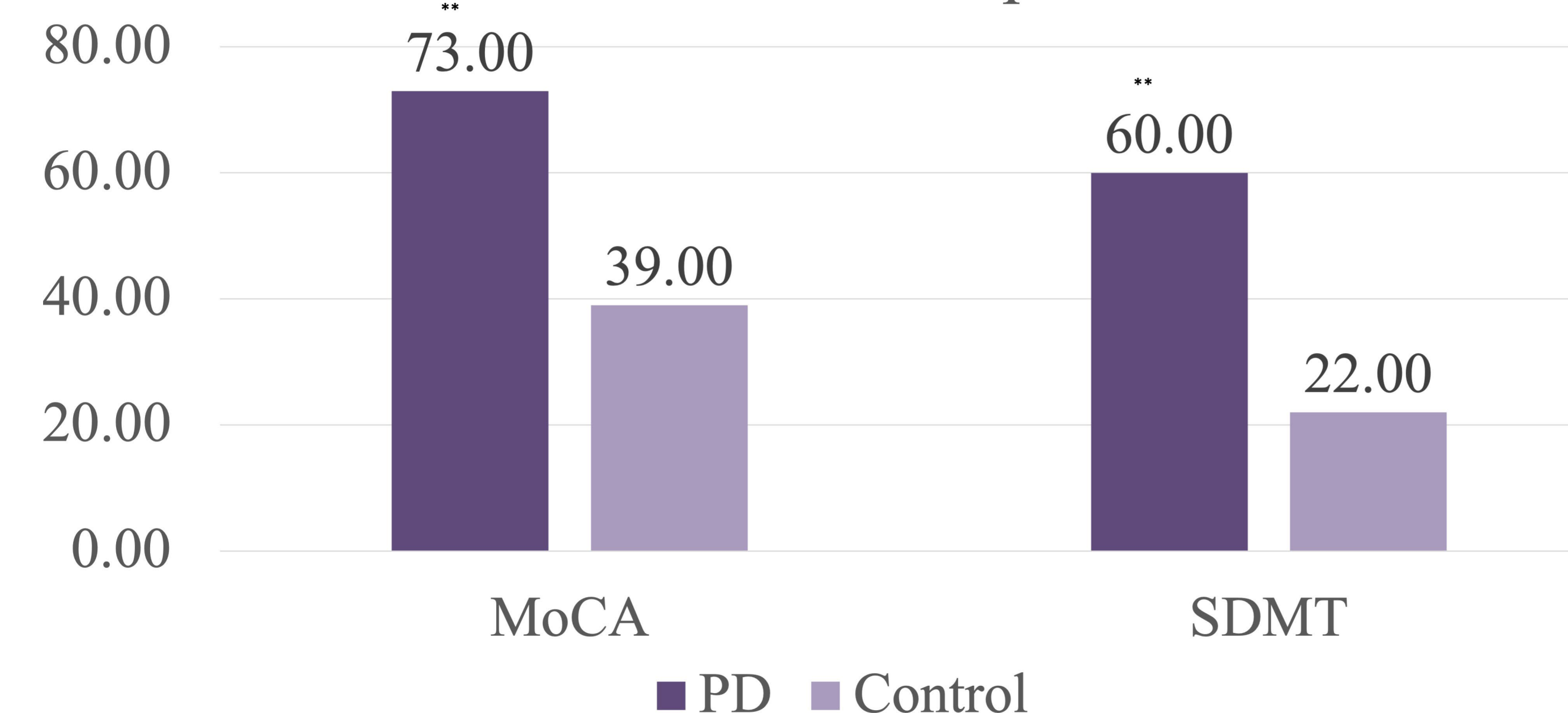


Figure 2: Percentage of Cognitive Impairment Between Groups



- There was no significant difference in age and educational level between the study and control groups.
- The groups differed on the MoCA ($F = 5.6, p = 0.02$) with patients scoring significantly worse ($M=23.8, SD=3.5$) than controls ($M=25.5, SD=3.6$).
- There was also a difference on the SDMT between groups ($F = 19.1, p = 0.001$) showing patients scoring worse ($M = 36.7, SD=12.3$) compared to controls ($M = 47.2, SD = 10.9$).
- Group differences on MoCA and SDMT remained significant even after correction for multiple comparisons using a Bonferroni correction.
- There was significant correlation between age and performance on MoCA ($r=-.263, p = 0.01$) and the SDMT ($r=-.443, p < 0.001$) showing that older age was associated with worse performance on both assessment tools.
- Within the Parkinson's group, participants over 65 performed significantly worse on the SDMT ($M=22.8, SD=3.5$) than participants under 65 ($M=24.9, SD=3.3; p = 0.01$), but there was not a significant difference between groups on the MoCA. There were not significant difference between participants with Parkinson's with 12 years of education or less compared to those with more than 12 years of education.

Summary

- Advanced age was shown to be associated with cognitive impairment in our study, which proved our alternative hypothesis.
- Patients with Parkinson's Disease at its typical age of onset (or older) showed increased levels of cognitive impairment compared to similar age controls.
- Patients with Parkinson's Disease had significantly greater cognitive impairment on the MoCA and SDMT compared to controls.
- Performance on the MoCA produced a higher percentage of cognitive impairment in Patients with Parkinson's Disease.
- The level of education of patients with Parkinson's Disease was not associated with greater cognitive impairment in our study.

Future Directions

- Create an updated version of the MoCA that accounts for age.
- If the above cannot be done, account for age secondarily when assessing an individual's level of cognitive decline when using the MoCA.

References

- Cerri, S., Mus, L., & Blandini, F. (2019). Parkinson's Disease in Women and Men: What's the Difference?. *Journal of Parkinson's disease*, 9(3), 501–515. <https://doi.org/10.3233/JPD-191683>
- Lövdén, M., Fratiglioni, L., Glymour, M. M., Lindenberger, U., & Tucker-Drob, E. M. (2020). Education and Cognitive Functioning Across the Life Span. *Psychological science in the public interest : a journal of the American Psychological Society*, 21(1), 6–41. <https://doi.org/10.1177/1529100620920576>