

# Impact of mild cognitive deficits on daily functioning in Parkinson's disease

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## Abstract

- **Background.** Patients with Parkinson's disease often present with mild cognitive deficits. The relationship between these impairments and ADL function has not been determined.
- **Objectives.** To evaluate the relationship between cognitive impairment and activities of daily living (ADL) in Parkinson's disease patients.
- **Methods.** The subjects were tested for cognitive status using the Dementia Rating Scale-2 (DRS-2) and the Mini Mental State Exam (MMSE). Alzheimer's Disease Cooperative Study Activities of Daily Living Inventory (ADCS-ADL) data were obtained via caregiver report as a measure of daily function.
- **Results.** Subjects with age-scaled DRS-2 scores in the mildly impaired range showed significant decrement in ADL function as compared to subjects with intact scores.
- **Conclusions.** Our data suggest that PD patients with mild cognitive deficits have ADL impairments as a result of cognitive dysfunction.

## Background

- Definition of Mild Cognitive Impairment (MCI) as it relates to prodromal Alzheimer's disease (AD): mild cognitive deficits are present, but they do not have a functional correlate.
- It is unknown whether cognitive deficits of similar magnitude may have a functional correlate in PD patients.
- We hypothesized that these mild cognitive deficits cause problems in ADL function in PD.

## Objectives

1. To determine the functional significance of mild cognitive deficits in PD.
2. To assess the accuracy of two clinical measures to detect clinically significant decrements in cognitive function.

## Methods

- 57 PD patients, including 14 women and 43 men, were recruited from Pennsylvania Hospital and the Philadelphia VA Medical Center.
- The subjects were tested for cognitive status using the Dementia Rating Scale-2 (DRS-2) and the Mini Mental State Exam (MMSE).
- We designated MMSE scores >27 as intact, 24-27 as mildly impaired and < 24 as demented.
- The age-scaled DRS-2 is a 15 point scale. We designated scores > 9 as intact, 6-9 as mildly impaired and < 6 as demented.
- Alzheimer's Disease Cooperative Study Activities of Daily Living Inventory (ADCS-ADL) data were obtained via caregiver report as a measure of daily function.

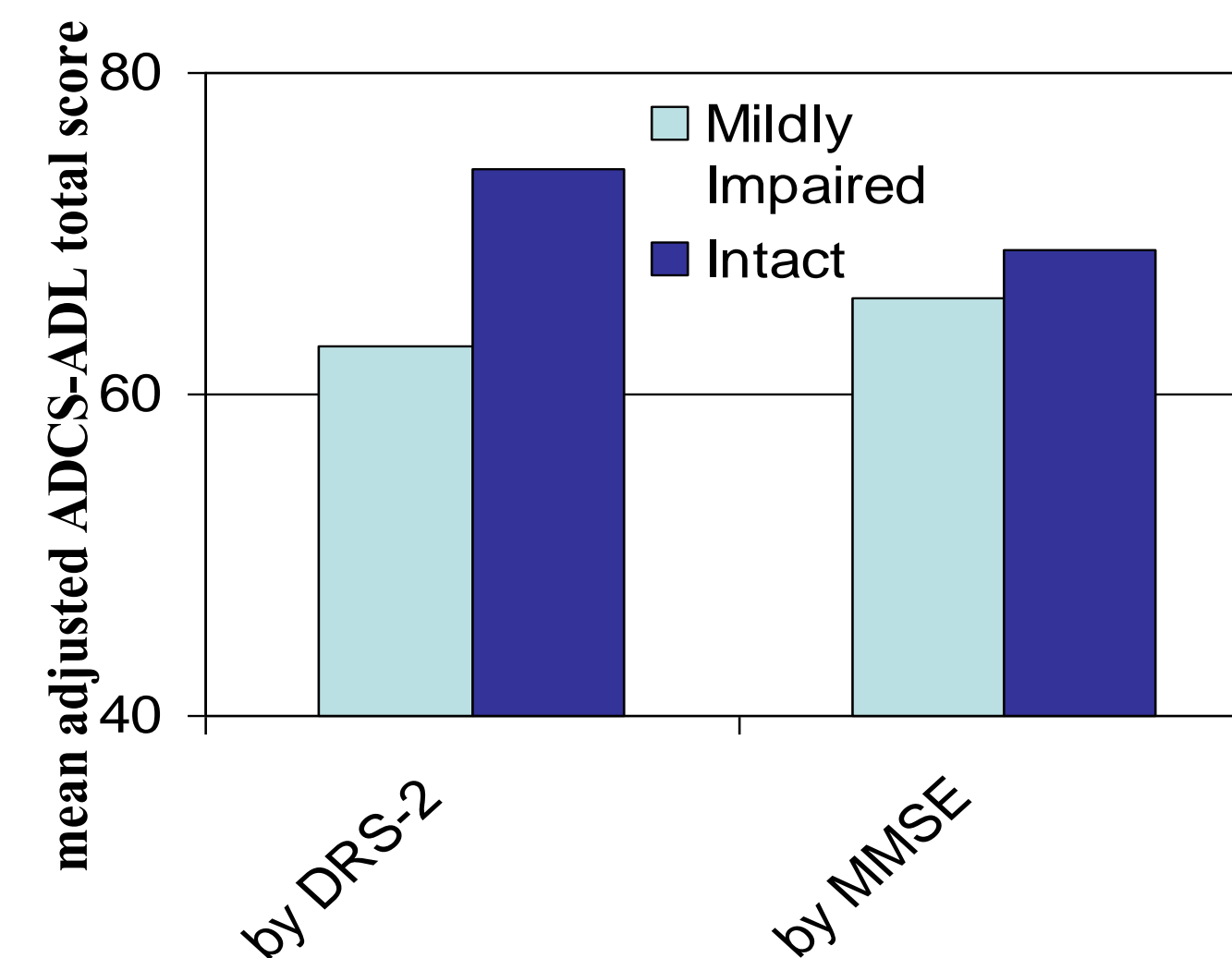
Table 1: Demographic characteristics of our sample

	Mean	SD	Min	Max
Age	73	7.4	60	94
MMSE	26	4.1	14	30
DRS-2	8	3.6	2	15
ADCS-ADL	67	13.8	20	78

- The ADCS-ADL questionnaire was separated into two categories:
  - Basic ADL (BADL) function, such as eating and bathing
  - Instrumental ADL (IADL) function, such as shopping and telephone use
- The Unified Parkinson's Disease Rating Scale (UPDRS) was used to adjust for differences in motor performance.

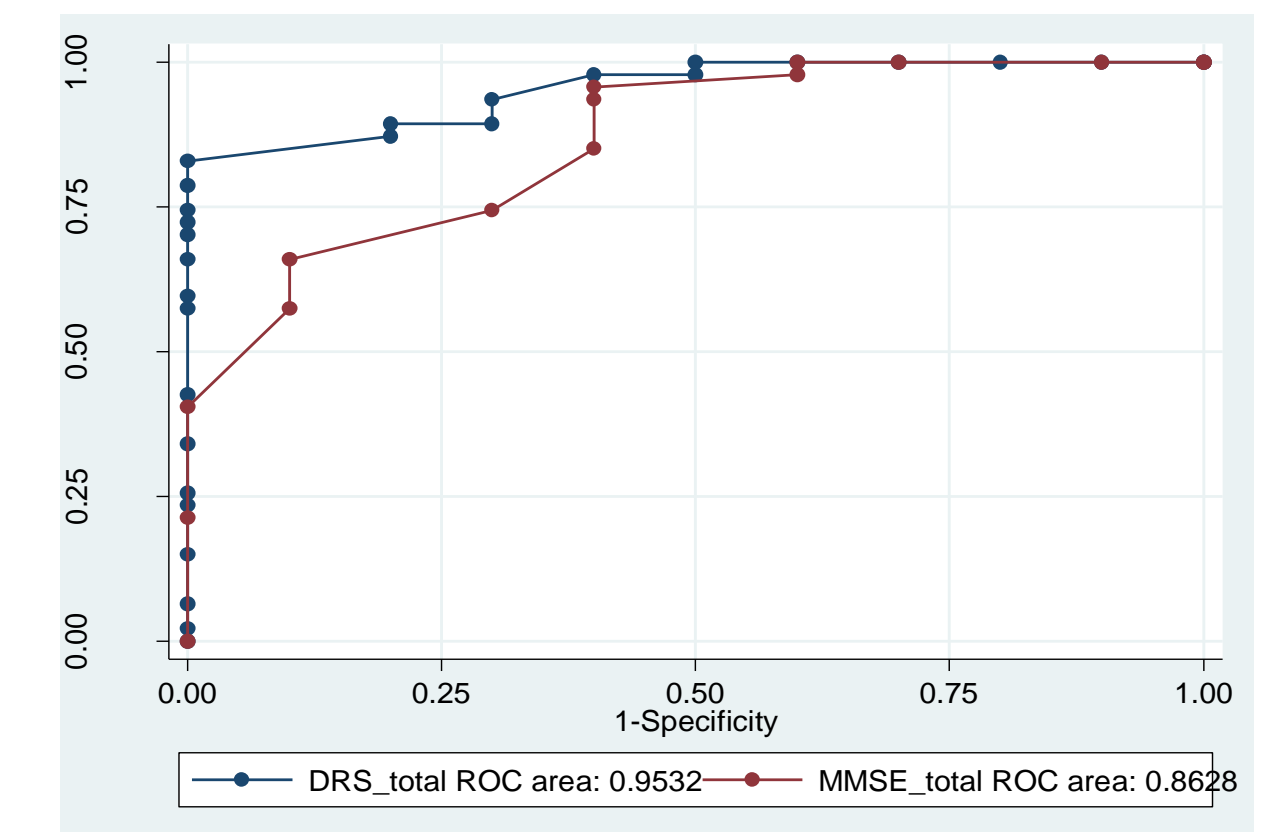
## Results

- Subjects with age-scaled DRS-2 scores in the mildly impaired range showed significant decrement in total ADL function as compared to subjects with intact scores (74 vs. 63;  $p = 0.002$ ).
- When categorized by the MMSE, mildly impaired subjects had lower ADL scores, but the results were not statistically significant in our sample (69 vs. 66;  $p > 0.05$ ).



- Subjects with age-scaled DRS-2 scores in the mildly impaired range showed significant decrement in IADL function as compared to subjects with intact scores (52 vs. 43;  $p = 0.025$ ).
- BADL scores of mildly impaired subjects were also lower, and the results were significant in our sample (22 vs. 19;  $p = 0.005$ ).
- Demented subjects, as rated by the DRS-2, showed significant decrement in total, basic and instrumental ADL function.

- A plot of Sensitivity vs. (1-Specificity) showed a greater area under the Receiver Operating Characteristic (ROC) curve for the DRS-2 raw score than for the MMSE.



## Conclusions

- PD patients with mild cognitive deficits have ADL impairments as a result of cognitive dysfunction.
- Better recognition of mild cognitive deficits is needed, as they are a cause of disability in Parkinson's disease and could be a target for therapy.
- The DRS-2 is a more sensitive measure than the MMSE for detecting these functionally significant mild cognitive deficits in PD.