

Patient-Informant Agreement on a Multidimensional Measure of Cognitive Impairment and Its Impact on Health-Related Quality of Life

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ABSTRACT

The purpose of this pilot study was to assess patient-informant agreement on a multidimensional instrument designed to assess deficits related to cognitive impairment and their impact for individuals with mild cognitive impairment (MCI) and mild-to-moderate dementia of the Alzheimer's type (DAT). Participants were 39 patient-informant dyads: 19 probable mild DAT (NINCDS-ADRD criteria) and 20 MCI (memory complaints with informant corroboration; no ADL impairment; normal cognitive function; no dementia). Patients completed the Patient Reported Outcomes in Cognition instrument (PROCOG), a psychometrically validated 55-item questionnaire designed to capture symptoms and impact of cognitive impairment. Informants rated patients using an informant version of the PROCOG. Patient-informant agreement was assessed with t-tests, intra-class correlation coefficients (ICC), and Kendall's tau. In all domains except long-term memory, informants reported numerically greater impairment than patients. There were statistically significant differences between patient and informant reports on subscales assessing skill loss, memory for recent event, and social impact ($p < .05$). The difference between patient and informant reports on the cognitive function scale approached statistical significance ($p = .07$). ICCs were in the small-to-moderate range (0.03 to 0.22). These pilot results from a mildly impaired sample are consistent with previous research with more severe DAT samples, which suggests that MCI and mild DAT patients may underestimate cognitive deficits and their impact on HRQL domains such as affect and social functioning. Use of this instrument may add a unique contribution to the characterization of cognitive impairment from the patient and informant perspectives.

INTRODUCTION

- MCI has been defined as a potentially prodromal phase of dementia of the Alzheimer's type (DAT) based on clinical presentation and data on progression to DAT over time (Morris et al., 2001; Petersen et al., 1999). Detection and measurement of cognitive symptoms and impact among patients with MCI and mild DAT is of key importance for disease management.
- There is a growing body of research on the accuracy of caregiver reporters as proxies for patients with DAT (e.g., Arguelles et al., 2001; Loewenstein et al., 2001). This is a key issue for assessment of patients with cognitive impairment because informant-report may be necessary for many patients whose dementia interferes with insight and, therefore, limits validity of results.
- Little is known about the patient-informant agreement among samples of MCI and mild DAT patients.

OBJECTIVE

The objective of the current study was to evaluate patient-informant agreement on cognitive impairment symptoms and their impact among dyads in which the patient has a relatively mild level of cognitive impairment.

METHODS

A total of 39 patient-caregiver dyads recruited from 5 U.S. academic medical centers and memory clinics completed a new patient-reported outcomes instrument (the PROCOG) designed to assess the impact of MCI and mild-to-moderate DAT on functional, behavioral, and health-related quality of life (HRQL) domains to assess patient-informant concordance.

Participant Inclusion/Exclusion Criteria

Subjects

All patients: Age >64, Center for Epidemiological Studies Depression Scale (CES-D) <23.

Mild DAT Patients: Current diagnosis (last 3 months) of probable DAT (NINCDS-ADRD) criteria; mild severity based on clinical evaluation.

MCI Patients: Memory complaints with informant corroboration of deficit; self-reported normal general cognitive function; Clinical Dementia Rating (CDR) score of 0.5 (memory box score of 0.5 or 1) within prior 3 months.

Patient Exclusion Criteria: Serious life events in the previous 3 months that may have affected the HRQL of the participant in the judgment of the investigator; current participation in another research study/clinical trial that includes the use of investigational medications for cognitive indications; history of alcohol or substance abuse consistent with DSM-IV criteria within the past 2 years.

Informants: Family member or friend of patient who either sees and/or speaks with the patient a minimum of 4 times per week or resides with the patient; ≥21 years of age; free of severe mental illness, current substance abuse, or dementia-related illness such as Alzheimer's Disease.

NOTE: Subjects could be currently taking prescription or non-prescription medication for their MCI or DAT.

Instrument: The PROCOG

- The PROCOG is a 55-item questionnaire that assesses the impact of cognitive symptoms. This instrument was developed through literature review, discussion with clinical experts, focus groups with patients and caregiver informants in the UK and US, and thorough psychometric validation (Frank et al., 2003).
- The PROCOG yields seven subscale scores: (1) affect, (2) skill loss, (3) semantic memory, (4) memory for recent events, (5) cognitive function, (6) social impact, and (7) long-term memory. Subscales were identified based on exploratory factor analysis. Subscale scores are calculated as the mean value of all items within the subscale. A total score is computed as the sum of all items (range: 0-220).
- Each item is rated on a 5-point Likert scale. Higher values on all scales indicate more severe impact of cognitive symptoms.
- Psychometric validation found this instrument to have good item performance, internal consistency reliability, test-retest reliability, concurrent validity, and discriminant validity (Frank et al., 2003).

METHODS (CONT'D)

Analysis of Patient-Informant Agreement

- The inter-rater reliability between patient and informant scores on the PROCOG multiple item subscales (i.e., the total score and subscales 1 to 6) was assessed using fixed-effects intra-class correlation coefficients (ICC). The ICC is considered the best statistic to use to assess inter-rater reliability between multiple raters on multiple-item, interval-level continuous scales (McDowell & Newell, 1996).
- For subscale 7, the single-item subscale assessing long-term memory, patient-informant concordance was assessed using Kendall's tau, which is appropriate for a single-item ordinal scale (McDowell & Newell, 1996).
- For all 7 subscales, t-tests were used to compare the mean scores of patients to the mean scores of the informants.

RESULTS

Descriptive Statistics for the Sample

- 39 patient-caregiver dyads participated in the current study (See Table 1).
- Mean Mini-Mental State Exam (MMSE) scores were 23.1±4.0 for DAT, 27.5± 2.2 for MCI, and 28.1± 2.0 for controls.
- Patients had a mean age of 76.2 years, and the DAT patients (79.2 years) were slightly older on average than the MCI patients (73.5 years). Informants had a mean age of 65.0 years.
- A total of 56% of the patients were male, whereas the caregiver informants were primarily female (74%). Patients and caregiver informants were mostly Caucasian (90% and 92% respectively).
- Most caregiver informants were either spouses (62%) or children (31%) of the patients.

Table 1. Sample Demographics

Characteristic	Patients			Informant Caregivers
	MCI (N=20)	Mild DAT (N=19)	MCI+DAT (N=39)	(N=39)
Age (Mean years ± SD)	73.5 ± 6.3	79.2 ± 3.9	76.2 ± 6.0	65.0 ± 12.3
Gender (% Male)	75%	37%	56%	26%
Race/ethnicity (%)				
Caucasian	80%	100%	90%	92%
Highest Level of Education Completed (%)				
High School	15%	58%	36%	26%
College Degree	35%	16%	26%	28%
Postgraduate Degree	25%	16%	21%	26%
Employment Status (%)				
Retired	75%	89%	82%	36%
Domestic Status (%)				
Living with Patient				69%

RESULTS (CONT'D)

Patient-Informant Agreement

- ICCs for multiple-item scales were in the small-to-moderate range indicating limited agreement between patient and informant report, with values ranging from 0.03 for subscale 1 (affect) to 0.22 for subscale 3 (semantic memory) (Table 2).

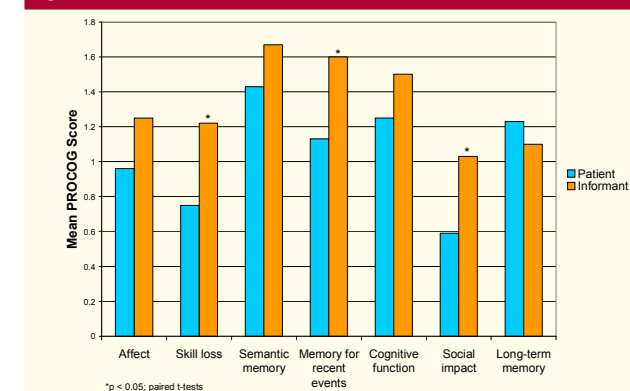
Table 2. PROCOG Informant-Patient Concordance

Subscale	Pearson's r ²	ICG ³
PROCOG Total Score	0.12	0.10
Subscale 1: Affect	0.04	0.03
Subscale 2: Skill loss	0.21	0.17
Subscale 3: Semantic memory	0.23	0.22
Subscale 4: Memory for recent events	0.18	0.15
Subscale 5: Cognitive function	0.14	0.14
Subscale 6: Social impact	0.25	0.21
Subscale 7: Long-term memory	0.27	0.26

¹ N = 19 participants with DAT and 20 with MCI
² Pearson product-moment correlation coefficient
³ Fixed effects intra-class correlation coefficient for Subscales 1-6; Kendall's tau-b for Subscale 7

- Informants reported greater impairment than patients in the PROCOG total score and subscales measuring skill loss, semantic memory, memory for recent events, cognitive function, and social impact. T-tests indicated that these differences were statistically significant for the total score, skill loss, memory for recent events, and social impact (Figure 1).
- In contrast, patients reported greater impairment than informants on the single-item subscale assessing long-term memory. A t-test revealed that this difference was not statistically significant.

Figure 1. PROCOG Informant and Patient Scores



DISCUSSION

- Compared to patients, informants reported significantly greater impairment in the following four scales: skill loss, memory for recent events, social impact, and overall functioning. These results are consistent with previous research on patient-proxy agreement conducted with more impaired DAT samples. Previous studies have found that DAT patients underestimate their deficits (Ott et al., 1996) and the impact of these deficits (Novella et al., 2001) in comparison to caregiver informants.
- Generally, informant reports are thought to be more accurate than self-reports of patients with DAT. In comparison to patient-report, informant-report has been found to have higher correlations with objective measures of dementia-related deficits (Neri et al., 1998). Furthermore, patients' level of insight into their own symptoms and symptom impact decreases with greater severity of dementia (McDaniel et al., 1995; Zanetti et al., 1999).
- Research on the accuracy of proxy reporters has yielded mixed results. Some studies have found high concordance between informant-report and objective dementia measures (Cipolli et al., 1998; Clark & Ewbank, 1996), suggesting that caregivers can provide accurate reports of patients' symptoms. However, Loewenstein et al. (2001) found that caregivers overestimated patients' abilities in several functional areas, and Kemp et al. (2002) found that only 60% of informants gave responses that were consistent with objective testing.
- Current analyses regarding patient-informant concordance suggest several directions for future research. First, it is recommended that these issues be explored with a larger sample. Second, results for MCI and DAT patients could be examined separately. Based on previous literature indicating that patient insight decreases with greater severity of dementia (McDaniel et al., 1995; Zanetti et al., 1999), it can be hypothesized that patient-informant agreement might be higher with MCI than with DAT.
- Neither informant nor patient report can be expected to be accurate in all cases. Thus, choice of whether to use informant or patient report will depend on the specific study goals.

CONCLUSION

- The PROCOG can be used to collect information on cognitive impairment symptoms and impact from both the patient and informant perspectives.
- Because accuracy of informant report relative to patient report is not known, data from both patients and informants provide unique information.
- PROCOG data collected from both patients and informants can assist in the evaluation of cognitive impairment symptoms and symptom impact on the patient's life.