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Specific Cognitive/Behavioral Domains Predict Neuropsychiatric Symptoms in Severe Dementia

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Background
Neuropsychiatric symptoms (NPS) occur frequently over the course of Alzheimer’s disease and related disorders (ADRD). Occurrence of NPS is highly variable and fluctuates in severity, but generally increases over time. Risk factors for NPS in ADRD have been studied; however, greater understanding of triggers is needed to inform care management strategies. Few studies have examined NPS in severe dementia.

Present Study
We investigated the cognitive correlates of NPS in patients with severe dementia in a community-based sample. We determined whether impairments in specific cognitive or behavioral domains were more predictive of specific NPS. We hypothesized that poorer cognitive abilities would be associated with more severe NPS (e.g., agitation) and higher cognitive scores with affective symptoms in severe dementia.

Methods
Participants: Eighty-nine participants from the Cache County Dementia Progression Study met the criteria for severe dementia with a Mini-Mental State Exam score of ≤ 10 or Clinical Dementia Rating of 3 (severe).

Forty-eight (54%) of these individuals completed the Severe Cognitive Impairment Profile (SCIP).

Procedure: SCIP assesses Comportment, Atention, Language, Memory, Motor, Conceptualization, Arithmetic, and Visuospatial abilities. Neuropsychiatric Inventory (NPI) assesses delusions, hallucinations, depression, anxiety, irritability, apathy, agitation/aggression, judgment, aberrant motor behaviors, euphoria, sleep, and appetite. NPI severity scores were summed across domains for a total NPI-12 score. Cluster scores were defined below.

Demographics
- Age in years, Mean (SD): 86.23 (6.12)
- Female n (%): 30 (62.5)
- Education Mean (SD): 13.13 (3.13)
- Age of onset in years Mean (SD): 80.18 (9.91)
- Dementia Duration in years Mean (SD): 6.05 (1.97)
- Living at home n (%): 18 (37)
- Residential/Assisted Living n (%): 10 (20.8)
- Residential/Assisted Living (locked unit) n (%): 5 (10.4)
- Skilled Nursing Facility n (%): 15 (31.3)

Statistical Analyses
- Bivariate correlations were calculated between SCIP domain scores and Total NPI-12 and domain clusters.
- SCIP domain scores that were significantly correlated with NPS in bivariate analyses were entered into multiple regression models to predict NPS.

Results
- SCIP sub scores of comportment (r = -0.36, p = 0.017) and memory (r = -0.31, p = 0.047) were associated with total NPI-12.
- Comportment was correlated with Apathy (r = -0.38, p = 0.010) while conceptualization (r = -0.41, p = 0.007), language (r = -0.36, p = 0.017), memory (r = -0.48, p = 0.001), and visuospatial ability (r = -0.31, p = 0.046) were each correlated with agitation/aggression.
- In multiple regression models (with inclusion of significant covariates),
  - Comportment predicted total NPI-12 score (β = -1.32, SE = 0.56, p = 0.02) and apathy (β = -0.01, SE = 0.02, p = 0.003)
  - Memory predicted agitation/aggression (β = -0.43, SE = 0.12, p = 0.001).

Conclusions
- Several cognitive or behavioral domains were associated with Neuropsychiatric symptoms in severe dementia.
- Associations may suggest vulnerability to display specific NPS, for example:
  - Poorer abilities in conceptualization, language, memory, and visuospatial abilities were predictive of agitation/aggression.
  - Poorer performance was predictive of worse apathy.
- Environmental manipulations to reduce cognitive demands for persons with poor abilities in the above domains may reduce occurrence of some neuropsychiatric symptoms.

References & Acknowledgement

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