PicnicHealth

HSD54

Utilization of Diagnostic Testing in Alzheimer's Patients

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Background + Purpose

Background

- Alzheimer's Disease (AD) is a neurodegenerative disorder that primarily impacts older adults and is the most common cause of dementia.[1]
- In recent years, treatments for Alzheimer's disease directed against amyloid beta target patient subgroups by severity or biomarkers. However, eligibility for trials has been challenging due to difficulty assessing cognitive impairment consistently and quantitatively in the real world.[2,3]

Purpose

- This study examines real-world evidence to understand utilization of cognitive and biomarker screening tools around Alzheimer's diagnosis.

Methods

Data Source

- This study analyzed data from the first 300 patients enrolled in the PicnicHealth Alzheimer's Disease Cohort
- Contains de-identified, patient-level data abstracted from structured and unstructured medical records of consented patients with AD receiving care in the United States (See Figure 1 for patient distribution)

Inclusion Criteria

- Diagnosis of mild cognitive impairment or AD, as confirmed in the patient's medical records
- ≥50 years old at enrollment
- Qualified into the PicnicHealth AD cohort in 2022

Analytical Methods

- Cognitive tests (Mini-Mental State Examination [MMSE] and Montreal Cognitive Assessment [MoCA]), neuroimaging, and cerebral spinal fluid measurements within 12 months of diagnosis were examined
- Impairment was considered mild if MMSE≥20 or MoCA≥18 and moderate/severe otherwise[4,5]
- Descriptive statistics for patient characteristics, diagnostic testing use, and health care resource utilization (HCRU) were reported

Table 1. Demographics and clinical characteristics of participants

Characteristic*	Result (N=300)
Age at Enrollment (years)	72 (66, 80)
Age at AD Diagnosis (years)	71 (63, 77)
Sex	
Female	172 (57%)
Male	128 (43%)
Race	
Black or African American	24 (8%)
White	256 (85%)
Other	6 (2%)
Unknown**	14 (5%)
Ethnicity	
Hispanic or Latino	15 (5%)
Not Hispanic or Latino	263 (88%)
Unknown**	22 (7%)
Severity	
Mild	87 (29%)
Moderate/Severe	34 (11%)
Missing	179 (60%)
Total Years of Visits	5 (2, 7)
Number of Providers	8 (3, 15)
Number of Care Sites	3 (2, 6)

*Continuous variables are reported as median (interquartile range); categorical variables are reported as n (%)

**Unknown includes missing data and "Prefer not to say"; Of the unknown values, 6 and 22 patients reported "Prefer not to say" for race and ethnicity, respectively

Table 2: Diagnostic tool prevalence within 12 months of AD diagnosis in the PicnicHealth cohort

Category***	Result (N=300)
Cognitive Screens	
MoCA only	35 (12%)
MMSE only	58 (19%)
Both MoCA and MMSE	28 (9%)
No evidence of MoCA or MMSE	179 (60%)
CSF test	22 (7%)
Neuroimaging	
MRI	118 (39%)
CT	71 (24%)
PET CT	22 (7%)
No neuroimaging exams	143 (48%)

***Evidence of at least one test is required for a patient to be considered within each category.
Categorical variables are reported as n (%)

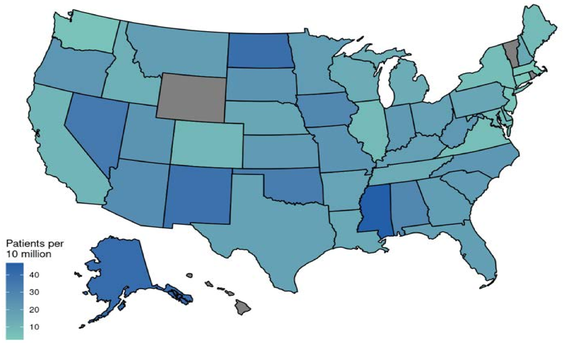

Figure 1: United States patient distribution of the PicnicHealth Alzheimer's Disease cohort

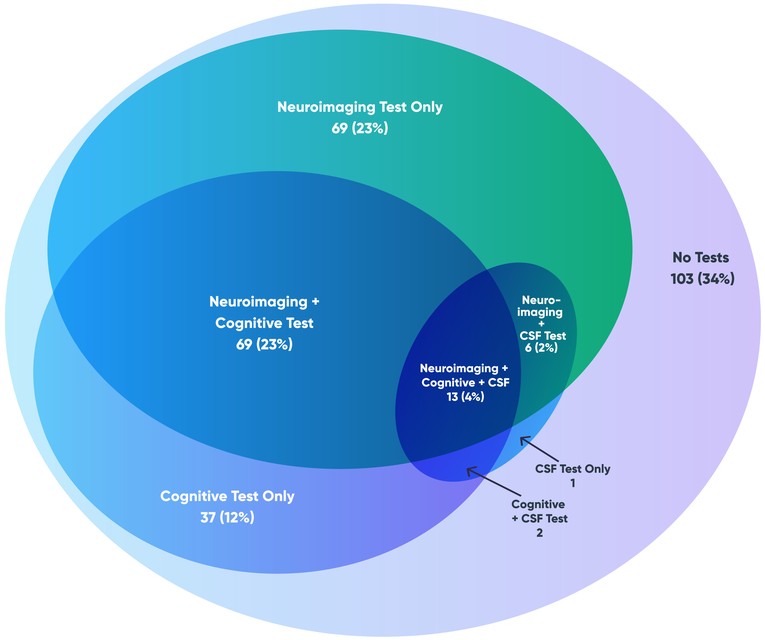

Figure 2: Real World observation of cognitive test combinations within 12 months of Alzheimer's Disease or mild cognitive impairment diagnosis

Results

- The study population was 57% female, 85% White and 8% Black. 5% identified as Hispanic/Latinx. (**Table 1**)
- Longitudinal data was available for a median of 5 years. Median age at diagnosis was 71.
- Cognitive scores were available for 121 (40%) patients; of these 72% exhibited mild impairment and 28% were moderate/severe. (**Table 2**)
- 58 patients were screened with MMSE alone, 35 MoCA alone, and 28 with both.
- Neuroimaging was available in 157 (52%) patients; 118 had at least one MRI, 71 at least one CT, and 22 at least one PET-CT.
- 22 (7%) had at least one CSF measurement.
- 13 (4%) patients had at least one type of neuroimaging and one CSF measurement and at least one cognitive test within 12 months of diagnosis. (**Figure 2**)

Conclusion

- Many Alzheimer's patients did not have evidence of cognitive or biomarker testing, indicating use of these screens are limited in clinical practice.
- Previous studies identified cognitive scores in smaller percentages of patients than the 40% in this sample, suggesting unstructured physician notes may identify more measurements than structured data sources.[3,6,7]
- Further research is needed for stratifying severity in the real-world setting, potentially using patient histories from unstructured clinical notes or patient-reported outcomes.

References

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