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Clinician diagnostic confidence among heterogeneous populations in IDEAS

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Background

- Lower rates of amyloid PET positivity have been reported among individuals who are ethnoracially diverse and reside in highly disadvantaged neighborhoods
- It is unknown if clinician confidence in a diagnosis of Alzheimer's Disease is lower among these groups
- IDEAS (Imaging Dementia – Evidence for Amyloid Scanning) captured >17,000 real world PET scans of patients from across the United States residing in varying levels of neighborhood disadvantage

Objectives/Hypothesis

- **Primary Objective:** Evaluate whether residence in a disadvantaged neighborhood and ethnoracial identity are associated with lower confidence in a clinical diagnosis of AD among individuals with MCI and dementia
- *We hypothesized 1) living in a more disadvantaged neighborhood would be associated with lower rates of diagnostic confidence and 2) African American, Latino, and Asian ethnoracial identity would be associated with lower rates of diagnostic confidence in a clinical AD diagnosis*

Methods

- Amyloid PET/CT scans in IDEAS were performed using one of three FDA-approved agents: 18F-Florbetaben (FBB), 18F-Florbetapir (FBP), 18F-Flutemetamol (FMM). Scans in IDEAS were visually interpreted as positive or negative
- Pre-PET clinician confidence in AD as the primary cause of cognitive impairment was captured on a 1-10 scale
- Neighborhood disadvantage was operationalized as area deprivation index (ADI), a composite of 17 social determinants measures captured in American Community Survey and US Census data.
- Association between diagnostic confidence (>7: high confidence) in a pre-PET diagnosis of AD and 1) ethnoracial identity; and 2) national-level ADI (1-100; binarized, 91-100: greatest disadvantage), were examined separately via logistic regression controlling for covariates



Results

Demographic and Baseline Characteristics

Variable	White, Non-Latino	African American	Latino	Asian
Gender, n (%)				
Female	7706 (50.1)	403 (62.7)	515 (62.1)	172 (53.1)
Male	7662 (49.8)	240 (37.3)	314 (37.9)	152 (46.9)
Age (mean ± SD), years (range 65-105)	75.7 (6.3)	75.0 (6.5)	75.9 (6.7)	76.3 (6.3)
Education, n (%)				
High school or less	4755 (30.9)	328 (51)	521 (62.8)	103 (31.8)
Some college or above	10616 (69.1)	315 (49)	308 (37.2)	221 (68.2)
Primary Language, n (%)				
English	15121 (98.4)	635 (98.8)	363 (43.8)	178 (54.9)
Hypertension, n (%)	7716 (50.2)	437 (68)	449 (54.2)	151 (46.6)
Other Cardiovascular, n (%)	7947 (51.7)	306 (47.6)	408 (49.2)	156 (48.1)
Pulmonary, n (%)	560 (3.6)	13 (2.0)	14 (1.7)	6 (1.9)
Diabetes, n (%)	2285 (14.9)	180 (28.0)	221 (26.7)	80 (24.7)
Kidney Disease, n (%)	476 (3.1)	39 (6.1)	25 (3.0)	11 (3.4)
Mood Disorder, n (%)	2846 (18.5)	56 (8.7)	152 (18.3)	40 (12.3)
Cerebrovascular Disease, n (%)	2295 (14.9)	98 (15.2)	123 (14.8)	46 (14.2)
Impairment Level, n (%)				
MCI	9585 (62.4)	310 (48.2)	370 (44.6)	172 (53.1)
Dementia	5786 (37.6)	333 (51.8)	459 (55.4)	152 (46.9)
National ADI, n (%)				
1-10	2340 (18.5)	48 (10.7)	120 (18.2)	122 (46.4)
11-20	2042 (16.2)	70 (15.7)	102 (15.5)	55 (20.9)
21-30	2028 (16)	53 (11.9)	109 (16.5)	26 (9.9)
31-40	1773 (14)	59 (13.2)	83 (12.6)	23 (8.7)
41-50	1391 (11)	48 (10.7)	72 (10.9)	15 (5.7)
51-60	978 (7.7)	50 (11.2)	56 (8.5)	8 (3.0)
61-70	704 (5.6)	32 (7.2)	43 (6.5)	4 (1.5)
71-80	559 (4.4)	28 (6.3)	29 (4.4)	2 (0.8)
81-90	361 (2.9)	21 (4.7)	22 (3.3)	1 (0.4)
91-100	466 (3.7)	38 (8.5)	24 (3.6)	7 (2.7)

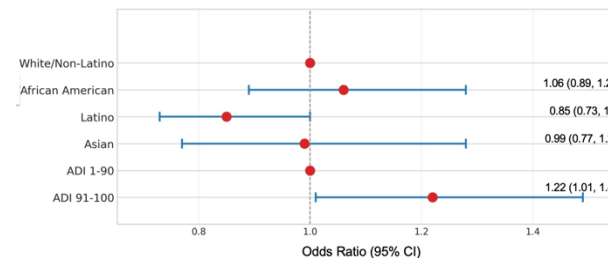
Pre-PET Diagnoses and diagnostic confidence among ethnoracial groups

Variable	White, Non-Latino	African American	Latino	Asian	p
Amyloid PET, n (%)					
Positive	9608 (62.6)	348 (54.2)	450 (54.3)	147 (45.4)	<.001
Negative	5750 (37.4)	294 (45.8)	379 (45.7)	177 (54.6)	
Pre-Amyloid PET Clinical Diagnosis, n (%)					
Alzheimer's Disease (AD)	11761 (76.5)	519 (80.7)	673 (81.2)	259 (79.9)	0.02
Non-AD, Neurodegenerative	1702 (11.1)	64 (10)	82 (9.9)	34 (10.5)	
Normal Aging	41 (0.3)	1 (0.2)	3 (0.4)	2 (0.6)	
Other CNS Conditions	137 (0.9)	5 (0.8)	1 (0.1)	2 (0.6)	
Psychiatric	982 (6.4)	38 (5.9)	43 (5.2)	19 (5.9)	
Sleep Disorder	162 (1.1)	5 (0.8)	3 (0.4)	2 (0.6)	
Toxic-Metabolic	371 (2.4)	7 (1.1)	21 (2.5)	4 (1.2)	0.03
Other	214 (1.4)	4 (0.6)	3 (0.4)	2 (0.6)	
Pre-PET Diagnostic Confidence (1-10; 10 indicating greatest confidence)					
1-3	388 (2.5)	50 (7.8)	16 (1.9)	3 (0.9)	0.03
4-6	6772 (44.1)	265 (41.2)	373 (44.9)	147 (45.4)	
7-9	8210 (53.4)	369 (57.4)	440 (53.1)	174 (53.7)	

Geographic Scope of IDEAS Study



Effect of Ethnoracial Identity and Neighborhood Disadvantage on Diagnostic Confidence (N = 11364)



Conclusions

- **Higher rates of a pre-PET diagnosis of AD among African American, Latino, and Asian individuals compared to non-Latino White individuals**
Despite lower rates of PET positivity among these groups from our prior work
- **No significant association between ethnoracial identity and diagnostic confidence**
Despite lower rates of amyloid PET positivity among African American, Latino, and Asian individuals. This highlights the value of access to biomarker testing for all groups of individuals
- **Significantly greater adjusted odds of high confidence in a pre-PET diagnosis of AD among those residing in more disadvantaged neighborhoods**
Despite lower rates of amyloid PET positivity among these individuals from our prior work. This highlights the shortcomings of clinician diagnosis alone without biomarker validation

Amyloid PET is a diagnostic tool with significant utility in the evaluation heterogeneous populations of individuals with MCI and dementia

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Learn more about the lab!



Imaging Dementia—Evidence
For Amyloid Scanning