

INTRODUCTION

Accurate dementia diagnosis remains challenging due to overlapping clinical manifestations and diverse etiologies. Misdiagnosis may delay appropriate care and increase the burden on patients and caregivers. This study examined factors associated with diagnostic errors and determined which dementia subtypes were most frequently misclassified in a specialized memory clinic.

METHODS

In this ambispective cohort study, patients with dementia misdiagnosis referred to a cognitive outpatient clinic between May and November 2025 were evaluated. Initial diagnoses were compared with final diagnoses established after clinical follow-up and diagnostic review. Clinical and demographic data were collected, and final diagnoses were classified as Alzheimer’s disease (AD) or non-AD dementia. Diagnostic performance metrics were calculated, and binary logistic regression was used to identify predictors of the final diagnosis, adjusting for age, sex, and education.

RESULTS

Of the 36 patients included in the study, 7 received a final diagnosis of AD and 29 were classified as non-AD. The initial clinical suspicion of AD showed 71.4% sensitivity, 44.8% specificity, 23.8% positive predictive value, and 94.1% overall accuracy (Table 1).

Metric	Value (%)	95% Confidence Interval (CI)
Sensitivity	71.4%	29.0 – 96.3
Specificity	44.8%	26.4 – 64.3
Positive Predictive Value	23.8%	8.2 – 47.2
Negative Predictive Value	86.7%	59.5 – 98.3
Overall Accuracy	94.1%	-

Table 1. Diagnostic performance of initial Alzheimer’s Disease (AD) clinical suspicion compared to final gold-standard diagnosis.

Initial Diagnosis - n (%)		Final Diagnosis - n (%)	
Alzheimer’s Disease (AD)	21 (58%)	AD	3 (14%)
		Mixed dementia	7 (33%)
		Parkinson’s disease	1 (4%)
		AD related Primary Progressive Aphasia	2 (9%)
		Frontotemporal dementia	1 (4%)
		Atypical parkinsonism	3 (24%)
		Non-AD Mild Cognitive Impairment	1 (4%)
		Vascular dementia	2 (9%)
		Other diagnoses	1 (4%)
Depression	3 (8%)	AD	1 (33%)
		Mixed dementia	1 (33%)
		Other diagnoses	1 (33%)
Parkinson’s disease	1 (2%)	Mild Cognitive Impairment	1 (100%)
Mixed dementia	1 (2%)	Mixed dementia	1 (100%)
Vascular dementia	2 (5%)	Other diagnoses	1 (50%)
		Non-AD Mild Cognitive Impairment	1 (50%)
Frontotemporal dementia	3 (8%)	Mixed dementia	1 (33%)
		Other diagnoses	2 (66%)
Dementia, unspecified	3 (8%)	Mixed dementia	3 (100%)
Primary progressive aphasia	1 (2%)	AD related Primary Progressive Aphasia	1 (100%)
Dementia With Lewy Bodies	1 (2%)	Mixed dementia	1 (100%)

Table 2. Comparison between initial and final diagnoses of patients evaluated for dementia.

Diagnostic reclassification was frequent. Among patients initially diagnosed with AD, only 14% retained a diagnosis of pure AD after specialized reassessment. Most were reclassified as mixed dementia, increasing its prevalence from 2.8% at the initial assessment to 38.9% at the final diagnosis (Table 2). Compared with patients with non-AD dementias, those with confirmed AD were younger (p = 0.003), more physically inactive (p = 0.046), and differed in the frequency of visual impairment (p = 0.039). No significant differences were observed for sex, education, vascular risk factors, depression, hearing impairment, obesity, alcohol consumption, smoking, or social isolation (Table 3).

CHARACTERISTICS	Non-Alzheimer's Disease (n = 29)	Alzheimer's Disease (n = 7)	P-Value
Demographics			
Age (years), Mean ± Standard Deviation	70.7 ± 7.2	79.0 ± 6.0	0.003 ^a
Education, Mean ± Standard Deviation	11.3 ± 4.7	13.8 ± 2.2	0.595 ^b
Sex (Female), absolute and relative frequency	2 (28.6%)	9 (31%)	0,810 ^b
Comorbidities & Risk Factors			
Hypertension, absolute and relative frequency	4 (57.1%)	18 (62.1%)	0.810 ^b
Diabetes Mellitus, absolute and relative frequency	1 (14.3%)	8 (27.6%)	0.466 ^b
Dyslipidemia, absolute and relative frequency	2 (28.6%)	13 (44.8%)	0.434 ^b
Physical Inactivity, absolute and relative frequency	2 (28.6%)	15 (51.7%)	0.046 ^b
Depression, absolute and relative frequency	3 (42.9%)	15 (51.7%)	0.674 ^b
Vision Impairment, absolute and relative frequency	1 (14.3%)	0 (0.0%)	0.039 ^b
Hearing Impairment, absolute and relative frequency	0 (0.0%)	5 (17.2%)	0.236 ^b
Obesity, absolute and relative frequency	0 (0.0%)	4 (13.8%)	0.297 ^b
Alcohol Use, absolute and relative frequency	1 (14.3%)	5 (17.2%)	0.145 ^b
Active Smoking, absolute and relative frequency	0 (0.0%)	1 (3.4%)	0.148 ^b
Social Isolation, absolute and relative frequency	2 (28.6%)	6 (20.7%)	0.653 ^b

Table 3. Demographic and clinical characteristics of the sample, comparing Alzheimer's Disease (AD) and Non-AD groups.

CONCLUSION

Pure AD was frequently overdiagnosed, and mixed dementia underrecognized. AD biomarkers improved diagnostic accuracy, whereas structural neuroimaging had limited value. Standardized biomarker-based approaches may enhance dementia diagnosis.

REFERENCES

PMID: 39460409 PMID: 29213821
PMID: 38934362

CONTACT

caroline.colvara@pucpr.edu.br