

Olfaction, cognition, and early signs of neurodegenerative disease
in a community-based sample of older adults

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Abstract

Introduction: We investigated associations of impaired odor identification with signs of early Alzheimer's disease (AD) and Lewy Body diseases (LBD).

Methods: In 787 community-sampled adults aged ≥ 65 without dementia or Parkinson's disease, we evaluated cross-sectional associations of olfaction (Brief Smell Identification Test, BSIT) with five cognitive domain scores, gait, tone, tremor, REM sleep behavior disorder (RBD) symptoms, and plasma biomarkers of neurodegeneration

Results: In adjusted regression models, worse BSIT scores were associated with lower cognitive scores in all domains, slowed gait, resting tremor, and RBD-like symptoms. The association between BSIT and memory was stronger in *APOE4* carriers. In cognitively unimpaired participants (Clinical Dementia Rating=0), most associations remained significant. BSIT scores were associated with plasma p-tau217 and NfL in exploratory analyses.

Conclusion: Odor identification is associated with cognition in an undifferentiated pattern and with Parkinsonian signs in older adults, even among those with normal cognition. The stronger association in *APOE4* carriers potentially suggests an emerging AD-like pathway, consistent with exploratory plasma biomarker analyses. In sum, evidence points to olfactory dysfunction as relevant for both AD and LBD-associated future risk.