

AI-Supported Dementia Diagnosis in Low-Resource Settings: Protocol for a Prospective Diagnostic Alignment Study in Accra, Ghana



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This study will investigate **diagnostic alignment** and the **root causes of disagreement** between an AI-based dementia diagnosis system and neurologists at Korle-Bu Teaching Hospital in Ghana

BACKGROUND	METHODS		CONCLUSIONS	REFERENCES
Rapidly increasing dementia rates across low- and middle-income countries¹ Limited access to specialists, neuroimaging and biomarkers¹ AI-based Clinical Decision Support Systems (CDSS) offer a scalable way to potentially augment scarce specialist care Recent research highlights significant disconnect between AI development and ethical implementation in low-resource settings² Evidence evaluating how AI-CDSS align with clinician judgment in real-world, low-resource dementia care settings is needed	Prospective, single-center observational study (Korle-Bu Teaching Hospital) ↓ Adult patients with suspected dementia.  (1) Standard Neurologist Evaluation  (2) AI-Supported Assessment (Structured Data Set) ↓ Independent Expert Adjudication Panel (Consensus Clinical Diagnosis, up to 6 months follow-up)	Diagnostic alignment between clinicians, AI outputs, and adjudicated diagnoses calculated using Cohen’s Kappa and Gwet’s AC1 statistics³ Cases of discordance will undergo mixed-methods root cause analysis to characterize informational, inferential, contextual or cultural sources of divergence Secondary analyses will assess workflow feasibility and performance differences across language and education subgroups	A framework for evaluating AI-based clinical decision support tools in low-resource environments Shifts evaluation emphasis from raw accuracy alone to real-world diagnostic alignment and contextual divergence Findings will inform how AI-CDSS can be responsibly adapted to support equitable care in resource-constrained settings	1) Akinyemi et al Dementia in Africa: Current evidence, knowledge gaps, and future directions. <i>Alzheimers Dement.</i> (2022) 2) Hswen et al. AI-Y: An AI Checklist for Population Ethics Across the Global Context. <i>Curr Epidemiol</i> (2025) 3) Bosbach, W. A. Novel artificial intelligence chest X-ray diagnostics: A quality assessment of their agreement with human doctors in clinical routine. <i>Journal of Clinical Quality Assessment</i> (2026) CONTACT  david.brodie-mends@gbhi.org  ALZHEIMER'S ASSOCIATION AAIC>26