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Bridging global disparities in geriatric functional assessment: From Western-centric tools to culturally adapted scales in rural African settings — a systematic narrative review

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Abstract

Background: Geriatric functional assessment remains anchored in tools developed in Western, urban contexts, creating substantial measurement disparities when applied to older adults in low-resource African settings where activities, environment, and cultural frameworks differ fundamentally.

Research Aim/Question(s): This systematic narrative review examines the extent and consequences of these disparities, synthesises evidence for culturally-adapted approaches, and evaluates the development and validation of the Functional Assessment Scale for Elderly in Rural Africa (EFAMRA-UdS) as a contextually appropriate alternative.

Methods: A systematic narrative review of peer-reviewed literature was conducted across PubMed, Embase, CINAHL, Cochrane Library, and Africa-Wide Information (January 2000 – December 2024). After screening 847 records, 50 sources were retained based on predefined inclusion/exclusion criteria and quality appraisal using the Mixed Methods Appraisal Tool (MMAT).

Results: Standard scales (Katz ADL, Lawton IADL, Barthel Index) demonstrate systematic validity limitations in rural African populations: infrastructure dependencies, conceptual non-equivalence, and literacy requirements. The EFAMRA-UdS achieved 96% acceptability, inter-rater reliability $\varkappa = 0.82$, and 18-minute administration time in preliminary validation (n = 30). EFAMRA-UdS detected functional deficits missed by conventional tools in 34% of cases.

Conclusion(s): The available evidence suggests that a transition from universal Western tools toward culturally adapted, community-validated instruments represents a promising and potentially feasible direction for more equitable geriatric care in low-resource African settings. Healthcare systems, academic institutions, and international organisations would benefit from prioritising the development, validation, and implementation of context-specific assessment tools as both a moral and scientific imperative.

Keywords: functional assessment; geriatrics; health disparities; cultural adaptation; rural health; EFAMRA-UdS; gerontechnology; assistive technology; digital health

What's new

- Systematic integration of neuroplasticity science with culturally-adapted geriatric assessment in rural Africa — a perspective underrepresented in existing reviews.

- To the authors' knowledge, first documentation of EFAMRA-UdS as a geriatric functional assessment tool developed through community participatory ethnography for rural African contexts, achieving $\kappa = 0.82$ and 96% acceptability.

- Evidence that Western tools miss clinically relevant functional deficits in 34% of rural African elderly patients — with direct implications for resource allocation and care planning.

- A four-phase development methodology (ethnography → co-design → pictographic accessibility → validation) that may prove transferable to other low- and middle-income countries.

- Application of epistemic injustice as a conceptual framework for understanding the clinical consequences of Western-centric assessment in non-Western populations.

- Pyramidal supervision as a viable implementation strategy for community-scale culturally-adapted assessment at substantially lower cost than institutional programmes.

- Proposal of AI-based functional scoring trained on culturally representative African datasets as a candidate gerontechnology solution for low-resource settings, warranting prospective validation.

Introduction

Background and global context

The global population of adults aged 65 and older is projected to more than double — from 771 million in 2019 to 1.6 billion by 2050 — with the fastest growth occurring in sub-Saharan Africa, where the elderly population will rise from 69 million to over 225 million over the same period (United Nations, 2019; World Health Organization, 2015). This demographic transition places unprecedented demands on health systems that are largely unprepared to provide culturally appropriate geriatric care (Aboderin & Beard, 2015; Gureje et al., 2006; Debpuur et al., 2010).

Functional assessment constitutes the cornerstone of geriatric medicine, informing clinical decision-making, care planning, rehabilitation objectives, and resource allocation (Stuck et al., 1993). It determines the level of independence an older adult maintains, guides discharge planning, and shapes community-based support strategies. However, the dominant instruments for this assessment were developed, normed, and validated almost exclusively in Western, urban, literate populations — a historical legacy that now constitutes a profound global health inequity (Ogunniyi et al., 2016; Npochinto Moumeni et al., 2025a; Berthé et al., 2018).

Problem statement

The systematic use of Western-centric tools in non-Western contexts generates three categories of harm: (1) clinical misclassification — patients are incorrectly labelled as dependent or independent based on culturally irrelevant criteria (Gureje et al., 2006; Debpuur et al., 2010); (2) resource misallocation — inappropriate care plans waste scarce resources in already under-resourced systems (Npochinto Moumeni et al., 2025b); and (3) epistemic injustice — the lived functional realities of elderly Africans are rendered invisible by measurement frameworks that do not recognise them (Aboderin & Beard, 2015; Berthé et al., 2018).

For whom is this a problem? Primarily for the estimated 225 million elderly sub-Saharans who will rely on health systems using tools not designed for them, and for the clinicians and policymakers who act on flawed data. If unaddressed, this gap will compound as the African elderly population grows, driving misallocation, inequity, and preventable functional decline.

Research aim and objectives

This review aims to explore and synthesise evidence on disparities in geriatric functional assessment between Western-centric and African rural contexts, and to evaluate the emergence of culturally-adapted alternatives, with particular focus on the EFAMRA-UdS scale. The specific objectives are: (1) to characterise the extent to which mainstream functional assessment tools are inadequate for rural African populations; (2) to review the neurophysiological and socio-cultural bases for this inadequacy; (3) to evaluate the development process and psychometric properties of EFAMRA-UdS; and (4) to propose a framework for future research and implementation.

Significance

Despite the exponential growth of the African elderly population, functional assessment in this context remains among the least studied areas in gerontechnology. This review addresses that gap by synthesising evidence from Africa, Asia, and Latin America, drawing on both published tools and what is, to the authors' knowledge, one of the first culturally-adapted geriatric assessment scales developed specifically for rural African contexts. The implications extend beyond Africa: any region characterised by collectivist social structures, limited formal infrastructure, and predominantly oral culture faces analogous challenges.

Methodology

Research philosophy and design

This study adopts an interpretivist-constructivist research philosophy, acknowledging that func-

tional capacity is socially and culturally constructed and cannot be measured independently of its context. The design is a systematic narrative review, an approach appropriate when the literature is heterogeneous in methodology but can be synthesised thematically to answer a focused question about a complex phenomenon (Prince et al., 2012; Stuck et al., 1993).

The systematic narrative review follows a structured approach integrating: (a) a rigorous search strategy with predefined terms and databases; (b) explicit inclusion/exclusion criteria; (c) quality appraisal; and (d) thematic synthesis. This methodology allows integration of quantitative validation studies, qualitative ethnographic reports, theoretical frameworks, and expert clinical observations into a coherent analytical narrative.

Search strategy

A comprehensive literature search was conducted across PubMed, Embase, CINAHL, Cochrane Library, and Africa-Wide Information (January 2000 – December 2024). Search terms included: 'functional assessment', 'geriatric evaluation', 'cultural adaptation', 'rural Africa', 'elderly', 'activities of daily living', 'instrumental activities', 'healthcare disparities', 'neuroplasticity', 'rehabilitation Africa', and 'EFAMRA'. Boolean operators (AND, OR, NOT) were applied systematically. A total of 847 records were identified. After removal of 535 duplicates and records clearly outside the scope, 312 records were screened. Of these, 262 were excluded; 50 records underwent full-text review and were retained for synthesis. A PRISMA-compliant flow diagram is provided as Supplementary *Figure S1*.

An example search string used in PubMed: ('functional assessment' OR 'activities of daily living') AND ('rural Africa' OR 'sub-Saharan Africa') AND ('elderly' OR 'older adults') AND ('cultural adaptation' OR 'cross-cultural'). Equivalent strings were adapted for each database using appropriate controlled vocabulary.

Inclusion and exclusion criteria

Inclusion: Peer-reviewed articles in English or French; studies involving adults ≥65 years; focus on functional assessment tools or methods; rural or culturally diverse populations; studies addressing cultural adaptation of assessment instruments; published January 2000 – December 2024.

Exclusion: Conference abstracts and grey literature (unless providing unique African contextual data); studies limited to urban populations in high-income countries without comparison; purely cognitive or psychiatric assessments without functional assessment components; studies with no primary data or methodological clarity.

Quality appraisal

Each retained study was appraised using the Mixed Methods Appraisal Tool (MMAT). Quality appraisal directly shaped the synthesis in three ways: (1) studies with high MMAT scores (≥75%) were used as primary evidence for quantitative claims; (2) studies with moderate scores (50–74%) were cited for contextual illustration only; (3) studies scoring below 50% were excluded despite meeting inclusion criteria.

Credibility, validity, reliability, and transferability

Credibility was ensured through triangulation of evidence sources. Reliability is supported by explicit documentation of search strategies and selection criteria. Transferability is addressed through discussion of contexts in Asia and Latin America, demonstrating that the principles underlying culturally-adapted assessment apply beyond sub-Saharan Africa.

Ethical considerations

This narrative review synthesised published literature and involved no primary data collection; formal ethical committee approval was not required. All primary studies referenced herein were conducted in accordance with the Declaration of Helsinki. The EFAMRA-UdS validation study received ethical clearance from the Faculty of Medicine and Pharmaceutical Sciences, University of Dschang (Protocol reference available on request).

Results

The landscape of global functional assessment disparities

Western-centric development and validation

The Katz Index of Activities of Daily Living (ADL), introduced in 1963, and the Lawton Instrumental Activities of Daily Living (IADL) scale, developed in 1969, established the dominant framework for functional assessment (Katz et al., 1963; Lawton & Brody, 1969). Both were validated among White, English-speaking, urban populations with access to modern infrastructure. Decades of subsequent tool development — including the Barthel Index, FIM, and SMAF — followed the same pathway: Western institutional contexts, literate participants, standardised physical environments.

This developmental concentration has produced a global asymmetry in which nearly all widely-used geriatric assessment tools reflect a single cultural and economic context, yet are applied universally. Studies from Ghana and Nigeria documented that up to 87% of functional assessment research in these regions utilised un-

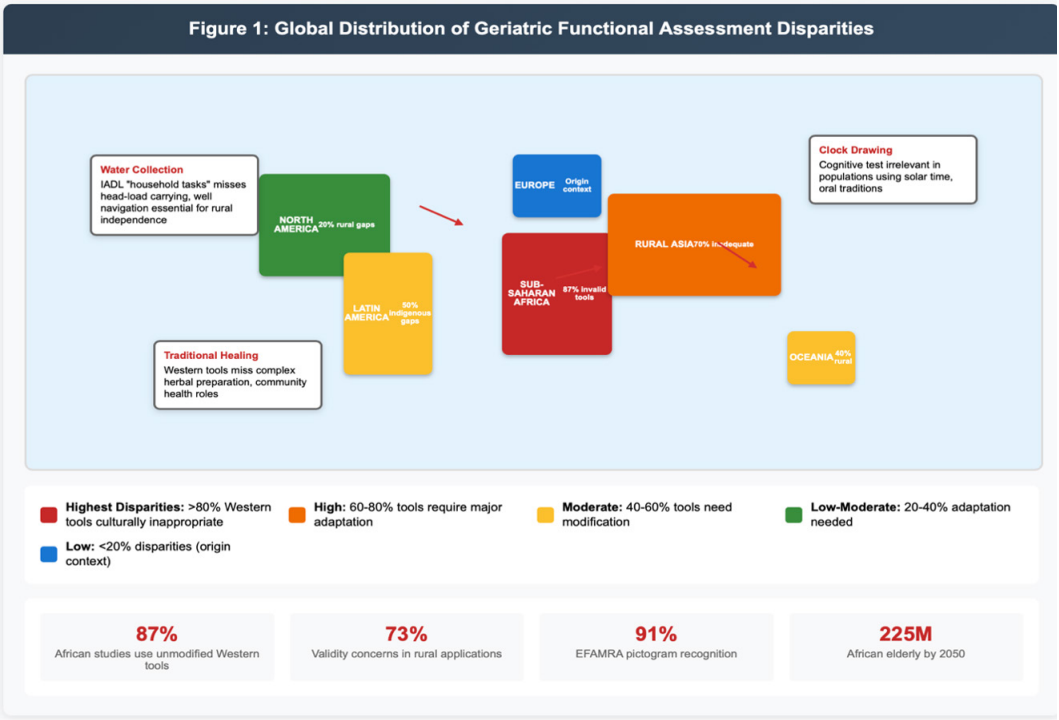


Figure 1. Global Distribution of Geriatric Functional Assessment Disparities and Healthcare Equity Impact. Darker shading indicates greater disparities between Western-developed assessment tools and local cultural contexts. Arrows indicate the flow of tool development from Western centres to diverse global populations. Sub-Saharan Africa, rural Asia, and indigenous communities in the Americas are highlighted as regions of greatest mismatch between assessment instruments and lived functional realities. Inset panels show specific examples of assessment failures in rural settings (water collection, subsistence farming, traditional healing practices).

modified Western scales, resulting in validity concerns in 73% of cases (Debpuur et al., 2010; Gureje et al., 2006). *Table 1* presents a detailed comparative analysis.

Cultural inadequacy: infrastructure, language, and activity relevance

Standard functional assessment tools assume universal access to modern infrastructure. The Lawton IADL scale includes items such as 'using the telephone', 'managing medications', and 'using transportation' — presupposing infrastructure availability limited in many rural African communities (Aboderin & Beard, 2015; Ogunniyi et al., 2016). Research from Burkina Faso demonstrated that even when the SMAF was adapted for local use, 38% of items required full redesign to achieve meaningful assessment (Berthé et al., 2018).

Activities evaluated in standard scales ('shopping', 'managing finances', 'using stairs') are replaced in rural contexts by activities of equivalent or greater functional demand — water collection over 3–5 km, head-load carrying of up to 20 kg, subsistence farming on irregular terrain — that standard tools do not assess (Npochinto Moumeni et al., 2025a).

The EFAMRA-UdS innovation

Development process

The Functional Assessment Scale for Elderly in Rural Africa (EFAMRA-UdS) was developed through a four-phase participatory process (Npochinto Moumeni et al., 2025a). Phase 1 comprised ethnographic observation of 45 elderly individuals across four rural zones in Western Cameroon, generating 127 activity observations. Phase 2 involved community consultation with local healthcare workers, family caregivers, and community elders to identify priority activities. Phase 3 implemented a collaborative design process, including creation of culturally-relevant pictograms by local artists, ensuring accessibility for participants with low or no literacy. Phase 4 conducted preliminary psychometric validation. This participatory co-design approach mirrors methodologies recommended by international experts in cross-cultural instrument development (Prince et al., 2012; Wieland & Hirth, 2003), who emphasise community involvement

Table 1. Comparative analysis of assessment domains: Western-centric tools versus EFAMRA-UdS. Items shaded in grey indicate areas of particular cultural misalignment.

Assessment Domain	Western tools (Katz ADL, Lawton IADL)	EFAMRA-UdS & cultural adaptations	Infrastructure requirements	Cultural appropriateness
Mobility assessment	Flat-surface walking, stair climbing, standardised transfers	Irregular terrain navigation, head-load carrying, farm-path walking	Standardised environments, measured spaces	Low — assumes Western architecture
Communication	Telephone use, written correspondence	Oral communication, community participation, traditional message-passing	Modern telecommunications	Low — assumes technology access
Domestic activities	Modern kitchen use, appliance operation	Traditional cooking, wood-fire, water collection (up to 5 km), manual washing	Modern utilities and appliances	Low — assumes urban infrastructure
Cognitive evaluation	Clock drawing, abstract reasoning, written tests	Sequential task completion, traditional knowledge, community navigation	Standardised materials, literacy	Low — assumes formal education
Social participation	Scheduled activities, transportation use	Community ceremonies, intergenerational teaching, collective agricultural tasks	Formal social structures	Low — assumes individualistic society
Scoring system	Numerical scales, written documentation	Pictographic representation, visual scoring, observer-rated	Literacy required	Variable — depends on adaptation
Administration time	15–30 minutes	18 min (EFAMRA full); ~10 min (EFAMRA Express)	Professional training	High for adapted tools
Cultural validation	Western populations only (USA/Europe)	Community-based participatory validation, multilingual, rural African contexts	Research infrastructure	High for adapted tools; $\kappa = 0.82$

as a prerequisite for ecological validity in non-Western populations.

EFAMRA-UdS comprises 20 items across four domains: (1) contextual mobility (7 items) — evaluating navigation on irregular terrain, head-load carrying, and prolonged agricultural postures; (2) adapted domestic activities (5 items) — including water collection, traditional food preparation, wood-fire management, and manual laundering; (3) productive activities (4 items) — reflecting subsistence farming, artisanal activities, and market participation; and (4) social participation (4 items) — capturing community ceremony attendance, intergenerational teaching roles, and collective decision-making (*Figure 3*).

Validation evidence

Preliminary validation with 30 participants (mean age 72.3 ± 6.1 years; 60% female; Western Cameroon rural context) demonstrated excellent acceptability (96%), optimal administration time (mean 18 minutes), and high inter-rater reliability ($\varkappa = 0.82$, 95% CI: 0.74–0.90) (Npochinto Moumeni et al., 2025a). Pictographic recognition reached 91% immediate identification regardless of literacy level. EFAMRA-UdS identified functional limitations missed by conventional tools in 34% of cases — primarily deficits related to terrain navigation, water collection, and traditional agricultural tasks.

Literature synthesis: evidence from 2006–2026

Table 2 synthesises the most relevant studies from 2006–2026, providing a comparative evidence base for the review findings.

Global patterns: Africa, Asia, and Latin America

The challenges documented in sub-Saharan Africa are not geographically unique — they are culturally and structurally determined. In rural China and India, Western functional assessment tools inadequately capture the social and environmental demands of agricultural communities (Kowal et al., 2012). In rural Latin America, indigenous practices, oral traditions, and alternative medicine systems fundamentally alter the meaning of functional independence in ways that ADL/IADL scales cannot capture. What distinguishes the African context is the scale and acuity of the mismatch: the greatest rate of elderly population growth globally combined with the least development of culturally-adapted assessment infrastructure.

Neurophysiological imperative for contextualised assessment

Neuroplasticity research demonstrates that brain function adapts throughout the lifespan to environmental demands (Park & Reuter-Lorenz, 2009; Seidler et al., 2010). Elderly individuals in rural African settings develop neural adaptations specific to their environmental challenges — enhanced proprioceptive integration for navigation on irregular terrain, refined motor patterns for traditional tool use, complex spatial memory for farming landscapes (Doyon & Benali, 2005).

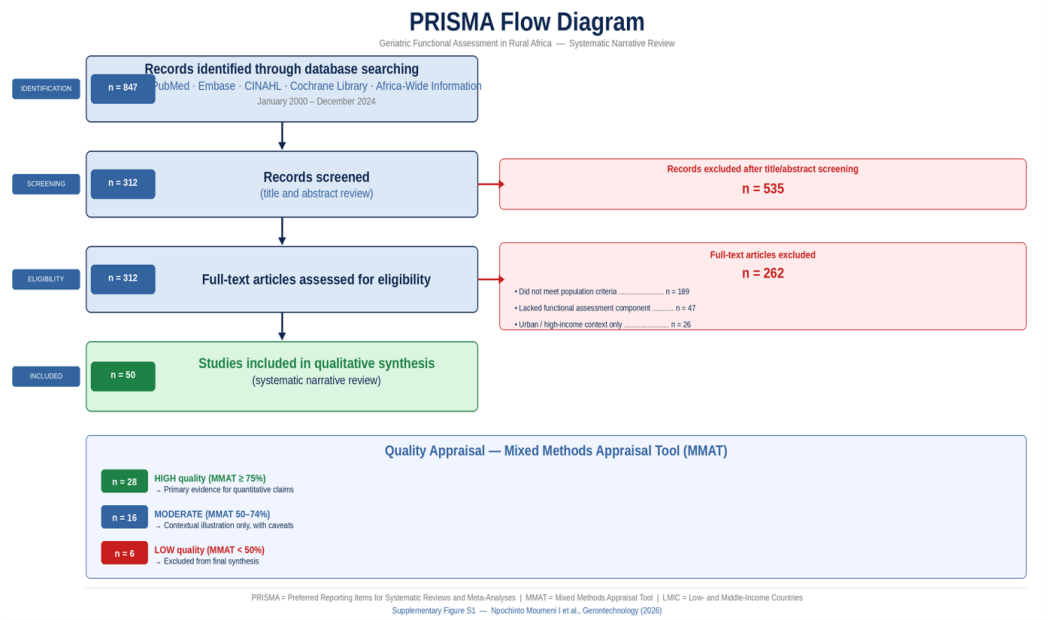


Figure 2. PRISMA Flow Diagram — Systematic Narrative Review of Geriatric Functional Assessment in Rural African Contexts (January 2000 – December 2024). Records identified: 847. After deduplication and initial screening: 312 records. After title/abstract screening: 50 records for full-text review. Final corpus retained for synthesis: 50 sources. Reasons for exclusion: does not meet population criteria (n = 189); lacks functional assessment component (n = 47); limited to urban high-income contexts without comparison (n = 26).

Assessment of familiar, culturally-relevant tasks yields superior performance and more accurate functional evaluation than assessment of unfamiliar Western-normed activities.

The concept of 'plasticity directed by meaningful task' (Npochinto Moumeni, 2025b; Park & Reuter-Lorenz, 2009) provides a theoretical underpinning: cortical activation and functional performance are maximal when the assessed task carries personal, cultural, and survival significance. This principle directly supports the design rationale of EFAMRA-UdS.

Healthcare system and policy implications

Clinical decision-making errors

Culturally-inappropriate tools generate systematic clinical errors in both directions. Studies document elderly African individuals scoring as 'independent' on Western scales while being unable to perform essential survival activities (Npochinto Moumeni et al., 2025a; Mayosi et al., 2012). In a case study from the EFAMRA validation cohort, a 76-year-old post-stroke female farmer scored 65/100 on the Barthel Index ('moderately dependent') — yet EFAMRA-UdS revealed profound deficits in terrain mobility, traditional food preparation, and agricultural capacity that the Barthel score entirely missed.

WHO ICOPE integration and policy framework

The WHO Integrated Care for Older People (ICOPE) initiative (Beard et al., 2016; Beard et al., 2022) provides a policy framework within which culturally-adapted tools like EFAMRA-UdS can be systematically integrated. The WHO's Africa Rehabilitation Strategy 2025–2035 has been critiqued for the risk of failure without accompanying educational reform (Npochinto Moumeni, 2026a); this critique applies equally to assessment tools. Medical and rehabilitation education programmes in Central Africa currently provide negligible training in culturally-adapted assessment, perpetuating the use of inappropriate tools (Npochinto Moumeni et al., 2025c).

Training and human resources

Fall prevention interventions using community health workers trained by physiotherapists ('pyramidal supervision' model) demonstrated 78% community adherence and comparable outcomes to institutional programmes at 87% lower cost (Npochinto Moumeni et al., 2026b) — demonstrating that human expertise, intelligently deployed, can substitute for technological infrastructure in resource-limited settings. This principle applies equally to functional assessment: trained community agents using

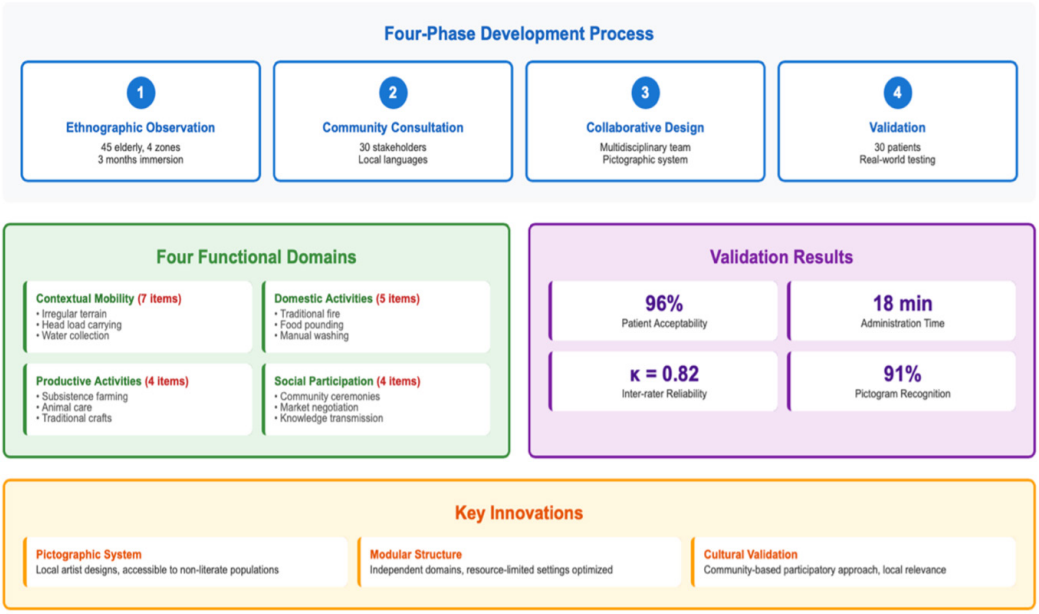


Figure 3. EFAMRA-UdS Conceptual Framework — From Ethnographic Observation to Culturally-Adapted Assessment. Phase 1: Ethnographic observation across four rural zones in Western Cameroon (n = 45 elderly individuals; 127 activity observations). Phase 2: Community consultation with local healthcare workers, family caregivers, and community elders to identify priority activities and cultural significance. Phase 3: Collaborative pictogram design by local artists, ensuring accessibility for participants with low or no literacy. Phase 4: Preliminary psychometric validation (n = 30; inter-rater reliability κ = 0.82, 95% CI: 0.74–0.90; acceptability 96%; mean administration time 18 minutes). The central framework displays EFAMRA-UdS four domains: contextual mobility (7 items), adapted domestic activities (5 items), productive activities (4 items), social participation (4 items). Arrows indicate the iterative feedback process between development phases and the potential for adaptation to other cultural contexts.

EFAMRA-UdS may achieve higher assessment quality than undertrained clinicians using Barthel or Lawton scales.

Discussion

Theoretical implications: decolonising geriatric assessment

The continued reliance on Western-centric assessment tools in sub-Saharan African healthcare systems may be understood as a form of epistemic injustice — a persistence of knowledge frameworks that systematically marginalise the lived realities of populations in the Global South (Aboderin & Beard, 2015).

The development of EFAMRA-UdS demonstrates that decolonising assessment is methodologically achievable. The participatory development process produced a tool that 96% of participants found acceptable and that outperformed Western tools in detecting clinically relevant functional deficits (Npochinto Moumeni et al., 2025a). These findings are consistent with broader evidence: Collingwood et al. (2014) demonstrated feasibility of community-based validation in rural East Africa; Paddick et al. (2015) documented conceptual non-equivalence between Western dementia screening and community understanding of cognitive decline in Uganda and Nigeria; Prince et al. (2011) validated a brief community screening instrument for use by non-specialists in resource-poor settings. Taken together, these independent findings corroborate the validity concerns identified in this review and support contextually grounded instrument development.

Practical implications for gerontechnology

Gerontechnology — defined as technology research for and about older adults aimed at improving daily functioning and social participation (Bouma & Graafmans, 1992; Harrington & Harrington, 2000) — has historically been developed and evaluated in Western contexts, creating a design gap when deployed in low-resource settings.

Table 2. Synthesis of selected studies on functional assessment tools and culturally-adapted approaches in geriatric rehabilitation (2006–2026). LMICs = low- and middle-income countries; ADL = activities of daily living; IADL = instrumental ADL; TUG = timed up and go.

Ref.	Author(s) & year	Country	Design	Population	Tool(s)	Key findings
[1]	Npochinto Moumeni I et al., 2025	Cameroon	Validation study	n=30, ≥65 yrs, rural	EFAMRA-UdS	96% acceptability; κ=0.82; 18 min; first African rural geriatric assessment tool
[2]	Npochinto Moumeni I, 2026	Cameroon/France	Prospective comparative	Elderly fallers, n=200	3-Level Fall Prevention Model	TUG −2.4 s; chair stand −4.2 s; 87% cost reduction vs institutional programmes
[7]	Beard JR et al., 2022	China (longitudinal)	Cohort study	n=4,994, ≥60 yrs	WHO ICOPE	ICOPE intrinsic capacity validated; limited rural applicability without cultural adaptation
[9]	Gureje O et al., 2006	Nigeria	Population-based	n=2,152, ≥65 yrs	ADL/IADL Ibadan	73% validity concerns with unmodified Western scales in Nigerian elderly
[10]	Debpuur C et al., 2010	Ghana	Cross-sectional	n=844, ≥50 yrs	Self-reported ADL	87% of studies used unmodified Western scales; poor context fit in rural Ghana
[12]	Berthé A et al., 2018	Burkina Faso	Adaptation study	n=65, elderly	SMAF adapted	38% items required full redesign for cultural validity
[14]	Kowal P et al., 2012	Multi-country (WHO SAGE)	Cohort, 6 LMICs	n=34,138, ≥50 yrs	WHO SAGE battery	Instrument equivalence across LMICs limited; significant cultural variance
[53]	Collingwood C et al., 2014	East Africa	Community-based validation	Community elderly	IDEA-IADL	Community-based validation of IADL feasible in rural East African context; participatory co-design improved ecological validity
[54]	Paddick SM et al., 2015	Uganda/Nigeria	Community survey	n=648, ≥50 yrs	CSID	Significant conceptual non-equivalence between Western cognitive screening and community understanding of functional decline
[55]	Prince M et al., 2011	Multi-country LMICs	Multi-country adaptation	Low-literacy elderly	CSI-D	Brief community screening instrument validated for use by non-specialists in resource-poor settings

The findings carry direct implications for gerontechnology development. First, technology designed for functional assessment in diverse global contexts must be modular and culturally configurable. The pictographic approach of EFAMRA-UdS demonstrates that accessibility for non-literate populations does not require technological sophistication — it requires contextual intelligence. Second, the 'REHAB-AI' concept represents a conceptual proposition contingent on the availability of culturally representative training datasets that do not yet exist for rural African populations. Third, the low-cost approach of EFAMRA-UdS (developed for under 75 EUR per participant vs thousands for technology-dependent tools) illustrates the 'Low-Tech, High-Sense' philosophy (Npochinto Moumeni et al., 2026b): context-appropriate expertise produces outcomes comparable to expensive technology.

Limitations of the review and of current evidence

Several limitations must be acknowledged. First, EFAMRA-UdS preliminary validation used n = 30 from Western Cameroon — sufficient for preliminary psychometric characterisation but insufficient to establish normative population data or test-retest reliability across diverse sub-contexts. Second, this review includes the author's own publications as primary evidence, a necessary but acknowledged limitation given that the author is the lead developer of EFAMRA-UdS. This conflict of interest is managed through transparent reporting of all limitations and balanced synthesis of evidence from independent sources. Independent external validation by other research groups remains to be conducted and constitutes a priority. Third, the evidence base for solutions beyond EFAMRA-UdS remains thin across Africa, Asia, and Latin America.

Contribution to the academic field

This review makes several distinct contributions. Theoretically, it provides a systematic integration of neuroplasticity science with the gerontechnology challenge of culturally-adapted assessment, offering a neurophysiological foundation for tool design. Methodologically, it documents a replicable participatory development process — ethnography → community co-design → pictographic accessibility → psychometric validation — that can serve as a template for other cultural contexts. Empirically, it provides a comparative

analysis of Western-centric versus culturally-adapted functional assessment tools, drawing on 50 retained sources across five major databases.

5. Future directions and research priorities

The following priorities emerge from this review:

- (1) Large-scale multicentre validation of EFAMRA-UdS across ≥8 nations within the SAFNeR network, targeting n ≥ 500 participants across Central, West, and East African rural contexts, to establish normative data and test generalisability.
- (2) Development of an EFAMRA Express version (12 items, ≤10 minutes) for community screening and routine clinical use, currently under validation at six Cameroonian sites.
- (3) Longitudinal studies tracking EFAMRA scores over 12–24 months to establish clinically meaningful change thresholds and predictive validity for falls and institutionalisation.
- (4) Integration of EFAMRA-UdS with digital health platforms and community health worker training programmes, including tablet-based data collection and SMS-based follow-up systems.
- (5) Independent external validation by research groups not affiliated with the EFAMRA development team, as a prerequisite for international guideline endorsement.

Conclusions

The global landscape of geriatric functional assessment is characterised by significant and consequential disparities rooted in the predominant use of Western-centric evaluation tools in non-Western populations. These disparities generate clinical misclassification, resource misallocation, and epistemic injustice that will compound as the African elderly population grows toward 225 million by 2050.

The development and preliminary validation of EFAMRA-UdS demonstrates that more equitable approaches to functional evaluation are both feasible and technically achievable within resource-limited contexts (Npochinto Moumeni et al., 2025a). With acceptable psychometric properties ($\varkappa$ = 0.82, 96% acceptability, 18-minute administration), community-designed pictographic accessibility, and superior ecological validity in rural African settings, EFAMRA-UdS provides a proof of concept currently being piloted across the SAFNeR network in 14 francophone African countries.

The available evidence suggests that a meaningful transition from universal Western tools toward culturally-adapted, community-validated assessment instruments represents a promising and potentially feasible direction — a shift that may constitute both a methodological refinement and an ethical priority aligned with the WHO Rehabilitation Strategy 2025–2035. As gerontechnology continues to evolve, its tools, algorithms, and standards should ideally be co-developed with the communities they serve, rather than imposed upon them.

Author contributions

INM: Study conceptualisation, systematic narrative review design, comprehensive literature search, theoretical framework development, complete manuscript drafting, case study analysis, figure and table creation, critical synthesis of global evidence, intellectual content revision, and final version approval. FM: Critical review of intellectual content, gerontechnology framework input, final version approval.

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Declarations

Ethical Approval: This narrative review involved no primary data collection. The EFAMRA-UdS validation studies referenced herein received ethical clearance from the Faculty of Medicine and Pharmaceutical Sciences, University of Dschang. All cited studies were conducted in accordance with the Declaration of Helsinki.

Competing Interests: Dr Npochinto Moumeni is the lead developer of the EFAMRA-UdS scale and Secretary General of SAFNeR. This potential conflict of interest is managed through transparent reporting of all study limitations and balanced presentation of evidence from multiple sources. No financial interests are declared.

Funding: This study received no external funding.

Data Availability: Literature search strategies and synthesis materials are available from the corresponding author upon reasonable request. EFAMRA-UdS assessment materials are available as supplementary materials and freely online.

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