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SYSTEMATIC REVIEW

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Nutritional status and physical function of older adults living in sub-Saharan Africa: a systematic review

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Abstract

Background Adequate nutrition is a cornerstone of healthy ageing, yet malnutrition is an escalating concern among older adults in sub-Saharan Africa (SSA). Despite its impact on independence and chronic disease risk, empirical syntheses of the relationship between nutritional status and physical function in this region remain scarce.

Objective To systematically review the prevalence of malnutrition among older adults in sub-Saharan Africa and its relationship with physical function.

Methods A systematic search was conducted across five electronic databases for peer-reviewed studies published in English between 2000 and 2025. Study selection, data extraction, and quality assessment were performed independently by two reviewers. The review targeted studies that assessed nutritional status (e.g., body mass index, Mini Nutritional Assessment) and physical function (e.g., activities of daily living, handgrip strength) in SSA populations aged 60+. Narrative synthesis was used to synthesise and report data outcomes.

Results Fifteen studies met the inclusion criteria. The prevalence of undernutrition (malnutrition) varied widely, ranging from 1.7% to 75%. Functional impairment was significant: dependency in activities of daily living (ADL) ranged from 9% to 76.5%, while instrumental ADL dependency ranged from 29% to 72.7%. Notably, low to moderate handgrip strength (< 16 kg; ≤27 kg) was also reported.

Conclusion The included studies reported associations between nutritional status and physical function among older adults in SSA. However, the predominantly cross-sectional nature of the included studies precludes establishing a causal relationship. Furthermore, the high variation in prevalence observed across studies may arise from true population differences and methodological differences. A geographical bias toward urban settings was identified, underscoring the need for longitudinal research and data from rural populations to inform targeted healthy ageing interventions.

PROSPERO registration CRD42023430056.

Keywords Nutrition status, Physical function, Older persons, Sub-Saharan Africa

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Introduction

The global demographic landscape is shifting toward an ageing population, a trend evident in sub-Saharan Africa (SSA) as well. In 2021, individuals aged 65 and older accounted for 6.9% of the region's population, a figure projected to nearly double to 11.1% by 2050 [1]. This rapid demographic transition necessitates a comprehensive understanding of the health and nutritional challenges unique to older adults in this socio-economic context.

Malnutrition, a term that refers to a lack (undernutrition) or excess (overnutrition) of nutrient intake [2], represents a significant public health burden for older adults, with global prevalence estimates ranging from 23% to 46% [3]. The word malnutrition is used interchangeably with undernutrition, a term that encompasses underweight, which arises from insufficient food intake, impaired food absorption, or poor biological utilisation of nutrients [4]. The severity of this issue is amplified in low- and middle-income countries (LMICs) by pervasive poverty and limited dietary diversity [5–7]. In SSA specifically, epidemiological data indicate a malnutrition incidence of 5–30% among community-dwelling older adults, rising sharply to 20–60% in hospital settings [8]. While adequate nutrition is a cornerstone of recovery from illness and infection, achieving it remains a challenge for older Africans who face physiological decline, limited social support, and reduced mobility [9–11].

Ageing is characterised by a progressive decline in physiological systems, often exacerbated by income loss and restricted access to healthcare [12–15]. Central to this decline is the erosion of physical function—the ability of an individual to perform daily activities and tasks that require physical strength [16–18]. Several tools are available for measuring physical function in older adults, including handgrip strength used in measuring muscle strength to assess the amount of force a muscle can produce with a single maximal effort [16], gait speed used to measure physical performance to assess whole body function related with mobility [16], Short Physical Performance Battery (SPPB) test assesses lower extremity functional performance using timed actions of standing balance, gait speed and lower extremity strength [19], Timed Up and Go test a physical performance measure predominantly used to evaluate walking and active stability [20], activities of daily living (ADLs), and instrumental activities of daily living (IADLs).

Malnutrition and physical function are inextricably linked (Fig. 1): age-related transformations such as anorexia of ageing, malabsorption, and sarcopenia create a feedback loop that leads to frailty, immobility, and increased dependency [21, 22]. Physical function is significantly linked to nutritional well-being in older adults [23, 24]. Physical limitations often create barriers to achieving optimal nutrition, as mobility difficulties and difficulty lifting utensils can negatively impact older adults' access to food from shops and preparation [23, 25]. Nutritional status and physical function are two critical areas that significantly affect the health trajectories and health-related quality of life of older adults [26]. The state of nutrition in older adults is crucial for bolstering immune health [27] preserving muscle and bone integrity, and averting chronic illnesses [28, 29]. Findings indicate that nutritional status and physical function are significant, interrelated elements that affect health in older adults [30, 31]. Undernutrition has the potential to hasten functional decline, while optimal nutrition can improve physical capacity and provide a protective effect against functional losses. With the ageing of global populations, it is becoming ever more essential to comprehend the intricate connections between nutritional status and physical function, as well as their links to health and well-being [32].

The Global Leadership Initiative on Malnutrition (GLIM) has provided standardised criteria for screening and assessing undernutrition, emphasising the need to understand these linkages in at-risk populations [34]. To date, systematic reviews in SSA on the older adult population have largely focused on the socio-economic determinants of nutritional status or dietary diversity [35–38].

Despite the rising prevalence of the ageing population in sub-Saharan Africa, the geriatric healthcare infrastructure remains critically underdeveloped. While individual studies have documented high rates of both undernutrition and functional impairment, there is a lack of synthesised evidence characterising the interaction between these two conditions. In the absence of a clear understanding of how nutritional deficits drive physical dependency—and vice versa—within the African socio-economic context, public health interventions remain fragmented. Without a systematic synthesis to identify the strength of these associations and the specific tools used to measure them, it is impossible to develop targeted, evidence-based strategies to mitigate the looming crisis of frailty and dependency in the region. Therefore, this systematic review aims to synthesise the current evidence on the nutritional status and physical function of older adults residing in sub-Saharan Africa.

Research question

Is nutritional status associated with physical function in older adults living in sub-Saharan Africa?

Objectives

The specific objectives are [1] to systematically review the literature on the prevalence of nutritional status of older adults living in sub-Saharan Africa and [2] assess its relationship with the physical function of older adults.

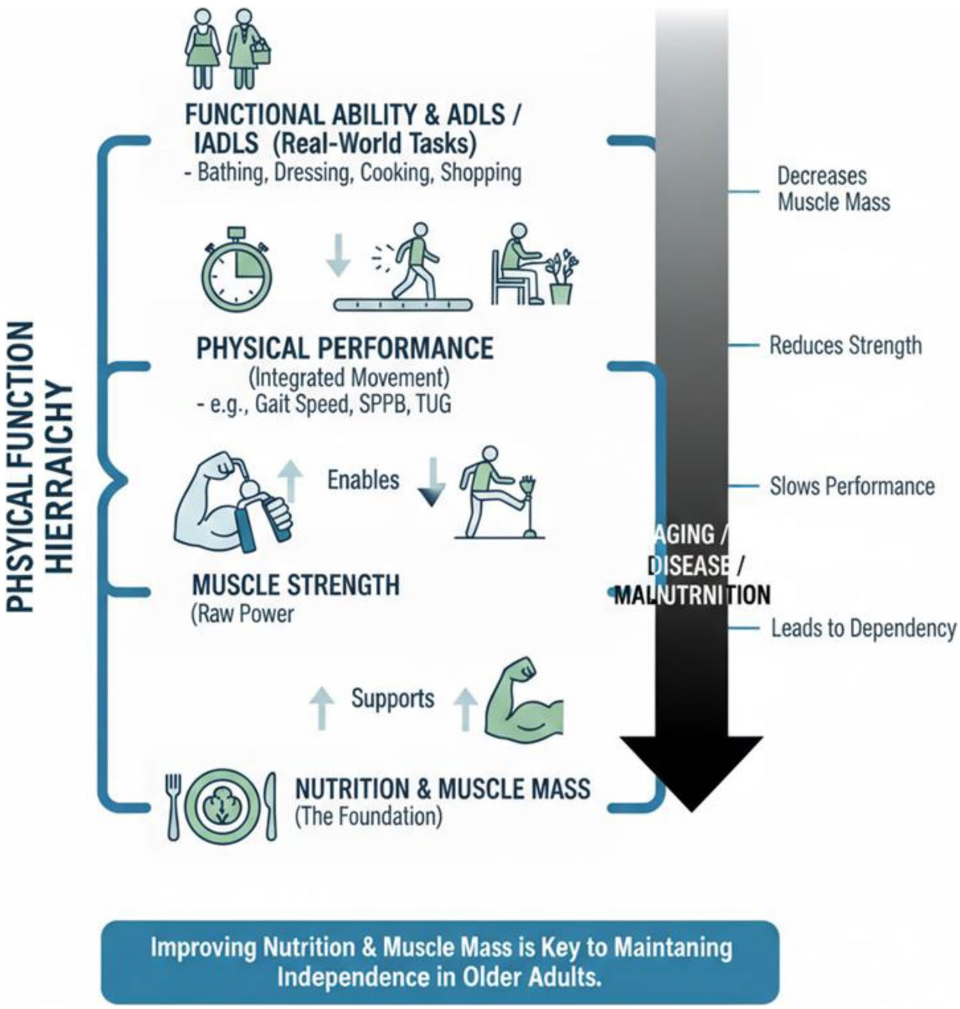

Fig. 1 Diagram showing the interrelationship between nutrition and physical function, adapted from Fried et al. [33]. Abbreviations: ADL- activities of daily living; IADL- instrumental activities of daily living; SPPB- short physical performance battery; TUG- timed up & go

Methodology

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines [39]. The review was registered in the International Prospective Register of Systematic Reviews (PROSPERO registration number CRD42023430056).

Search strategy

A single reviewer (O.D.I) independently performed the initial searches, with a revised search conducted by two reviewers (O.D.I & E.O.W). A pilot search was conducted on the Medline Electronic database to test the search strategy and obtain preliminary studies on the review topic. Comprehensive searches were conducted on Medline, Embase, Web of Science, Africa Index Medicus (AIM) and African Journals Online (AJOL). Hand searches were performed on Google Scholar, citation follow-up was conducted, and the reference lists of included studies were reviewed for additional references and citations. The PICOS (Table 1) framework for systematic reviews was used to structure the searches' key free search terms such as "older adults, "nutritional status", "physical function" and "sub–Saharan Africa", alongside medical subject heading (MeSH) terms, for example, "micronutrient status", to capture primary studies examining nutritional status and physical function in micronutrient studies. The search terms were combined using the Boolean logic "AND" and "OR". The searches were limited to English and restricted to articles published from January 2000 to 2023, as the aim of the study was to identify contemporary trends and correlations concerning malnutrition and physical function in older adults (see full search strategy in the supplementary file). A revised search was conducted in January 2026 to capture articles, including those published very recently from 2000 to December 2025.

Table 1 Eligibility of studies determination following the PICOS strategy of inclusion and exclusion criteria

Parameter	Inclusion	Exclusion
Population	Adults 60 years and above, both sexes.	Infants, children, adolescents, middle-aged, and adults below 60 years old
Interest	Nutritional Status and Physical Function.	
Comparison	Not applicable	
Outcome	Anthropometric outcomes (BMI), MNA, and physical function (muscle strength, functional mobility, ADL and IADL).	Studies whose outcomes are not nutritional status and physical function. Also, studies with disease-related outcomes
Study types	Observational designs - cross-sectional studies, longitudinal studies, cohorts, experimental designs, RCTs.	Case-control, literature review, systematic reviews, editorials, conference abstracts.

Abbreviations: *BMI* body mass index, *MNA* mini nutritional assessment, *ADL* activities of daily living, *IADL* instrumental activities of daily living, *RCTs* randomised control trials

Eligibility criteria
Studies were eligible for inclusion if they were conducted among older adults aged 60 years and above (the selection of this age is predicated on the region's life expectancy) in sub-Saharan Africa and evaluated both nutritional status and physical function in a study. Studies were excluded if they were disease-related malnutrition and did not meet the criteria stated above (see Table 1).

Study selection
Study selection was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) [39] (see Fig. 2). The search results were transferred to the online Covidence software (available at www.covidence.org), where 2 reviewers (O.D.I., J.O.O., and E.O.W.) independently screened the titles and abstracts of all search outputs after duplicates were removed, and conflicts were resolved between O.D.I., J.O.O., and E.O.W. A fourth reviewer (V.R.) evaluated 10% of the discarded papers at both stages. Full texts of potential qualifying abstracts were retrieved and screened for relevance; only those that met the inclusion criteria were included in the review. Conflicts in full-text selection were resolved between O.D.I. and V.R., and when they persisted, were discussed with E.A.W. and resolved.

Data extraction
Data extraction was conducted using a prespecified Microsoft Excel spreadsheet containing the following items: authors, year of publication, country of study, sample size, population studied, sampling strategy, study design, method for evaluating nutrition status, and method for evaluating physical function. The tool was piloted with two articles prior to final extraction. The data extraction was performed independently by one researcher (O.D.I), with a 100% check by a second reviewer (V.R). To account for methodological diversity, quality, and sample variability, the study adopted a narrative synthesis [40]. A textual approach was used to summarise the included studies, focusing on methodological quality in a data extraction sheet and on relationships within and between the studies reviewed.

Quality assessment of articles and risk of bias
All studies identified were cross-sectional observational studies. The quality of the selected studies was assessed using the Critical Appraisal Checklist for cross-sectional studies [41] from the Joanna Briggs Institute [42]. The tool considers eight methodological aspects, including: inclusion criteria, the population studied, exposure and conditions measured, identification and strategies for dealing with confounding factors, validity and reliability of outcome measurements, and statistical analysis. The tool is preferred and suitable for cross-sectional studies that report on data with prevalence [41]. The risk of bias for each article was categorised as "low risk", "moderate risk" or "high risk" based on the tool's point score. The quality assessment was carried out independently by the first author (O.D.I.), and 80% were checked by the second author (V.R.). In the event of any differences, they were resolved through discussion among them and E.A.W. Meta-analysis was not carried out due to heterogeneity in the study tools and variations in settings.

Results
A total of 4998 records, including those subjected to citation checking, were identified through the search strategies, of which 1508 were duplicates (Fig. 2). Of the 3490 remaining records, 3212 were excluded following title and abstract screening, leaving 278 reports for retrieval. Of the 278 reports that were sought for retrieval, 227 reports were retrieved, while 51 reports were not retrieved. For the full-text screening, the inclusion and exclusion criteria were applied to each of the 227 articles retrieved. Only 15 studies met the criteria and were included in this review. Out of the excluded 212 articles, 28 studies were disease-related, 22 were conference abstracts, 77 studies were wrong populations, 29 studies were wrong setting (outside sub-Saharan Africa), 41 articles had wrong outcomes (nutrition status and physical function were not measured), and 15 others were wrong language.

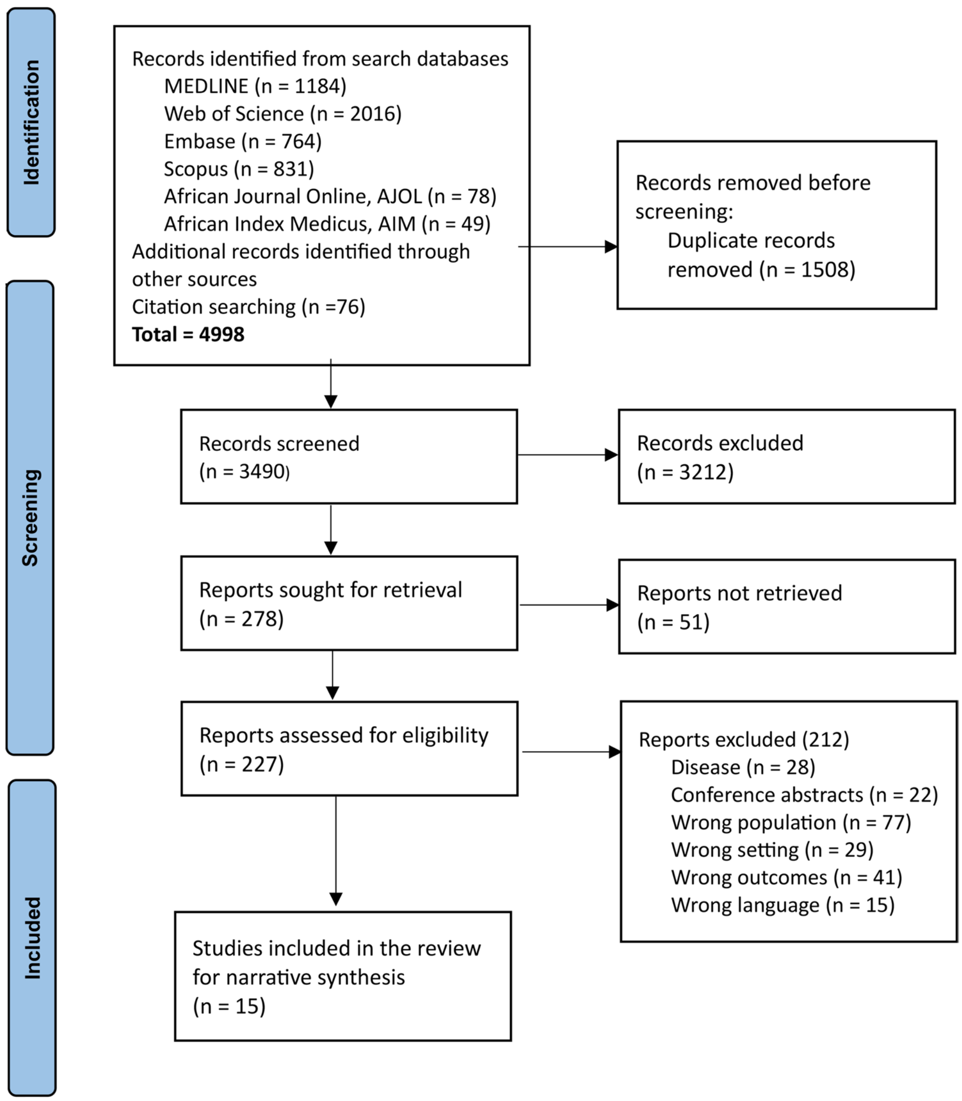

Fig. 2 PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram showing the selection of studies.

Characteristics of included studies

Study population

Of the 15 studies that met the inclusion criteria and were included in the review focused on the population of 60 years and above [25, 43–56]. The total number of participants included in the studies ranged from 100 [43] to 9736 [45]. All of the studies included participants of both sexes. See Table 2 for details.

Geographical distribution

Of the 15 studies included, four studies [25, 48–50] were conducted in Nigeria, four in South Africa [45, 52, 53, 56], two each from Malawi [47, 51] and Tanzania [44, 55], and one each from Ghana [45], Democratic Republic of Congo (DRC) [54], Ethiopia [46] and Uganda [43] (See Table 2).

Nutritional status assessment measures

With regard to the tool that was used to assess nutritional status, four studies [25, 44, 48, 49] used BMI only, while two studies used both BMI and MNA [53, 54]. Four studies [45–47, 50] used Mini Nutrition Assessment, either short or full form (MNA), while one study [56] utilised BMI and waist circumference. Additionally, one further used the GLIM criteria in addition to the MNA-SF [47]. See Table 2 for details.

Physical function assessment measures

For the assessment of physical function, three studies [45, 55, 56] used handgrip strength only (HGS), while two studies used handgrip strength (HGS), sit-to-stand, and the Timed Up and Go test [51, 52]. One study used a combination of HGS, ADL and IADL to quantify participants' physical function [47]. Three studies [43, 44,

Table 2 Characteristics of the studies included in the review

Reference	Year	Country	Title	Study design	Sample Size	Population Studied	Study Setting	Sampling Method	NS measures	PF measures
Adepoju et al. [25]	2021	Nigeria	Nutritional Status and Functional Capacity of the Elderly in Selected Communities in Ibadan, Oyo State	Cross-sectional	450	Men & Women 60yrs & above	Urban area	Multistage Sampling technique	BMI	BADL & IADL
Andre et al. [54]	2013	DRC	Mini Nutritional Assessment and functional capacity in community-dwelling elderly in Rural Luozi, Democratic Republic of Congo	Cross-sectional	370	Men & Women 65–88 years	Rural area	Convenient	BMI & MNA-LF	ADL & IADL
Corso et al. [45]	2025	Ghana & South Africa	Nutritional status is associated with cognition and grip strength among older adults: A 10-year longitudinal study in Ghana and South Africa	Longitudinal	9736	Men & Women 60 yrs	Urban	Multistage cluster sampling	MNA-SF	HGS
Charlton et al. [52]	2005	South Africa	Micronutrient dilution associated with added sugar intake in elderly black South African women.	Cross-sectional	285	Men & Women 60yrs & above	Urban area	Convenient	BMI	HGS, Sit-to-stand, & Timed-up-and-go
Charlton et al. [53]	2007	South Africa	The MNA, but not the DETERMINE, screening tool, is a valid indicator of nutritional status in elderly Africans	Cross-sectional	283	Men & Women 60yrs & above	Urban area	Purposive	MNA-LF, BMI	ADL, IADL, HGS, GS, Mobility balance
Chilima & Ismail [51]	2001	Malawi	Nutrition and handgrip strength of older adults in Rural Malawi	Cross-sectional	284	Men & Women 60yrs & above	Rural area	Multistage cluster sampling	BMI, MUAC, Armspan, SF	HGS, Sit-to-stand, & Timed-up-and-go
Kikafunda & Lukwago [43]	2005	Uganda	Nutritional status and functional ability of the elderly aged 60 to 90 years in the Mpigi district of central Uganda	Cross-sectional	100	Men & Women 60–90 years	Rural area	Stratified random sampling	BMI, MUAC, Armspan	ADL
Tesfaye et al. [46]	2024	Ethiopia	Nutritional status of hospitalised elderly patients in Ethiopia: a cross-sectional study of an important yet neglected problem in clinical practice	Cross-sectional	157	Men & Women 60 yrs & above	Urban	Convenient	MNA-LF	ADL
Mphwanthe et al. [47]	2025	Malawi	Risk of malnutrition, food insecurity, dietary quality, and associated factors among Malawian older adults at hospital admission: a cross-sectional study	Cross-sectional	315	Men & Women 60–93 years	Urban	Non-probability consecutive	MNA-SF, GLIM	HGS & ADL
Nyaruhucha et al. [18]	2004	Tanzania	Nutritional status, functional ability and food habits of institutionalised and non-institutionalised elderly people in Morogoro Region, Tanzania	Cross-sectional	100	Men & Women 60yrs & above	Urban area	Not reported	BMI	BADL
Olawumi et al. [50]	2021	Nigeria	Functional Correlates of Malnutrition Among Older Patients in a Primary Care Clinic in Northern Nigeria	Cross-sectional	352	Men & Women 60yrs & above	Urban area	Systematic random sampling	BMI, MNA-LF, MAC	ADL & IADL
Gabriel & Alaba [49]	2024	Nigeria	Nutritional status and functional capacity of elderly in selected communities in Yewa South, Ogun State	Cross-sectional	319	Men & Women 60 years & above	Urban	Multistage sampling	BMI	BADL & IADL
Pieterse et al. [55]	2002	Tanzania	The association between nutritional status and handgrip strength in older Rwandan refugees	Cross-sectional	444	Men & Women 60yrs & above	Urban area	Not reported	BMI, MUAC, SF	HGS
Nzeagwu & Ozougwu [48]	2019	Nigeria	Nutritional and health status of older persons in rural communities of Udi Local Government Area, Enugu State	Cross-sectional	238	Men & Women 60 yrs & above	Rural	Random sampling	BMI	ADL & IADL
Shozi et al. [56]	2022	South Africa	Relationships between physical activity, body mass index, waist circumference and handgrip strength amongst adults from the Northwest province, South Africa: The PURE study.	Cross-sectional	243	Men & women 60–70 years	Urban area	Not reported	BMI & WC	HGS

Abbreviations: *NS* nutritional status, *PF* physical function, *BMI* body mass index, *MNA*(LF, SF) mini nutritional assessment (LF: long form, SF: short form), *MUAC* mid-upper arm circumference, *MAC* mid-arm circumference, *WC* waist circumference, *HGS* handgrip strength, *ADL* activities of daily living, *IADL* instrumental activities of daily living, *BADL* basic activities of daily living, *GLIM* Global Leadership Initiative on Malnutrition

46] used ADL only, while five studies [25, 48–50, 54] used ADL and IADL. Table 2 shows the characteristics of the studies.

Nutrition status findings

Anthropometry

Of the 15 studies included, 11 [25, 43, 44, 48, 49, 51–56] reported nutritional status using the World Health Organisation's body mass index (BMI) cutoffs. The BMI results showed that undernutrition (underweight) ranged from 1.7% [48] to 34% [54], while overweight ranged from 8.2% [25] to 38.8% [49]. Obesity was reported to range from 8% [25] to 65% [53]. Those who were reported to have a normal status ranged from 37.8% [48] to 66.7% [25]. Among the studies that reported on nutrition status using BMI, five [43, 44] reported results separately for men and women. The findings showed varying results between men and women, with the men having higher rates of undernutrition and the women having higher rates of obesity (Table 3). Some of the studies [43, 51, 56] measured body composition using other methods such as mid-upper arm circumference (MUAC) and waist circumference (WC). Details on nutritional status and physical function for all the identified papers are presented in (Table 3).

Mini-nutritional assessment and global leadership initiative on malnutrition (GLIM) criteria

Six studies [45–47, 50, 53, 54] used the MNA with one of them, adding the GLIM criteria [47] for reporting their findings. Two of the six studies used the short form [45, 47], while the others used the full version [46, 50, 53, 54]. Malnutrition with MNA-SF was reported to range from 3.6% [45] to 40.3% [47] while the MNA-LF was between 5.6% [53] to 81% [46]. Those at risk of malnutrition were found to be between 31.1% [45] to 57.8% and those with normal nutritional status ranged from 2% [46] to 65.3% [45]. According to the study that used GLIM criteria, malnutrition was reported at 75% [47]. See Table 3 for details.

Physical function findings

Of the 15 included studies that reported findings, ten studies [25, 43, 44, 46–50, 52, 54] used ADL and IADL. The ADL showed dependency levels for different activities or functions ranging from 7.6% to 76.5%, and the IADL ranged from 27.7% to 72.7% (see Table 3). Of the other studies that assessed physical function, six studies [45, 47, 51, 53, 55, 56] reported the findings with HGS. The HGS was higher in men than in women in most cases (see Table 3).

Quality assessment and risk of bias of included studies

The methodological quality and risk of bias (RoB) for the included studies are summarised in (Fig. 3). Overall, the evidence base demonstrated high methodological integrity, with the majority of studies exhibiting low to moderate risk of bias. Quantitative assessment revealed that 60% (n = 9) of the included studies were classified as having a low risk of bias, while 26.6% (n = 4) were classified as having a moderate risk. A minority of the literature (13.4%, n = 2) was identified as high risk, primarily due to limitations in specific methodological domains. The internal validity of the evidence was strongest in exposure assessment, statistical rigour, and the reliability of reported results, all of which were consistently well documented across the cohort. In contrast, the most frequent methodological weaknesses were identified as: confounder adjustment and inadequate control for extraneous variables. Specifically, three studies [45–47] achieved a perfect score by meeting all pre-specified criteria, while nine studies [18, 25, 43, 50–52, 54–56] demonstrated high adherence, meeting 87.5% of the assessment items. Although a systematic assessment of quality was conducted, a formal evaluation of the certainty of evidence—such as the GRADE (Grading of Recommendations Assessment, Development and Evaluation) framework—was not pursued. This decision was predicated on substantial heterogeneity across study designs, diverse populations, and varied metrics used to define outcomes, which precluded a meaningful pooled certainty analysis.

Discussion

This systematic review synthesised evidence from 15 studies across eight sub-Saharan African (SSA) countries, revealing a significant but complex association between undernutrition and diminished physical function in older adults. We observed a high prevalence of undernutrition (up to 34%) and risk of malnutrition (up to 57.8%), figures that notably exceed reported rates for mid-adults in the same region (2.7%–19.5%) [57, 58]. Crucially, our findings indicate that poor nutritional status is positively correlated with declines in handgrip strength (HGS) and impairments in both activities of daily living (ADL) and instrumental activities of daily living (IADL), although this directionality cannot be assumed due to the cross-sectional design of the included studies (see Table 4).

The wide range in undernutrition prevalence (1.7% in urban South Africa to 30% in Tanzania) highlights a profound socio-economic gradient. The relative food security and healthcare infrastructure in South Africa likely provide a protective effect compared to lower-income nations like Tanzania or Nigeria [35]. Furthermore, a distinct rural-urban divide was evident. Studies in rural

Table 3 Results of selected studies of nutrition status and physical function

Reference	Year	Nutrition Status Outcomes	Physical Function outcomes
Adepoju et al. [25]	2021	BMI: Underweight 17%, Overweight 8.2%, Obesity 8%, Normal weight 66.7%.	BADL: 91% functional independent, 7% moderate, 2% severe; IADL: 71% functional independent, 19% moderate, 10% severe
Andre et al. [54]	2013	BMI: Underweight 34.3%; MNA-LF: Normal 13.8%, Risk of malnutrition 57.8%, malnutrition 28.4%.	ADL: 76.5% dependent, 23.5% independent; IADL: 72.7% dependent, 27.3% independent.
Corso et al. [45]	2025	MNA-SF (Result for Ghana): Malnutrition = 9.9%, Risk of malnutrition = 48.9%, Normal = 41.2%. MNA-SF (Result for South Africa): Malnutrition = 3.6%, Risk of malnutrition = 31.1%, Normal 65.3%	Mean HGS (Ghana): 23.4 ± 10.7 kg Mean HGS (South Africa): 36.4 ± 19.6 kg
Charlton et al. [52]	2005	BMI- Women: Underweight = 2.2%, Overweight = 20%, Obese = 65%; Men: Underweight = 19.2%, Overweight = 25.5%, Obese = 14%	ADL: 8.8% dependent, 91.2% independent. No data reported on HGS
Charlton et al. [53]	2007	BMI: 65% obese, 20% overweight, MNA-LF: Malnutrition = 5.6%, Risk of malnutrition = 50.4%, Normal = 44%	Mean HGS: Men = 24.1 ± 7.7 kg; women = 15.1 ± 5.3 kg.
Chilima & Ismail [51]	2001	BMI: Undernutrition = 17.95%	Mean HGS: men = 28.0 ± 5.9 kg; women = 21.7 ± 4.5 kg
Kikafunda & Lukwago [43]	2005	BMI: Underweight = 33.4% (total), Men = 32%, Women = 68%; Normal = 58.0%, Overweight = 8.6%.	ADL: 67% dependent, 33% independent
Tesfaye et al. [46]	2024	MNA-LF: Malnutrition = 81%, Risk of malnutrition = 17%, Normal = 2%.	ADL: 72% dependent, 28% independent
Mphwanthe et al. [47]	2025	MNA-SF: Malnutrition = 40.3%, Risk of malnutrition = 39.7%, Normal = 20%. GLIM-criteria: Malnutrition = 75%	ADL: 37.1% dependent, 62.9 independent. HGS (kg): Men(< 27 kg) = 97.8%, women(< 16 kg) = 74.8%
Nyaruhucha et al. [18]	2004	BMI: Underweight = 30.1% (total) women = 22.7%, Men = 39.3%.	ADL: 21% dependent, 79% independent
Olawumi et al. [50]	2021	MNA-LF: Malnutrition = 25.9%, Risk of malnutrition = 53.1%, normal = 21%.	ADL: 21.6% dependent, 78.4% independent. IADL: 32.4% dependent, 67.6% independent.
Gabriel & Alaba [49]	2024	BMI: Underweight = 3.1%, Overweight = 38.8%, Normal = 45.9%, Obese = 12.2%.	BADL and IADL: 12.2% dependent, 87.8% independent
Pieterse et al. [55]	2002	BMI: Undernutrition 23.2% for men, 15.0% for women	Mean HGS: men = 30 ± 6.7 kg; women = 22 ± 5.1 kg
Nzeagwu & Ozougwu [48]	2019	BMI: Underweight = 1.7%, Normal = 37.8%, Overweight = 34.5%, Obese = 26.1%	ADL: 7.6% dependent, 92.4% independent. IADL: 27.7% dependent, 72.3% independent
Shozi et al. [56]	2022	Mean BMI: men = 22.16 ± 5.14 kg/m^2, women = 27.46 ± 6.06 kg/m^2; Underweight = 9.0%. Mean WC: men = 83.20 ± 12.96 cm, women = 90.89 ± 12.97 cm	Mean HGS: men = 30.28 ± 8.69 kg; women = 23.27 ± 6.45 kg

Abbreviations: *NS* nutritional status, *PF* physical function, *BMI* body mass index, *MNA* mini nutritional assessment, *MUAC* mid-upper arm circumference, *MAC* mid-arm circumference, *WC* waist circumference, *HGS* handgrip strength, *ADL* activities of daily living, *IADL* instrumental activities of daily living, *BADL* basic activities of daily living, kg-kilogram, cm centimetre, %- percentage

Ghana, Uganda, and the DRC reported higher undernutrition rates, likely driven by limited access to food, lower nutritional literacy, and the absence of government social safety nets [43, 54]. These results align with global trends where low-income status dictates dietary quality, thereby exacerbating food insecurity and reducing the nutritional well-being of ageing populations [59–62].

While obesity is traditionally more prevalent among African women [63], our findings show that undernutrition and malnutrition risk remain disproportionately high in this group. Interestingly, despite lower nutritional status, the mean HGS of 23.27 kg in African women in Malawi, Tanzania, and South Africa was comparable to that of 19.4 kg in women from high-income countries [64–66]. This “resilience” in muscle strength may reflect the high levels of lifelong physical labour and domestic chores undertaken by older women in SSA. In contrast, men’s HGS aligned with low- and medium-income countries (LMICs) averages but remained lower than Western benchmarks, potentially signalling a premature onset of ageing due to chronic illness and strenuous labour [51, 53, 56].

The correlation between undernutrition and functional decline appears bidirectional. Impairments in physical function—specifically in food preparation (33.1%), shopping (32.4%), and mobility (33.3%) — directly impede older adults’ ability to maintain adequate nutrition [18, 25, 53]. Conversely, inadequate nutrition results in increased morbidity and decreased mobility [67]. While HGS emerged as a reliable proxy for physical function, its correlation with body mass index (BMI) was inconsistent across the literature. While some studies suggest HGS increases with BMI [56, 68], others found no definitive link [69], likely due to the “obesity paradox” or the presence of sarcopenic obesity, where high BMI masks underlying muscle wasting [56, 70].

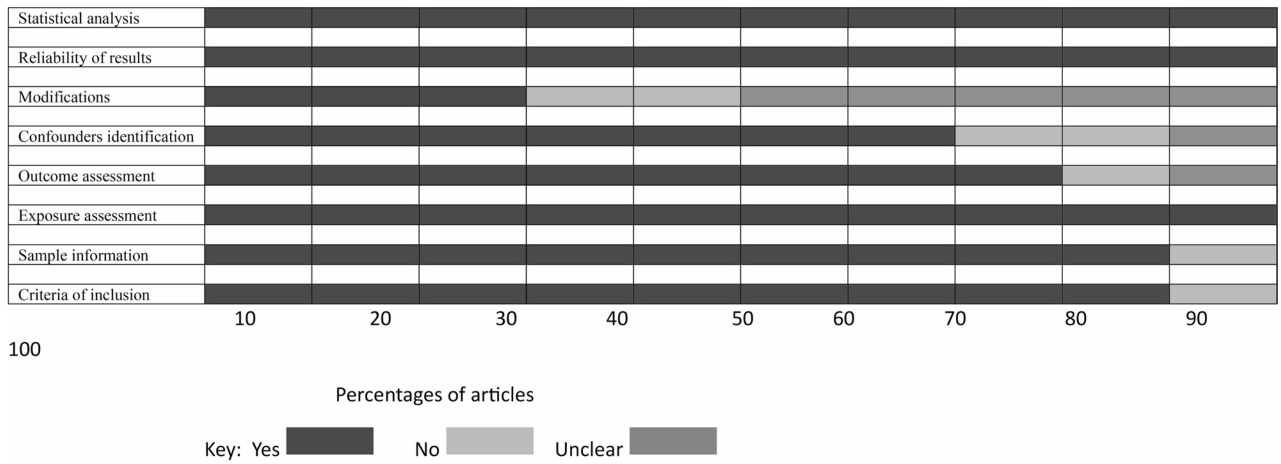

Fig. 3 Quality assessment and risk of bias of studies using critical appraisal checklist for observational and analytical studies from the joanna briggs institute (JBI)

Table 4 Summary of findings on the relationship between nutrition status and physical function

Reference	Summary of findings for the link between NS & PF	Measure of association
Adepoju et al. [25]	Nutrition status was significantly associated with physical function in aspects of ADL and IADL.	$X^2 = 45.91$ ($p < 0.00$)
Andre et al. [54]	Malnutrition was high, with reduced functional ability	Did not report figures
*Corso et al. [45]	A positive association was found between nutritional status and physical function	$\beta = 2.43$ ($p < 0.0001$)
Charlton et al. [52]	Physical function declined with poor nutritional status.	$r = 0.165$ ($p < 0.05$)
Charlton et al. [53]	The study showed a positive correlation between physical function and nutritional status	$r = 0.156$ ($p < 0.05$)
Chilima & Ismail [51]	The study revealed that poor handgrip strength and physical function were correlated with poor nutritional status	$\beta = 0.408$ ($p < 0.000$)
Kikafunda & Lukwago [43]	The study found a high level of undernutrition correlated with poor functional ability in the studied population.	Coefficients not reported; $p < 0.05$
Tesfaye et al. [46]	No relationship was observed between nutritional status and physical function	AOR 3.689; 95% CI: 1.190, 11.433 ($p < 0.024$)
Mphwanthe et al. [47]	Malnutrition was significantly observed to be associated with reduced functional independence	AOR 5.182; 95% CI: 1.469–18.279 ($p < 0.011$)
Nyaruhucha et al. [18]	The difference was observed in the nutritional status between the institutionalised and non-institutionalised participants, as well as in the inability to perform daily activities of living, such as feeding and mobility.	Did not report figures
Olawumi et al. [50]	The study showed that functional dependence was a determinant of malnutrition. The association between nutrition status and the physical function of the participants was significant	OR = 14.706, 95% CI = 1.263–3.349, ($p = 0.032$)
Gabriel & Alaba [49]	No correlation was observed between physical function and nutritional status	Did not report figures
Pieterse et al. [55]	The study revealed that poor handgrip strength was associated with poor nutritional status	$\beta = 0.262$ ($p < 0.001$)
Nzeagwu & Ozougwu [48]	No relationship was observed between nutritional status and physical function among older adults studied	$r = -0.085$ ($p > 0.191$)
Shozi et al. [56]	The study revealed that nutritional status was correlated with poor upper limb muscle strength	$r = 0.24$ ($p < 0.001$)

Causality inference cannot be assumed, as 97% of the included studies were cross-sectional observational studies

*Corso et al. was a longitudinal study

Abbreviations: *NS* nutritional status, *PF* physical function, *ADL* activities of daily living, *IADL* instrumental activities of daily living

A significant finding of this review is the limitation of current assessment tools. BMI remains the most utilised measure of nutritional status [71], yet its validity in older adult populations is contested. The use of WHO cutoffs (e.g., BMI < 18.5 kg/m^2) may lead to an underestimation of undernutrition [71]; recent evidence suggests a higher threshold of ≤ 22 kg/m^2 is more appropriate for older adults to account for height loss and body composition shifts [72, 73]. The MNA tool proved more comprehensive in clinical settings, though its reliance on questionnaires introduces inherent subjectivity and recall bias [53, 74]. Moving forward, adopting the GLIM criteria, which combine phenotypic and etiologic measures, may provide the necessary consensus for diagnosing malnutrition in this demographic [21]. Undernutrition is a significant driver of functional decline among older adults in Sub-Saharan Africa (Table 4), particularly in rural and low-income settings. There is an urgent need for longitudinal research to establish the causal pathway between nutritional interventions and physical preservation. Policymakers should prioritise multifaceted assessment strategies rather than BMI alone to identify and support at-risk older adults in this rapidly ageing region.v

This is the first systematic review to specifically examine the intersection of nutrition and physical function among older adults in SSA. A major strength is the inclusion of objective measures of physical performance, which reduces the risk of reporting bias. However, several limitations must be noted: Study Design: 14 of the 15 studies were cross-sectional, precluding any definitive inferences regarding causality. Heterogeneity: Variations in sample sizes ($n = 100–9736$), sampling methods, recruitment settings, and assessment tools made a meta-analysis unfeasible. Search Strategy: Restricting the search to English-language articles, conducting the initial search by a single researcher, and excluding specific sub-national state terms may have led to the omission of relevant data. A certainty assessment of the evidence for primary outcomes was also not carried out in this study due to the high heterogeneity of the studies and the narrative nature of the synthesis.

Conclusion

This systematic review underscores that the triple burden of malnutrition—encompassing undernutrition, overnutrition, and malnutrition risk—persists as a critical public health challenge among older adults in Sub-Saharan Africa. The evidence consistently identifies a significant correlation between nutritional status and functional outcomes, specifically muscle strength and independence in both activities of daily living (ADLs) and instrumental activities of daily living (IADLs). However, the current literature is predominantly cross-sectional. To move beyond association and establish definitive causality, future research must prioritise longitudinal designs. These findings call for the integration of routine nutritional screening into geriatric care frameworks across the region to preserve functional autonomy in an ageing population.

Key takeaways

- Older adults in Sub-Saharan Africa face a "triple burden" of malnutrition—undernutrition, overnutrition, and significant malnutrition risk—highlighting a major, unaddressed public health gap.
- Nutritional status is a critical determinant of physical autonomy; poor nutrition is consistently correlated with diminished muscle strength and a reduced ability to perform activities of daily living (ADLs/IADLs).
- While the association between nutrition and physical function is clear, current evidence is limited by cross-sectional data. Longitudinal research is essential to determine if malnutrition is a precursor to or a result of functional decline.
- There is an urgent need to integrate standardised nutritional screening and interventions into primary healthcare frameworks across Sub-Saharan Africa to support healthy ageing.

Supplementary Information

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Supplementary Material 1.

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Clinical trial number

Not applicable.

Authors' contributions

Onosolesena Dennis Idiakheua (O.D.I) and Elvis O. Wambiya (E.O.W.) conducted the literature search. Screening and conflict resolution were performed by O.D.I., James Odhiambo Oguta (J.O.O.), and Elvis O. Wambiya (E.O.W.). Articles that met the inclusion criteria were obtained in full text and evaluated for final eligibility by the first author, O.D.I., Viren Ranawana (V.R.), and Elizabeth A. Williams (E.A.W.), who approved the included articles. O.D.I., V.R., and E.A.W. contributed to the methodology. O.D.I developed and wrote the first draft of the manuscript. All authors critically read, revised and approved the final version for publication.

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Data availability

This systematic review relies on data obtained from studies published in publicly accessible literature. All data generated or analysed during this investigation are encompassed within this published article, including its tables, figures, and supplementary file. Further details can be obtained from the corresponding author upon a justifiable request.

Declarations

Human ethics and consent to participate

Not applicable.

Consent to publish

Not applicable.

Competing interests

The authors declare no competing interests.

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