A Systematic Literature Review on Health Issues of Malnutrition in the Aged and Interventions

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ABSTRACT

Malnutrition remains a persistent and multifaceted public health concern among the aged population globally. With the increasing proportion of older adults, the risks associated with malnutrition such as weakened immunity, muscle wasting, cognitive decline, and higher mortality rates pose serious challenges for healthcare systems. This systematic literature review critically examines empirical research from 2015 to 2025 to explore the health issues linked to malnutrition in the elderly and assess evidence-based interventions. The review utilized the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to screen studies from databases including PubMed, Scopus, and CINAHL. Inclusion criteria focused on peer-reviewed studies addressing individuals aged 60 and above, with outcomes related to physical health, psychological well-being, and healthcare utilization. Interventions evaluated include nutritional supplementation, community meal programs, multidisciplinary approaches, and caregiver education. Findings reveal that while biological factors such as dysphagia and chronic illnesses are leading contributors to malnutrition, social determinants like isolation and poverty significantly make the issue worse. Effective interventions often involve a combination of nutritional counselling, food security strategies, and tailored healthcare services. This review underscores the need for integrated, person-centered interventions and policy reforms that address both clinical and social dimensions of aging-related malnutrition. Future research should prioritize culturally sensitive and scalable strategies to improve nutritional health outcomes in older populations.

Keywords: malnutrition, elderly, aging, interventions, nutrition, public health.

INTRODUCTION

As global demographics shift toward an increasingly aging population, malnutrition in the elderly has become a critical issue of concern (Agarwal *et al*., 2021). While the clinical, physiological, and socio-economic dimensions of malnutrition in older adults are well-documented, several emerging issues are complicating both its management and intervention strategies. These issues ranging from the impacts of climate change and food insecurity to digital health inequalities and the rising prevalence of multimorbidity require immediate scholarly and policy attention to effectively protect aging populations worldwide. Globally, the aging population is expanding at an unprecedented rate, with the proportion of individuals aged 60 and above projected to double by 2050 (World Health Organization [WHO], 2021). As longevity increases, ensuring the quality of life among older adults have become a pressing public health priority. One of the most critical yet often under-recognized

threats to healthy aging is malnutrition. Malnutrition in the elderly is a complex, multifactorial condition characterized by deficiencies, excesses, or imbalances in energy and nutrient intake, often leading to detrimental physical and psychological health outcomes (Volkert et al., 2019). Age-related physiological changes such as diminished appetite, reduced taste and smell, and impaired gastrointestinal function compound the risk, while chronic diseases, polypharmacy, functional impairments, and socio-economic deprivation further exacerbate the problem (Cederholm *et al.*, 2019). The consequences of malnutrition in the elderly are profound. Clinically, it is associated with increased susceptibility to infections, impaired wound healing, muscle atrophy (sarcopenia), cognitive decline, and heightened mortality rates (Agarwal et al., 2021). Malnourished older adults also experience longer hospital stays, higher readmission rates, and increased healthcare costs (Phillips *et al*., 2022). Despite growing awareness, malnutrition remains significantly underdiagnosed and undertreated in both community and institutional settings, highlighting a critical gap in geriatric care. Given the multifactorial etiology of malnutrition, interventions must be comprehensive and context-sensitive. These range from individualized dietary plans and oral nutritional supplementation to broader community-based programs, such as home-delivered meals, caregiver education, and interdisciplinary care approaches (Beelen *et al*., 2017). However, the effectiveness of these interventions varies widely depending on implementation settings, cultural contexts, and the presence of co-morbidities. This systematic literature review aims to synthesize current empirical evidence (from 2015 to 2025) on the health issues associated with malnutrition in older adults and evaluate the range of interventions implemented to address these challenges. The goal is to provide a clearer understanding of the biological, psychological, and social consequences of malnutrition in aging populations and to identify effective strategies for prevention and management. Ultimately, this review seeks to inform policy development and clinical practice in geriatric nutrition and public health.

METHODS

Research Approach

A rigorous and structured research approach is essential for producing reliable and valid findings in any academic inquiry. In the context of this study, which investigates the health issues associated with malnutrition among the aged and evaluates the effectiveness of interventions, a systematic literature review approach was adopted. This method enables a comprehensive synthesis of existing scholarly knowledge, highlighting current trends, gaps, and evidence-based practices. The systematic review methodology was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Page et al., 2021), ensuring transparency, reproducibility, and methodological rigor.

Philosophical Assumptions and Paradigm

The research was grounded in a post-positivist paradigm, which acknowledges the existence of objective reality but accepts that knowledge is socially constructed and fallible. In this study, the post-positivist stance informed the choice of a systematic review, as it emphasizes evidence-based analysis and critical appraisal of findings while recognizing the context-dependent nature of interventions. The focus was on identifying patterns across empirical studies and drawing generalizable insights, rather than producing subjective interpretations.

Research Design

A qualitative-descriptive systematic review design was employed. This design allows the researcher to analyze both qualitative and quantitative studies using thematic synthesis, aiming to generate a detailed and coherent understanding of how malnutrition affects elderly populations and how various interventions address these challenges. The review did not seek to conduct a meta-analysis, as the heterogeneity in study designs, populations, and intervention types rendered statistical pooling inappropriate.

Data Sources and Search Strategy

To ensure a comprehensive search, data were collected from multiple academic databases, including PubMed, Scopus, and CINAHL. These databases were selected for their extensive coverage of peer-reviewed literature in

the fields of medicine, nursing, public health, and allied health sciences. The search was restricted to studies published between January 2015 and May 2025, focusing on current trends and practices.

Boolean operators and search terms were combined to refine the search strategy. Keywords included: "malnutrition," "elderly," "older adults," "aged," "interventions," "health outcomes," "nutritional status," and "public health." Filters were applied to limit results to English-language, peer-reviewed articles involving participants aged 60 and above.

Inclusion and Exclusion Criteria

To maintain relevance and focus, clearly defined inclusion and exclusion criteria were established prior to the selection of studies. Studies were included if they:

1. Focused on malnutrition among individuals aged 60 years and above;
2. Reported on health outcomes associated with malnutrition (e.g., physical, cognitive, or social);
3. Evaluated or described nutritional or support-based interventions; and
4. Were the articles peer-reviewed and published in English.

Quality Appraisal

To evaluate the methodological rigor of the included studies, the Joanna Briggs Institute (JBI) Critical Appraisal Tools were employed. These tools offer a structured way to assess the internal validity and reliability of studies across various research designs. Only studies deemed of moderate to high quality were retained for final synthesis, ensuring that the review was built on credible and methodologically sound evidence.

Data Analysis and Synthesis

Given the qualitative-descriptive nature of the review, thematic analysis was used to synthesize the findings. This involved grouping similar findings across studies into emergent themes related to health consequences, risk factors, and intervention effectiveness. Studies with similar outcomes were coded and compared to identify patterns, contradictions, and knowledge gaps. This approach facilitated the generation of practical insights while accommodating the methodological diversity of the included research. The systematic literature review approach adopted in this study provided a structured and transparent pathway for exploring malnutrition among the aged and the interventions designed to combat it. By combining evidence from multiple high-quality studies across various settings and disciplines, the research produced a nuanced understanding of both the clinical impacts and socio-environmental drivers of malnutrition in older populations. The use of a post-positivist paradigm, rigorous screening protocols, and thematic synthesis ensured that the findings are both credible and applicable to policy and practice. Future research should continue to build on this foundation by incorporating mixed-methods reviews and meta-analytical techniques where appropriate.

RESULTS

Study Selection

A total of 1,376 articles were identified from the database search. After removing duplicates (n = 243), 1,133 articles remained for screening. Following title and abstract review, 147 full-text articles were assessed for eligibility. A final set of 32 studies met the inclusion criteria and were included in this review. The PRISMA flow diagram is summarized below:

- Records identified: 1,376
- Records after duplicates removed: 1,133
- Full-text articles assessed: 147

- Studies included in final review: 32

Study Characteristics

The included studies were conducted across various global regions, including Europe (n = 12), North America (n = 9), Asia (n = 6), and Africa (n = 5).

Table 1: Characteristics of Reviewed Studies by Region and Year

Region	**Number Of Studies**	**Percentage**
Europe	12	37.5%
North America	9	28.1%
Asia	6	18.8 %
Africa	5	15.6 %
Total	32	100%

Source: Authors' Construct (2025)

Key Findings

1. Health Issues Associated with Malnutrition:

- Physical health outcomes: Muscle wasting (sarcopenia), impaired immunity, delayed wound healing, osteoporosis, and higher hospitalization rates (Cruz-Jentoft et al., 2021).
- Cognitive and psychological effects: Increased prevalence of dementia, depression, and cognitive impairment (Kaiser et al., 2017).
- Mortality and morbidity: Higher risk of mortality, longer hospital stays, and increased healthcare costs (Agarwal et al., 2021).

2. Determinants of Malnutrition:

- Physiological: Dysphagia, poor dentition, polypharmacy
- Psychological: Depression, cognitive decline
- Social: Isolation, poverty, lack of caregiver support

3. Interventions Identified:

- Nutritional supplementation (e.g., protein shakes, fortified meals): Found effective in improving body mass index (BMI), muscle strength, and appetite (Beelen et al., 2017).
- Community-based programs (e.g., Meals on Wheels, senior feeding schemes): Associated with improved nutritional intake and reduced hospital admissions (Zheng et al., 2020).
- Multidisciplinary care involving dietitians, nurses, and social workers: Led to improved adherence to dietary plans and reduced malnutrition-related complications (Phillips et al., 2022).
- Caregiver education and behavioural interventions: Enhanced food intake and reduced depressive symptoms among home-bound elderly (Locher et al., 2020).

Table 2: Health Issues and Interventions Identified in Reviewed Studies

Category	No. of Studies	Examples / Key Notes
Health Issues		
- Physical (e.g., sarcopenia, frailty)	18	Cruz-Jentoft et al. (2021), Agarwal et al. (2021)
- Psychological (e.g., depression)	10	Kaiser et al. (2017), Locher et al. (2020)
- Cognitive (e.g., dementia)	7	Kaiser et al. (2017)
Interventions		
- Nutritional supplementation	14	Beelen et al. (2017), Zheng et al. (2020)
- Community feeding programs	7	Locher et al. (2020)
- Multidisciplinary care	6	Phillips et al. (2022)
- Caregiver education	5	Keller et al. (2019), Locher et al. (2020)

Source: Authors' Construct (2025)

DISCUSSION

The study showed that older adults, especially those living alone or in rural areas, are at heightened risk of food insecurity due to limited mobility, income, and access to fresh produce. This was thematically linked to social factors such as isolation, poverty and lack of care giver support. It was noticed that traditional caregiving systems are also under strain due to changing family structures, urban migration, and increased workforce participation among potential caregivers. As a result, many older adults are living alone, particularly in high-income countries, without regular access to home-cooked meals or support with grocery shopping (Locher et al., 2020). Social isolation not only reduces access to adequate nutrition but also diminishes the motivation to eat, a factor linked with geriatric depression and anorexia of aging. Intervention models must evolve to address the psychosocial drivers of malnutrition, incorporating strategies that foster community engagement and emotional well-being. Many intervention programs are designed without sufficient attention to cultural dietary preferences or religious restrictions, especially in multicultural societies

On the health-related issues, the review observed that malnutrition risk increases when nutrient-dense foods become scarce or unaffordable, exacerbating existing health vulnerabilities. Interestingly, the the review showed that the prevalence of multimorbidity and the co-occurrence of two or more chronic conditions is increasing among the elderly, often necessitating complex medication regimens. This phenomenon leads to polypharmacy, which in turn can affect appetite, interfere with nutrient absorption, or induce nausea, all of which increase the risk of malnutrition (Morley et al., 2020). The interaction between malnutrition and multimorbidity forms a vicious cycle where poor nutrition worsens disease progression, while disease burden further complicates dietary intake. Current healthcare interventions often treat chronic diseases in isolation, neglecting the nutritional status of the patient as a systemic concern. Another emerging concern involves ethical dilemmas in nutritional care, especially for elderly individuals with dementia or terminal illness. Questions arise about whether to initiate or continue artificial feeding, particularly when the patient cannot consent or when the intervention may prolong suffering. Legal frameworks vary across countries, and healthcare providers often lack adequate training in navigating these sensitive decisions (Cederholm et al., 2019).

There is a pressing need for clear guidelines and interdisciplinary ethical consultations in long-term care settings to protect both patient rights and well-being. Despite awareness campaigns, malnutrition remains underdiagnosed in many settings due to the absence of standardized screening protocols across healthcare

institutions. Even in high-resource environments, malnutrition is often overshadowed by other acute medical issues during clinical consultations. Inconsistent use of validated tools like the Mini Nutritional Assessment (MNA) or the Malnutrition Universal Screening Tool (MUST) contributes to poor identification rates (Phillips et al., 2022). Strengthening nutrition education in medical and nursing curricula could empower healthcare workers to integrate malnutrition screening into routine geriatric assessments. While considerable strides have been made in recognizing and addressing malnutrition among the aged, emerging issues are reshaping the landscape of geriatric nutritional health. Climate change, multimorbidity, the digital divide, social isolation, cultural inappropriateness of interventions, ethical dilemmas, and underdiagnoses all present complex challenges that current policies and clinical practices must adapt to. A paradigm shifts toward more inclusive, personalized, and multidisciplinary approaches is essential. Going forward, public health strategies must be proactive, integrative, and sensitive to the evolving needs of older adults to mitigate the silent epidemic of malnutrition in aging societies.\

CONCLUSION

Malnutrition among the elderly is a complex, multifactorial public health issue that continues to be under-recognized and undertreated across healthcare systems worldwide. This systematic literature review has revealed that malnutrition in older adults is associated with a wide array of negative health outcomes, including physical deterioration, cognitive decline, immune dysfunction, and increased mortality. Moreover, the burden of malnutrition extends beyond individual health, contributing to higher healthcare costs, prolonged hospital stays, and reduced quality of life. The evidence underscores that malnutrition in the aged is not solely a medical issue but one deeply rooted in social, psychological, and economic determinants. Factors such as isolation, poverty, chronic illnesses, polypharmacy, and diminished functional capacity all interact to increase vulnerability. In response, various interventions ranging from oral nutritional supplementation and home-delivered meals to caregiver education and multidisciplinary care have been implemented with varying degrees of success. However, the effectiveness of these strategies depends heavily on context-specific implementation, cultural relevance, and individualization of care. Emerging challenges such as climate-related food insecurity, digital exclusion, shifting family dynamics, and ethical considerations in late-life nutritional care further complicate the landscape. These developments call for a shift from isolated clinical solutions to more integrated, person-centered approaches that address both the physiological and socio-environmental aspects of malnutrition. In conclusion, tackling malnutrition in the aged requires a multidimensional strategy that includes early screening, tailored interventions, community engagement, and policy reform. Healthcare systems must prioritize nutrition as a core component of geriatric care and allocate resources toward sustainable, culturally sensitive, and scalable interventions. Only through holistic efforts can we ensure healthy aging and preserve the dignity and well-being of older adults.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflict of interest.

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