



## Impact of Social Worker, Nursing, and Dietitian–Led Integrated Psychosocial– Nutritional Interventions on Frailty and Functional Decline in Older Adults

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### **Article Info:**

**DOI:** 10.22399/ijcesen.4848

**Received :** 01 May 2024

**Accepted :** 30 May 2024

### **Keywords**

### **Abstract:**

Integrated psychosocial-nutritional interventions led by a team of social workers, nurses, and dietitians present a transformative, holistic strategy for mitigating frailty and functional decline in the rapidly growing older adult population. This interdisciplinary approach directly targets the multifactorial etiology of these conditions by simultaneously addressing critical nutritional deficiencies, managing chronic diseases, and bolstering psychological resilience and social support networks. The synergistic

Frailty,  
Functional Decline,  
Older Adults,  
Integrated Interventions,  
Psychosocial Support,  
Nutritional Intervention

collaboration between professionals—where dietitians optimize nutrient intake to preserve muscle mass, nurses enhance physical function and health literacy, and social workers combat isolation and improve access to resources—creates a reinforcing cycle that improves self-efficacy, biological resilience, and overall well-being. Evidence indicates that such integrated models can effectively slow or even reverse frailty progression, reduce disability, and improve quality of life more effectively than siloed, single-domain interventions. Successful implementation, however, requires overcoming systemic barriers related to fragmented healthcare funding, interprofessional collaboration, and equitable access to ensure these comprehensive benefits reach diverse aging populations.

## 1. Introduction

The global demographic shift towards an aging population is one of the most significant social transformations of the 21st century. By 2050, it is projected that the number of individuals aged 60 years and older will reach 2.1 billion, representing a substantial increase from previous decades [1]. This demographic change brings with it a heightened prevalence of age-related conditions, among which frailty and functional decline stand out as critical determinants of health, independence, and quality of life in later years. Frailty is a multidimensional clinical syndrome characterized by diminished physiological reserve and increased vulnerability to stressors, leading to adverse outcomes such as falls, hospitalization, disability, and mortality [2]. Functional decline, often intertwined with frailty, refers to the loss of ability to perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs), which are essential for autonomous living [3]. The interplay between biological, psychological, social, and environmental factors underpins these conditions, necessitating a holistic approach to prevention and management. Historically, healthcare systems have addressed the needs of older adults through a fragmented, disease-centric model, where specialists manage isolated conditions without sufficient integration. This siloed approach has proven inadequate for addressing the complex, intertwined nature of frailty and functional decline, which often stem from synergistic deficits across multiple domains [4]. For instance, malnutrition—a common issue in older adults—can exacerbate sarcopenia, reduce immune function, and diminish energy levels, thereby accelerating physical frailty. Concurrently, psychosocial factors such as social isolation, depression, and cognitive impairment can undermine motivation for physical activity and adherence to nutritional guidelines, creating a vicious cycle of decline [5]. Recognizing this complexity, there has been a growing paradigm shift towards integrated, interdisciplinary interventions that target the multifactorial etiology of frailty and functional decline.

Integrated care models that combine psychosocial and nutritional components have emerged as promising strategies to mitigate these age-related challenges. These models often involve a team of professionals, including social workers, nurses, and dietitians, who collaborate to address the bio-psycho-social needs of older adults. Social workers contribute expertise in assessing and enhancing social support, mental health, and access to community resources, which are crucial for psychological well-being and engagement in health-promoting behaviors [6]. Nurses, with their holistic view of patient care, play a pivotal role in monitoring health status, managing chronic conditions, promoting functional mobility, and educating patients and families about self-care strategies [7]. Dietitians provide specialized knowledge in nutritional assessment, personalized dietary planning, and management of age-related nutritional deficiencies, which are foundational to maintaining muscle mass, strength, and overall physiological resilience [8].

The integration of these professional roles into a cohesive intervention framework aims to create synergistic effects, where the combined impact exceeds the sum of individual contributions. For example, a social worker might address loneliness by facilitating group activities, which in turn could improve mood and appetite, thereby enhancing the effectiveness of a dietitian's nutritional plan. Simultaneously, a nurse could monitor blood pressure and medication adherence, ensuring that physical health stabilizes enough for the older adult to participate in social and nutritional activities. This team-based approach aligns with the World Health Organization's emphasis on person-centered, integrated care for aging populations, which seeks to optimize intrinsic capacity and functional ability across the life course [1]. Despite the logical appeal of such interventions, the empirical evidence regarding their impact on frailty and functional decline requires thorough examination, considering variations in design, implementation, and population characteristics.

## 2. Frailty, Functional Decline, and Current Intervention Paradigms

Frailty and functional decline are prevalent concerns in gerontology, with extensive literature documenting their predictors, trajectories, and consequences. Frailty is often operationalized using models such as the phenotypic model by Fried et al., which defines it based on five criteria: unintentional weight loss, self-reported exhaustion, weak grip strength, slow walking speed, and low physical activity [2]. Alternatively, the cumulative deficit model by Rockwood et al. views frailty as an index of health deficits across multiple systems, emphasizing its multidimensional nature [3]. Functional decline, meanwhile, is typically measured through assessments of ADLs (e.g., bathing, dressing) and IADLs (e.g., shopping, managing medications), with declines signaling loss of independence [4]. Both conditions share common risk factors, including advanced age, multimorbidity, polypharmacy, poor nutrition, and psychosocial stressors such as depression and social isolation [5].

Traditional interventions for frailty and functional decline have often focused on single-domain approaches, such as exercise programs to improve physical strength or nutritional supplements to address deficiencies. While these interventions show modest benefits, their effectiveness is frequently limited by a lack of attention to the psychosocial context that influences adherence and outcomes [6]. For instance, an older adult with depression may lack the motivation to participate in exercise, while someone experiencing social isolation might not have the support to prepare nutritious meals. This has led to calls for more comprehensive strategies that address the interplay between physical and psychosocial health [7]. Psychosocial interventions, including cognitive-behavioral therapy, social support groups, and case management, have demonstrated positive effects on mental health and social engagement, which can indirectly influence physical function [8]. Nutritional interventions, such as protein supplementation, dietary counseling, and meal delivery services, have been shown to improve body composition and reduce frailty markers [9]. However, the integration of these approaches into unified programs remains underexplored in large-scale studies.

The concept of integrated care for older adults has gained traction, with models like the Geriatric Interdisciplinary Team and the Chronic Care Model emphasizing coordination among healthcare professionals. These models advocate for personalized care plans that consider the whole person, rather than isolated symptoms or diseases [10]. Within this framework, the roles of social workers, nurses, and dietitians are complementary.

Social workers assess psychosocial needs, provide counseling, connect individuals to community resources, and address social determinants of health [11]. Nurses conduct comprehensive geriatric assessments, manage clinical care, educate on disease management, and promote functional independence [12]. Dietitians evaluate nutritional status, develop tailored dietary interventions, and monitor for deficiencies that could exacerbate frailty [13]. When these professionals collaborate, they can identify and mitigate barriers to health that might be overlooked in siloed care. For example, a dietitian might notice poor appetite due to loneliness, which the social worker can address through social interventions, while the nurse monitors for underlying medical causes like medication side effects [14].

Existing reviews and meta-analyses have examined various interventions for frailty, but few have specifically focused on integrated psychosocial-nutritional approaches led by the triad of social workers, nurses, and dietitians. Some studies have evaluated multidisciplinary teams in geriatric evaluation and management units, showing reductions in functional decline and institutionalization [15]. Others have tested combined physical exercise and nutritional counseling, reporting improvements in frailty scores [16]. However, the inclusion of psychosocial components led by social workers is less common, and the unique contributions of each professional group within an integrated framework warrant further investigation. Moreover, the mechanisms through which such interventions impact frailty and functional decline—such as enhanced self-efficacy, improved social support, better nutrient intake, and optimized medication management—require elucidation [17].

### **3. Theoretical Framework Underlying Integrated Psychosocial-Nutritional Interventions**

The development and implementation of integrated psychosocial-nutritional interventions are grounded in several theoretical perspectives from gerontology, psychology, and sociology. These frameworks provide a rationale for why combining psychosocial and nutritional components, delivered by a team of professionals, may be particularly effective in addressing frailty and functional decline. One key theory is the Biopsychosocial Model, which posits that health and illness are influenced by interrelated biological, psychological, and social factors [18]. Applied to aging, this model suggests that frailty arises from dysregulation across these domains. For instance, biological

changes like sarcopenia can be exacerbated by psychological factors such as depression, which may stem from social isolation. Integrated interventions that simultaneously target these domains align with this holistic view, aiming to restore balance and enhance resilience [19].

Another relevant theory is Social Cognitive Theory, which emphasizes the role of self-efficacy, observational learning, and social support in behavior change [20]. In the context of frailty, older adults may lack confidence in their ability to engage in physical activity or prepare healthy meals, especially if they face functional limitations. Social workers can boost self-efficacy through counseling and by facilitating peer support groups, where participants observe others successfully managing similar challenges. Nurses can provide education and skill-building for health management, while dietitians can offer practical cooking demonstrations. Together, these efforts reinforce positive behaviors through social modeling and encouragement, leading to sustained improvements in nutrition and physical function [21].

The Ecological Model of Aging also informs integrated interventions by highlighting the transaction between individuals and their environments [22]. Functional decline often occurs when there is a mismatch between an older adult's competencies and environmental demands. Social workers play a crucial role in modifying the social environment by strengthening support networks and accessing community services. Nurses assess home safety and recommend adaptations to reduce fall risks, while dietitians consider food accessibility and cultural preferences in dietary plans. By addressing environmental barriers, the intervention enhances the person-environment fit, promoting independence and reducing frailty [23].

Furthermore, the concept of Interprofessional Collaboration is central to the delivery of integrated care. This approach leverages the distinct expertise of each professional to create a synergistic effect. Theories of team dynamics suggest that effective collaboration improves problem-solving, care coordination, and patient outcomes [24]. For example, regular team meetings allow social workers, nurses, and dietitians to share insights, adjust care plans, and address emerging issues comprehensively. This collaborative process ensures that interventions are tailored to the individual's unique needs, increasing relevance and adherence [25]. Together, these theoretical foundations justify the integrated approach and guide the design of interventions that are both multidimensional and person-centered.

#### **4. Components of Integrated Interventions: Roles of Social Workers, Nurses, and Dietitians**

Integrated psychosocial-nutritional interventions involve distinct but overlapping contributions from social workers, nurses, and dietitians. Each professional brings specialized skills to address the multifaceted nature of frailty and functional decline. The following paragraphs detail the core components led by each discipline, illustrating how their roles interconnect within the intervention framework.

Social worker-led psychosocial components focus on enhancing mental health, social connectedness, and access to resources. Social workers conduct comprehensive psychosocial assessments to identify risk factors such as depression, anxiety, loneliness, caregiver stress, and financial constraints [26]. Based on these assessments, they provide individualized counseling, cognitive-behavioral techniques, and stress management strategies to improve psychological well-being. Additionally, social workers facilitate group sessions or community activities that foster social interaction and reduce isolation, which is a known contributor to frailty [27]. They also connect older adults with essential services, such as transportation, home care, or financial assistance, ensuring that practical barriers to health are minimized. By addressing psychosocial determinants, social workers help create a supportive environment that motivates engagement in health-promoting behaviors and adherence to nutritional and exercise recommendations [28].

Nursing-led health and functional components center on monitoring and optimizing physical health, managing chronic conditions, and promoting functional independence. Nurses perform detailed geriatric assessments, including evaluations of mobility, balance, medication use, and comorbid diseases like hypertension or diabetes [29]. They develop personalized care plans that incorporate exercise prescriptions, fall prevention strategies, and medication management. Education on self-care, symptom recognition, and healthy lifestyle choices is a key nursing role, empowering older adults to take an active role in their health [30]. Nurses also coordinate with other healthcare providers to ensure seamless care, particularly during transitions such as hospital discharges. By focusing on functional capacity and disease management, nurses address the biological underpinnings of frailty, helping to stabilize health and prevent further decline [31].

Dietitian-led nutritional components aim to improve dietary intake, correct deficiencies, and promote optimal nutrition for healthy aging.

Dietitians assess nutritional status through tools like the Mini Nutritional Assessment, dietary recalls, and biochemical markers [32]. They design individualized meal plans that emphasize adequate protein, calories, vitamins, and minerals, considering factors like chewing ability, taste changes, and cultural preferences. Interventions may include nutrition education, cooking workshops, and recommendations for oral nutritional supplements if needed [33]. Dietitians also monitor weight changes and provide ongoing support to ensure dietary adherence. Given the strong link between malnutrition and frailty, these nutritional strategies are vital for maintaining muscle mass, strength, and immune function, thereby slowing functional decline [34].

The integration of these components occurs through regular team communication, shared goal-setting, and coordinated care delivery. For instance, a social worker might identify that an older adult is skipping meals due to depression, prompting the dietitian to adjust the meal plan and the nurse to review medications that could affect appetite. This collaborative approach ensures that interventions are holistic and adaptive, addressing the dynamic needs of older adults.

### **5. Mechanisms of Action: How Integrated Interventions Influence Frailty and Functional Decline**

The impact of integrated psychosocial-nutritional interventions on frailty and functional decline is mediated through multiple interconnected mechanisms. Understanding these pathways is essential for optimizing intervention design and explaining observed outcomes. One primary mechanism is the enhancement of psychological resilience and self-efficacy. By addressing psychosocial stressors through counseling and social support, social workers help reduce symptoms of depression and anxiety, which are known to sap energy and motivation [35]. Improved mental health fosters a positive outlook, increasing the likelihood that older adults will engage in recommended physical activities and dietary changes. This psychological boost is reinforced by nurses and dietitians who provide education and skill-building, further strengthening self-efficacy in managing health [36]. As self-efficacy grows, individuals become more proactive in maintaining function, thereby mitigating frailty progression.

Another mechanism is the optimization of physiological and nutritional status. Dietitian-led interventions directly improve nutrient intake, leading to better body composition, enhanced

muscle protein synthesis, and reduced inflammation [37]. Adequate protein and energy intake are crucial for preserving lean mass and strength, which are core components of physical frailty. Concurrently, nurse-led components that promote physical activity, whether through structured exercise or daily movement, stimulate muscle maintenance and improve cardiovascular health. These biological improvements are synergistic; for example, better nutrition supports exercise tolerance, while exercise enhances appetite and nutrient utilization [38]. Additionally, nurses' management of chronic conditions and polypharmacy reduces adverse drug events and metabolic disturbances that could exacerbate frailty.

Social integration and support networks act as a third mechanism. Social workers' efforts to reduce isolation and build community connections provide emotional and practical support, which encourages adherence to health behaviors [39]. Social engagement itself has been linked to lower levels of inflammatory markers and better cognitive function, both of which influence frailty [40]. Furthermore, in group-based intervention settings, peer support creates a sense of accountability and shared experience, motivating participants to sustain lifestyle changes. This social mechanism complements the biological and psychological pathways, creating a reinforcing cycle where improved health enables greater social participation, which in turn promotes well-being.

Lastly, the integrated care model facilitates early identification and management of risks. Through regular assessments by the team, subtle declines in function or nutrition can be detected early, allowing for timely interventions before severe frailty sets in [41]. For example, a nurse noticing slow gait speed might coordinate with the dietitian to increase protein intake and with the social worker to address any fear of falling that limits mobility. This proactive, preventive approach is key to reversing or slowing functional decline. Moreover, the coordination among professionals reduces gaps in care, ensuring that recommendations are consistent and comprehensive, which enhances overall intervention efficacy [42].

### **6. Empirical Evidence from Clinical Trials and Observational Studies**

A growing body of empirical research has investigated the effects of integrated psychosocial-nutritional interventions on frailty and functional decline in older adults. These studies vary in design, population, and intervention specifics, but collectively provide insights into the potential

benefits of such approaches. One notable randomized controlled trial (RCT) conducted by Serra-Prat et al. examined a multidisciplinary intervention involving nurses, dietitians, and social workers for community-dwelling frail older adults [43]. The intervention included nutritional counseling, exercise promotion, and psychosocial support over six months. Results showed significant improvements in frailty scores, measured by the Fried criteria, and enhanced performance in ADLs compared to usual care. The authors attributed these gains to the combined effect of improved dietary intake, increased physical activity, and better mental health, underscoring the value of integration.

Another RCT by Cameron et al. focused on older adults at risk of functional decline following hospitalization [44]. The intervention team comprised nurses who coordinated care, dietitians who provided nutritional assessments and plans, and social workers who addressed post-discharge social needs. At 12-month follow-up, participants in the intervention group demonstrated slower rates of functional decline, with fewer readmissions and better quality of life. The study highlighted the importance of bridging hospital and community care through interdisciplinary collaboration, particularly in mitigating the cascade of decline often triggered by acute illness.

Observational studies have also supported these findings. A longitudinal study by Bollwein et al. evaluated a community-based program where social workers organized group activities, nurses conducted health screenings, and dietitians offered cooking classes [45]. Among participants, there was a significant reduction in the prevalence of frailty over two years, along with increased social engagement and nutritional knowledge. Although observational in nature, this study suggests that sustained integrated interventions can have long-term benefits in real-world settings.

However, not all studies have reported uniformly positive outcomes. A meta-analysis by Puts et al. on multidisciplinary interventions for frailty found mixed results, with some trials showing minimal impact on functional status [46]. The authors noted that heterogeneity in intervention components, intensity, and duration likely contributed to variable effects. For instance, interventions that lacked strong psychosocial elements or had limited involvement from social workers showed weaker effects on frailty. This underscores the need for careful design where all components are robustly implemented and tailored to individual needs.

Furthermore, subgroup analyses indicate that integrated interventions may be particularly beneficial for older adults with mild to moderate

frailty, offering a window of opportunity for reversal [47]. In contrast, those with severe frailty or advanced dementia may require more intensive or modified approaches. Additionally, cultural and socioeconomic factors influence effectiveness; interventions that consider these contexts, often through social workers' input, tend to achieve better adherence and outcomes [48]. Overall, the empirical evidence, while promising, calls for more high-quality RCTs with standardized outcome measures to firmly establish the efficacy of integrated psychosocial-nutritional interventions.

## **7. Methodological Considerations in Evaluating Integrated Interventions**

Evaluating the impact of integrated psychosocial-nutritional interventions presents several methodological challenges that researchers must address to ensure valid and reliable findings. One key consideration is the selection of appropriate outcome measures. Frailty and functional decline are multidimensional constructs, requiring assessment tools that capture physical, psychological, and social domains. Commonly used instruments include the Fried Frailty Phenotype, the Frailty Index, the Barthel Index for ADLs, and the Lawton IADL scale [49]. However, these tools may not fully reflect changes influenced by psychosocial or nutritional components. Incorporating patient-reported outcomes, such as quality of life scales (e.g., EQ-5D) and measures of social well-being (e.g., Lubben Social Network Scale), can provide a more holistic evaluation [50]. Additionally, biomarkers like inflammatory markers or nutritional indicators (e.g., serum albumin) may offer objective correlates of intervention effects.

Another methodological issue is the design of control groups in clinical trials. Usual care controls may vary widely across settings, making it difficult to isolate the specific effects of the integrated intervention [51]. Some studies employ attention control groups that receive equal contact time but without the integrated components, helping to account for placebo effects. However, blinding participants and personnel to group assignment is often impossible due to the nature of psychosocial and nutritional interventions, potentially introducing performance bias. Researchers can mitigate this by using blinded outcome assessors and objective measures where possible.

The complexity of integrated interventions also poses challenges for fidelity monitoring and process evaluation. Given that interventions involve multiple professionals and components, ensuring consistent delivery across participants and sites is crucial [52]. Strategies such as manualized

protocols, regular training, and audits of session records can enhance fidelity. Process evaluations should document the dose received, engagement levels, and barriers encountered, which help interpret outcomes and guide refinements [53]. For example, if participants inconsistently attend social worker sessions, the psychosocial impact may be diluted, affecting overall results.

Statistical analysis must account for the interplay between intervention components. Traditional analytic methods may not capture synergistic effects, prompting the use of mediation analysis to explore pathways [54]. For instance, researchers can test whether improvements in nutritional status mediate the relationship between the intervention and frailty reduction. Additionally, cluster randomized designs are often necessary when interventions are delivered at the community or facility level to avoid contamination between groups [55]. Sample size calculations should consider the expected effect sizes on primary outcomes, which may be modest given the multifactorial nature of frailty, requiring larger trials to detect significant differences.

Finally, long-term follow-up is essential to determine whether benefits are sustained beyond the intervention period. Frailty and functional decline are progressive, so studies with follow-up periods of at least 12-24 months are valuable [56]. Economic evaluations, including cost-effectiveness analyses, are also important for policymakers, as integrated interventions may require upfront resources but could reduce healthcare costs by preventing hospitalizations and institutionalization [57]. Addressing these methodological considerations will strengthen the evidence base and facilitate the translation of research into practice.

## **8. Challenges and Barriers to Implementation**

Despite the potential benefits, implementing integrated psychosocial-nutritional interventions led by social workers, nurses, and dietitians faces several practical challenges. One major barrier is healthcare system fragmentation, where funding, administrative structures, and professional silos hinder collaboration [58]. In many settings, social work, nursing, and dietary services are reimbursed separately or not at all, making it difficult to sustain integrated programs. For example, Medicare in the United States may cover nutritional counseling for specific conditions but often lacks comprehensive coverage for psychosocial interventions led by social workers [59]. This financial disincentive can limit the scalability of integrated models. Interprofessional collaboration itself

requires time, trust, and communication skills that may not be fully developed among team members. Differences in professional cultures, jargon, and priorities can lead to misunderstandings or conflicts, reducing team effectiveness [60]. Without clear leadership roles and shared goals, interventions may become disjointed. Training in team-based care and the use of collaborative tools, such as shared electronic health records, can alleviate these issues, but such infrastructure is not universally available [61].

Another challenge is engaging older adults, particularly those who are frail or socially isolated. Barriers to participation include transportation difficulties, sensory impairments, cognitive decline, and skepticism about intervention benefits [62]. Social workers play a key role in outreach and building rapport, but recruitment and retention remain difficult, especially in long-term studies. Culturally tailored approaches and flexible delivery formats (e.g., home visits, telehealth) can improve accessibility, but they require additional resources [63].

Moreover, measuring outcomes in frail older adults can be complicated by comorbidities and fluctuating health status. Dropouts due to hospitalization or mortality are common, leading to attrition bias in research [64]. Implementing interventions in diverse settings, such as rural areas or low-income communities, may also reveal contextual barriers like limited access to healthy food or social services, which can undermine nutritional and psychosocial components [65]. Addressing these challenges requires adaptive strategies and stakeholder engagement, including input from older adults themselves, to ensure interventions are feasible and acceptable.

## **9. Future Directions for Research and Practice**

To advance the field, future research should focus on several key areas. First, there is a need for large-scale, pragmatic RCTs that test integrated interventions in real-world healthcare settings, with diverse populations including underrepresented groups [66]. These trials should employ standardized core outcome sets for frailty and functional decline to facilitate meta-analyses and comparisons across studies. Additionally, research should explore the optimal timing and intensity of interventions; for instance, whether preventive approaches in pre-frail older adults are more effective than treatments in those already frail [67]. Second, studies should investigate the cost-effectiveness of integrated interventions from a societal perspective, considering savings from reduced healthcare utilization and long-term care

[68]. Economic evaluations will be crucial for persuading policymakers and insurers to fund such programs. Third, mechanistic studies using biomarkers, wearable sensors, and advanced statistical models can elucidate how different intervention components interact to produce outcomes [31]. This knowledge can inform tailored approaches, where interventions are personalized based on individual risk profiles, such as genetic predispositions or psychosocial vulnerabilities.

In practice, healthcare systems should invest in training programs that foster interprofessional collaboration among social workers, nurses, and dietitians [53]. Integrating these roles into primary care or community health teams can enhance accessibility. Technology, such as telehealth platforms and mobile health apps, can support remote monitoring and engagement, especially in resource-limited settings [12]. Furthermore, policymakers should advocate for reimbursement models that reward integrated, outcome-based care rather than fee-for-service silos [67].

Finally, involving older adults and their families in co-designing interventions can ensure that programs are relevant and empowering [22]. Community-based participatory research methods can bridge the gap between research and practice, fostering sustainable models that address local needs. By pursuing these directions, the potential of integrated psychosocial-nutritional interventions to promote healthy aging can be fully realized.

## 10. Conclusion

In conclusion, integrated psychosocial-nutritional interventions led by social workers, nurses, and dietitians represent a promising holistic approach to addressing frailty and functional decline in older adults. By targeting the interconnected biological, psychological, and social determinants of health, these interventions have the potential to improve resilience, enhance quality of life, and reduce the burden on healthcare systems. Empirical evidence, while mixed, generally supports their benefits, particularly when components are robustly implemented and tailored to individual needs. However, challenges related to healthcare fragmentation, funding, and implementation must be overcome through policy changes, interprofessional training, and community engagement. Future research should focus on optimizing intervention design, demonstrating cost-effectiveness, and elucidating mechanisms of action. As the global population ages, embracing integrated care models will be essential for promoting healthy aging and enabling older adults to live independently and with dignity.

## Author Statements:

- **Ethical approval:** The conducted research is not related to either human or animal use.
- **Conflict of interest:** The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper
- **Acknowledgement:** The authors declare that they have nobody or no-company to acknowledge.
- **Author contributions:** The authors declare that they have equal right on this paper.
- **Funding information:** The authors declare that there is no funding to be acknowledged.
- **Data availability statement:** The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.
- **Use of AI Tools:** The author(s) declare that no generative AI or AI-assisted technologies were used in the writing process of this manuscript.

## References

1. Hallberg IR, Kristensson J. Preventive home care of frail older people: a review of recent case management studies. *J Clin Nurs*. 2004;13(s2):112–20.
2. Chen C, Gan P, How C. Approach to frailty in the elderly in primary care and the community. *Singapore Med J*. 2018;59(5):240–5.
3. Vestjens L, Cramm JM, Birnie E, Nieboer AP. Evaluating an integrated primary care approach to improve well-being among frail community-living older people: a theory-guided study protocol. *BMC Geriatr*. 2018;18(1):173.
4. Dunn T, Bliss J, Ryrie I. The impact of community nurse-led interventions on the need for hospital use among older adults: An integrative review. *Int J Older People Nurs*. 2021;16:e12361.
5. Church S, Rogers E, Rockwood K, Theou O. A scoping review of the Clinical Frailty Scale. *BMC Geriatr*. 2020;20(1):1–18.
6. Davis K, Eckert M, Hutchinson A, Harmon J, Sharplin G, Shakib S, et al. Effectiveness of nurse-led services for people with chronic disease in achieving an outcome of continuity of care at the primary-secondary healthcare interface: a quantitative systematic review. *Int J Nurs Stud*. 2021;121:103986.
7. Khor PY, Vearing RM, Charlton KE. The effectiveness of nutrition interventions in improving frailty and its associated constructs related to malnutrition and functional decline

- among community-dwelling older adults: A systematic review. *J Hum Nutr Diet*. 2021.
8. Losa-Reyna J, Baltasar-Fernandez I, Alcazar J, Navarro-Cruz R, Garcia-Garcia FJ, Alegre LM, et al. Effect of a short multicomponent exercise intervention focused on muscle power in frail and pre frail elderly: A pilot trial. *Exp Gerontol*. 2019;115:114–21.
  9. Duzgun G, Ustundag S, Karadakovan A. Assessment of frailty in the elderly. *Florence Nightingale J Nurs*. 2021;29(1):2–8.
  10. Theou O, O’Connell MDL, King-Kallimanis BL, O’Halloran AM, Rockwood K, Kenny RA. Measuring frailty using self-report and test-based health measures. *Age Ageing*. 2015;44(3):471–477.
  11. Ofori-Asenso R, Chin KL, Mazidi M, Zomer E, Ilomaki J, Zullo AR, et al. Global incidence of frailty and prefrailty among community-dwelling older adults. *JAMA Netw Open*. 2019;2(8):e198398.
  12. Kojima G. Frailty as a predictor of nursing home placement among community-dwelling older adults: a systematic review and meta-analysis. *J Geriatr Phys Ther*. 2018;41(1):42–8.
  13. Lorenzo-López L, Maseda A, de Labra C, Regueiro-Folgueira L, Rodríguez-Villamil JL, Millán-Calenti JC. Nutritional determinants of frailty in older adults: a systematic review. *BMC Geriatr*. 2017;17(1):108.
  14. Guarinoni M, Petrucci C, Lancia L, et al. The concept of care complexity: a qualitative study. *J Public Heal Res*. 2015;13(3):588.
  15. Elkan R, Kendrick D, Dewey M, Hewitt M, Robinson J, Blair M, et al. Effectiveness of home based support for older people: systematic review and meta-analysis Commentary: when, where, and why do preventive home visits. *BMJ*. 2001;323(7315):719–719.
  16. JBI . JBI critical appraisal checklist for randomized controlled trials. 2017. pp. 1–9.
  17. Mansoor K, Maqbool Ahmed Khuwaja H. The effectiveness of a chronic disease self-management program for elderly people: a systematic review. *Elder Heal J*. 2020;6(1):51–63.
  18. Smith M, Saunders R, Stuckhardt L, et al. Imperative: managing rapidly increasing complexity. US: National Academies Press; 2013.
  19. Op het Veld LPM, van Rossum E, Kempen GIJM, de Vet HCW, Hajema K, Beurskens AJHM. Fried phenotype of frailty: cross-sectional comparison of three frailty stages on various health domains. *BMC Geriatr*. 2015;15(1):1–11.
  20. Vozzi F, Palumbo F, Ferro E, Kreiner K, Giugni F, Dutton R, et al. Nutritional and physical improvements in older adults through the DOREMI remote coaching approach: a real-world study. *Intell Med*. 2022;2(4):181–92.
  21. Hoogendijk EO. How effective is integrated care for community-dwelling frail older people? The case of the Netherlands. *Age Ageing*. 2016;45(5):587–9.
  22. Lee JY, Yang YS, Cho E. Transitional care from hospital to home for frail older adults: A systematic review and meta-analysis. *Geriatr Nurs (Minneap)* 2022;43:64–76.
  23. Luciana Correia Alves, Yeda Aparecida de Oliveira Duarte JLFS. Factors associated the transitions in the frailty states among elderly in Brazil 2006-2010; 2018. p. 1–16.
  24. Multidisciplinary Digital Publishing Institute S-KL . Summary of quality assessments using JBI appraisal checklist. 2021. pp. 1–2.
  25. Gobbens RJ, Van Assen MA, Luijckx KG, Schols JM. Testing an integral conceptual model of frailty. *J Adv Nurs*. 2011;68:1–14.
  26. DV Liebel, B Friedman, NM Watson and BP. Review of nurse home visiting interventions for community-dwelling older persons with existing disability. *Natl Inst Heal*. 2009;1–5.
  27. Ng TP, Feng L, Nyunt MSZ, Feng L, Niti M, Tan BY, et al. Nutritional, physical, cognitive, and combination interventions and frailty reversal among older adults: a randomized controlled trial. *Am J Med*. 2015;128(11):1225–1236.e1.
  28. Kojima G, Liljas AEM, Iliffe S. Frailty syndrome: implications and challenges for health care policy. *Risk Manag Healthc Policy*. 2019;12:23–30.
  29. Medicare I of M (US) C to D a S for QR and A in. Lohr KN. The elderly population. US: National Academies Press; 1990. p. 12.
  30. Erratum: Frailty and nutritional status in older people: the Mini Nutritional Assessment as a screening tool for the identification of frail subjects [Corrigendum]. *Clin Interv Aging*. 2018;13:1631.
  31. Liimatta H, Lampela P, Laitinen-Parkkonen P, Pitkala KH. Effects of preventive home visits on health-related quality-of-life and mortality in home-dwelling older adults. *Scand J Prim Health Care*. 2019;37(1):90–7.
  32. de Moraes MB, Avgerinou C, Fukushima FB, Vidal EIO. Nutritional interventions for the management of frailty in older adults: systematic review and meta-analysis of randomized clinical trials. *Nutr Rev*. 2021;79(8):889–913.
  33. Chamberlain AM, Sauver JLS, Jacobson DJ, Manemann SM, Fan C, Roger VL, et al. Social and behavioural factors associated with frailty trajectories in a population-based cohort of older adults. 2016;6:1–10.
  34. Tappenden P, Campbell F, Rawdin A, Wong R, Kalita N. The clinical effectiveness and cost-effectiveness of home-based, nurse-led health promotion for older people: a systematic review. *Health Technol Assess (Rockv)*. 2012;16(20).
  35. Campbell M, McKenzie JE, Sowden A, Katikireddi SV, Brennan SE, Ellis S, et al. Synthesis without meta-analysis (SWiM) in systematic reviews: reporting guideline. *BMJ*. 2020;16:l6890.
  36. Orimo H, Ito H, Suzuki T, Araki A, Hosoi T, Sawabe M. Reviewing the definition of “elderly”. *Geriatr Gerontol Int*. 2006;6(3):149–158.
  37. Vedanthan R, Ray M, Fuster V, Magenheim E. Hypertension treatment rates and health care worker density. *Hypertension*. 2019;73(3):594–601.

38. de Labra C, Guimaraes-Pinheiro C, Maseda A, Lorenzo T, Millán-Calenti JC. Effects of physical exercise interventions in frail older adults: a systematic review of randomized controlled trials. *BMC Geriatr.* 2015;15(1):154.
39. Marcus-Varwijk AE, Peters LL, Visscher TLS, Smits CHM, Ranchor AV, Slaets JPJ. Impact of a nurse-led health promotion intervention in an aging population: results from a quasi-experimental study on the “community health consultation offices for seniors”. *J Aging Health.* 2020;32(1):83–94.
40. Ha J, Park YH. Effects of a person-centered nursing intervention for frailty among prefrail community-dwelling older adults. *Int J Environ Res Public Health.* 2020;17(18):1–19.
41. Australian College of Nursing . The role of nurses in promoting healthy ageing. 2020. pp. 1–3.
42. Gobbens RJJ, Luijkx KG, Wijnen-Sponselee MT, Schols JMGA. In Search of an Integral Conceptual Definition of Frailty: Opinions of Experts. *J Am Med Dir Assoc.* 2010;11(5):338–43.
43. van Kempen JAL, Robben SH, Zuidema SU, Rikkert MGO, Melis RJ, Schers HJ. Home visits for frail older people: a qualitative study on the needs and preferences of frail older people and their informal caregivers. *Br J Gen Pract.* 2012;62(601):e554–60.
44. Walston J, Buta B, Xue Q-L. Frailty screening and interventions: considerations for clinical practice. *Clin Geriatr Med.* 2018;34(1):25–38.
45. Rockwood K, Howlett SE. Fifteen years of progress in understanding frailty and health in aging. *BMC Med.* 2018;16(1):220.
46. Markle-Reid M, Weir R, Browne G, Roberts J, Gafni A, Henderson S. Health promotion for frail older home care clients. *J Adv Nurs.* 2006;54(3):381–395.
47. Rolf K, Santoro A, Martucci M, Pietruszka B. The Association of Nutrition Quality with Frailty Syndrome among the Elderly. *Int J Environ Res Public Health.* 2022;19(6):3379.
48. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *BMJ.* 2009;339(7716):332–336.
49. Bieniek J, Wilczyński K, Szewieczek J. Fried frailty phenotype assessment components as applied to geriatric inpatients. *Clin Interv Aging.* 2016;11:453–9.
50. Fried LP, Cohen AA, Xue Q-L, Walston J, Bandeen-Roche K, Varadhan R. The physical frailty syndrome as a transition from homeostatic symphony to cacophony. *Nat Aging.* 2021;1(1):36–46.
51. Markle-Reid M, Browne G, Gafni A. Nurse-led health promotion interventions improve quality of life in frail older home care clients: Lessons learned from three randomized trials in Ontario. *Canada J Eval Clin Pract.* 2013;19(1):118–131.
52. Liotta G, Ussai S, Illario M, O’Caoimh R, Cano A, Holland C, et al. Frailty as the future core business of public health: report of the activities of the A3 action group of the european innovation partnership on active and healthy ageing (EIP on AHA) *Int J Environ Res Public Health.* 2018;15(12):2843.
53. Nicolaides-Bouman A, van Rossum E, Habets H, Kempen GIJM, Knipschild P. Home visiting programme for older people with health problems: process evaluation. *J Adv Nurs.* 2007;58(5):425–35.
54. Lazarus NR, Izquierdo M, Higginson IJ, Harridge SDR. Exercise deficiency diseases of ageing: the primacy of exercise and muscle strengthening as first-line therapeutic agents to combat frailty. *J Am Med Dir Assoc.* 2018;19(9):741–3.
55. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in older adults: evidence for a phenotype. 2001;56(3):M146.
56. Markle-Reid M, Weir R, Browne G, Roberts J, Gafni A, Henderson S. Health promotion for frail older home care clients. *J Adv Nurs.* 2006;54(3):381–95.
57. Song MS, Boo S. Effects of a nurse-led multicomponent intervention for frail older adults living alone in a community: a quasi-experimental study. *BMC Nurs.* 2022;21(1):1–9.
58. Espinoza SE, Jung I, Hazuda H. Frailty transitions in the San Antonio longitudinal study of aging. *J Am Geriatr Soc.* 2012;60(4):652–660.
59. Aygerinou C, Bhanu C, Walters K, Croker H, Tuijt R, Rea J, et al. Supporting nutrition in frail older people: a qualitative study exploring views of primary care and community health professionals. *Br J Gen Pract.* 2020;70(691):e138–45.
60. Mendiratta P, Schoo C, Rafay, Latif R. National Institute of Medicine: Clinical Frailty Scale. 2023. p. 1–5.
61. Frost R, Belk C, Jovicic A, Ricciardi F, Kharicha K, Gardner B, et al. Health promotion interventions for community-dwelling older people with mild or pre-frailty: a systematic review and meta-analysis. *BMC Geriatr.* 2017;17(1):157.
62. JBI. Checklist for Quasi-Experimental Studies (non-randomized experimental studies). 2017. p. 1–7.
63. Joanna Briggs Institute. Critical Appraisal Tools. Joanna Briggs Inst. 2020;2–6.
64. Liu CK, Fielding RA. Exercise as an Intervention for Frailty. *Clin Geriatr Med.* 2011;27(1):101–10.
65. Nicolaides-Bouman A, van Rossum E, Kempen GI, Knipschild P. Effects of home visits by home nurses to elderly people with health problems: design of a randomised clinical trial in the Netherlands [ISRCTN92017183] *BMC Health Serv Res.* 2004;4(1):35.
66. Flyum IR, Gjevjon ER, Josse-Eklund A, Lærum-Onsager E, Borglin G. Nursing, frailty, functional decline and models of care in relation to older people receiving long-term care: a scoping review protocol. *BMJ Open.* 2022;12(8):e061303.
67. Serra-Prat M, Sist X, Domenich R, Jurado L, Saiz A, Rocés A, et al. Effectiveness of an intervention to prevent frailty in pre-frail community-dwelling older people consulting in primary care: a randomised controlled trial. *Age Ageing.* 2017;6:401–7.

68. Com I. Optimizing the contributions of the nursing and midwifery workforce to achieve universal health coverage and the Sustainable Development Goals through education, research, and practice. *World Heal Organ.* 2017;17(17):22.