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(RESEARCH ARTICLE)

Frailty and healthy aging among older adults in Vietnam: Current evidence and implications for geriatric nursing practice

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Abstract

Background: Frailty is increasingly recognized as a major geriatric syndrome and a critical determinant of healthy aging worldwide. Characterized by reduced physiological reserve and increased vulnerability to stressors, frailty is associated with functional decline, hospitalization, disability, poor quality of life, and mortality. Vietnam is experiencing one of the most rapid demographic transitions in Asia, with a rapidly growing population of older adults and an increasing burden of chronic diseases and functional impairment. Despite growing research interest, evidence regarding frailty among Vietnamese older adults remains fragmented and has not been comprehensively synthesized from a geriatric nursing perspective. This review aimed to summarize current evidence on frailty and healthy aging among older adults in Vietnam and to discuss implications for geriatric nursing practice.

Methods: A narrative review was conducted using evidence retrieved from PubMed, Google Scholar, the World Health Organization (WHO), Global Burden of Disease (GBD) databases, and official reports from the Ministry of Health of Vietnam and the General Statistics Office of Vietnam. Studies published between 2000 and 2025 were identified using combinations of keywords related to frailty, healthy aging, older adults, functional decline, geriatric nursing, and Vietnam. Eligible sources included peer-reviewed original studies, systematic reviews, and national and international reports.

Results: The evidence indicates that frailty is becoming an important public health issue in Vietnam. Frailty among older adults is associated with advanced age, multimorbidity, malnutrition, sarcopenia, polypharmacy, social isolation, and reduced physical activity. Frail older adults experience increased risks of falls, hospitalization, disability, dependence in activities of daily living, cognitive impairment, and mortality. Existing healthcare services in Vietnam remain inadequately prepared to address the multidimensional needs of frail older adults, particularly in community and long-term care settings.

Conclusions: Frailty has emerged as an important challenge for healthy aging in Vietnam. Strengthening early screening, comprehensive geriatric assessment, community-based interventions, and geriatric nursing capacity is essential for promoting healthy aging and reducing adverse health outcomes among older adults.

Keywords: Frailty; Healthy aging; Older adults; Vietnam; Geriatric Nursing; Functional decline

1. Introduction

Population aging has become one of the most significant demographic transformations of the twenty-first century. According to the World Health Organization (WHO), the global population aged 60 years and older is expected to increase from approximately 1 billion in 2020 to 2.1 billion by 2050, while the population aged 80 years and older is projected to triple during the same period (1). This demographic transition has profound implications for healthcare

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systems, social protection programs, and long-term care services worldwide. The concept of healthy aging has therefore become a global priority. WHO defines healthy aging as the process of developing and maintaining the functional ability that enables well-being in older age (2). Functional ability depends not only on the absence of disease but also on intrinsic capacity, mobility, cognition, psychological health, social participation, and supportive environments (2,3). Consequently, healthy aging has shifted the focus of geriatric care from disease-centered approaches toward preserving function, independence, and quality of life.

Frailty has emerged as one of the most important determinants of healthy aging. Frailty is generally defined as a state of increased vulnerability resulting from age-associated declines in multiple physiological systems, leading to reduced resilience to stressors and increased risk of adverse outcomes (4). Frailty is increasingly recognized as a multidimensional syndrome involving physical, psychological, cognitive, and social domains (5). The clinical importance of frailty has been extensively documented. Frail older adults are more likely to experience falls, hospitalization, disability, institutionalization, poor quality of life, and mortality than robust individuals (6). Systematic reviews have demonstrated that frailty substantially increases healthcare utilization and healthcare costs, making it an important public health concern for aging societies (7). Because frailty is potentially preventable and reversible during its early stages, early identification and intervention are increasingly emphasized in healthy aging strategies (8). The prevalence of frailty varies considerably according to study populations and assessment methods. A large systematic review reported that the prevalence of frailty among community-dwelling older adults ranged from approximately 4% to 59%, with pooled estimates generally between 10% and 15% (9). In Asian countries, frailty prevalence is frequently higher due to rapid population aging, increasing multimorbidity, and healthcare inequalities (10).

Vietnam is currently experiencing one of the fastest demographic transitions in Southeast Asia. The proportion of individuals aged 60 years and older has increased substantially over the last two decades and is projected to exceed 20% by 2038, officially transforming Vietnam into an aged society (11–13). Although life expectancy has increased steadily, healthy life expectancy remains considerably lower, indicating that many older adults spend their later years living with chronic diseases, disability, and functional dependence (14). The burden of non-communicable diseases among Vietnamese older adults is increasing rapidly. Hypertension, cardiovascular diseases, stroke, diabetes, chronic respiratory diseases, and musculoskeletal disorders account for the majority of morbidity and mortality among older populations (15,16). These chronic conditions often coexist and contribute to multimorbidity, functional decline, and frailty. Frailty is increasingly recognized in Vietnam as an important geriatric syndrome associated with adverse health outcomes. However, studies on frailty among Vietnamese older adults remain limited and fragmented. Existing evidence suggests that frailty is associated with advanced age, female sex, malnutrition, polypharmacy, cognitive impairment, depression, physical inactivity, and social isolation (17–19). Moreover, frailty substantially increases the risk of falls, hospitalization, dependence in activities of daily living (ADL), and mortality.

Traditional family-based care remains the principal source of support for older adults in Vietnam. Nevertheless, urbanization, labor migration, declining family size, and changing social structures have gradually weakened informal caregiving systems (20). Consequently, frail older adults increasingly face unmet healthcare and long-term care needs. For nursing professionals, frailty presents both challenges and opportunities. Nurses play central roles in early screening, comprehensive geriatric assessment, chronic disease management, nutritional interventions, exercise promotion, caregiver education, and coordination of long-term care services (21). Developing geriatric nursing competencies and implementing evidence-based frailty interventions are therefore essential to promote healthy aging. Despite increasing research interest in frailty and healthy aging, comprehensive synthesis of evidence from Vietnam remains limited. Existing studies frequently focus on specific diseases or isolated aspects of aging and rarely integrate epidemiological evidence with practical implications for geriatric nursing. Therefore, this review aimed to synthesize current evidence regarding frailty and healthy aging among older adults in Vietnam, focusing on epidemiological characteristics, determinants, adverse outcomes, and implications for geriatric nursing practice.

2. Data used and Methods

2.1. Data sources

This review synthesized evidence from multiple scientific and institutional databases, including PubMed, Google Scholar, the World Health Organization (WHO), the Global Burden of Disease database, the Ministry of Health of Vietnam, the General Statistics Office of Vietnam, and reports published by the United Nations Population Fund (UNFPA). Publications published between 2000 and 2025 were considered to capture contemporary evidence regarding frailty and healthy aging among older adults in Vietnam.

2.2. Methods

A narrative review approach was adopted to synthesize current evidence on frailty and healthy aging among older adults in Vietnam (22–24). Literature searches were conducted in PubMed, Google Scholar, WHO databases, GBD repositories, and official reports from the Ministry of Health of Vietnam and the General Statistics Office of Vietnam (1–16). Search terms included combinations of "frailty", "healthy aging", "older adults", "functional decline", "sarcopenia", "multimorbidity", "long-term care", "geriatric nursing", and "Vietnam". Studies were included if they focused on adults aged 60 years and older and reported epidemiological, clinical, functional, or healthcare outcomes related to frailty. Eligible sources comprised peer-reviewed original studies, systematic reviews, and official national and international reports. Editorials, conference abstracts, and studies lacking sufficient methodological information were excluded. Findings were synthesized into four thematic domains: epidemiology and assessment of frailty, determinants and adverse outcomes, frailty and healthy aging, and implications for geriatric nursing practice.

3. Results and discussion

3.1. Definitions and assessment tools of frailty

Frailty has evolved from a purely biomedical concept into a multidimensional geriatric syndrome encompassing physical, psychological, cognitive, and social vulnerabilities. Although there is no universally accepted operational definition, frailty is generally recognized as a state of decreased physiological reserve and increased vulnerability to adverse outcomes following exposure to stressors (25,26). The two most influential conceptual models are the Physical Frailty Phenotype proposed by Fried et al. and the Deficit Accumulation Model developed by Rockwood and Mitnitski (17,27). The Fried Phenotype defines frailty according to five components: unintentional weight loss, self-reported exhaustion, weakness, slow gait speed, and low physical activity. Individuals meeting three or more criteria are classified as frail, whereas those meeting one or two criteria are considered prefrail (17). Conversely, the Frailty Index conceptualizes frailty as the accumulation of health deficits, including diseases, symptoms, functional limitations, and laboratory abnormalities (27).

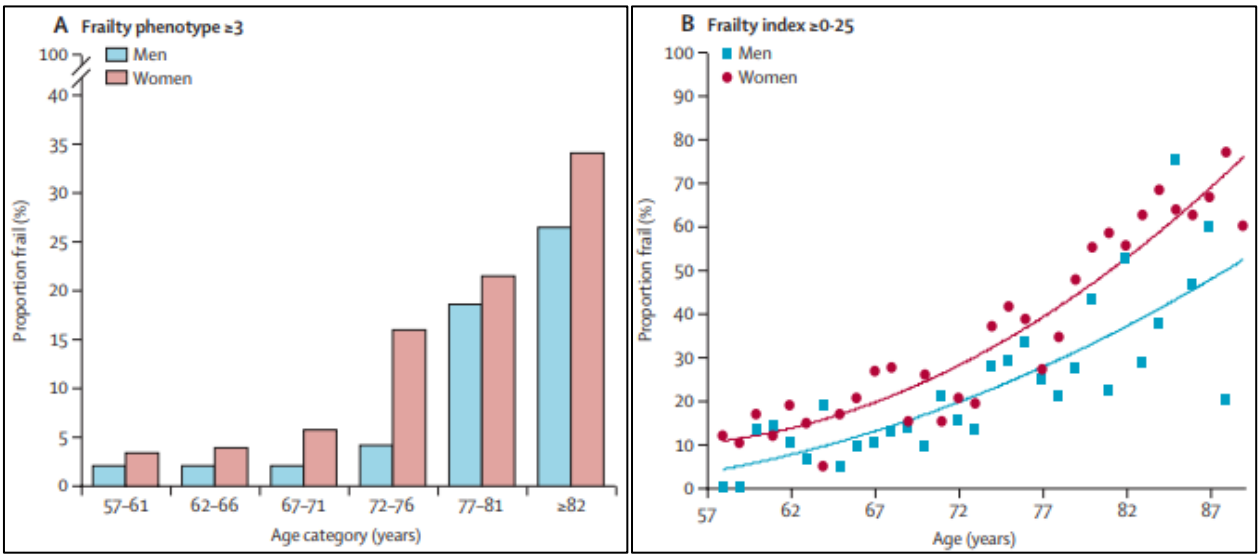

Figure 1 Frailty prevalence for men and women by age (25)

In recent years, several simplified screening tools have been developed for use in primary care and community settings. The FRAIL Scale and the Clinical Frailty Scale (CFS) have demonstrated acceptable validity and practicality in identifying vulnerable older adults (28,29). These tools are particularly attractive in low- and middle-income countries because they require limited resources and can be implemented by nurses and primary healthcare providers. The absence of a standardized frailty assessment tool remains a major challenge when comparing prevalence estimates across countries. Differences in measurement instruments, age structures, and study settings contribute to substantial heterogeneity in reported prevalence rates (30). Therefore, interpretation of frailty epidemiology should consider methodological differences among studies.

Table 1 Definitions and diagnostic criteria of frailty used in international studies

Frailty model	Main components	Advantages	Limitations
Fried Frailty Phenotype	Weight loss, exhaustion, weakness, slowness, low activity	Widely validated; predictive of adverse outcomes	Primarily physical dimensions
Frailty Index	Accumulation of deficits across multiple domains	Comprehensive and multidimensional	Requires extensive data collection
Clinical Frailty Scale	Global clinical judgment and functional dependence	Rapid assessment in clinical settings	Subjective interpretation
FRAIL Scale	Fatigue, resistance, ambulation, illnesses, weight loss	Simple community screening tool	Lower sensitivity in some populations

Table 1 illustrates the conceptual diversity of frailty assessment tools. The Fried Phenotype remains the most commonly used research instrument because of its strong predictive validity for falls, disability, hospitalization, and mortality (17). However, its focus on physical frailty may underestimate psychological and social dimensions of vulnerability. The Frailty Index provides a more comprehensive assessment but requires considerable resources and detailed clinical information (27). In contrast, the FRAIL Scale and Clinical Frailty Scale are more practical for community screening and may be particularly suitable for implementation in Vietnamese primary healthcare and nursing settings. The absence of a universally accepted tool underscores the need for context-specific validation of frailty instruments in Vietnam.

3.2. Epidemiology and prevalence of frailty in Vietnam and Asia

Frailty prevalence increases substantially with age and varies according to sex, socioeconomic conditions, and assessment methods. A systematic review by Collard et al. estimated the pooled prevalence of frailty among community-dwelling older adults to be approximately 10.7%, while prefrailty affected more than 40% of older populations (9). Subsequent reviews reported even higher prevalence estimates in Asian populations, ranging from approximately 5% to 27% (31,32). The rapid demographic transition occurring in Asia has contributed to increasing frailty prevalence. Older adults in low- and middle-income countries often experience cumulative disadvantages related to nutrition, education, income, and healthcare access, all of which contribute to greater vulnerability and accelerated biological aging (33).

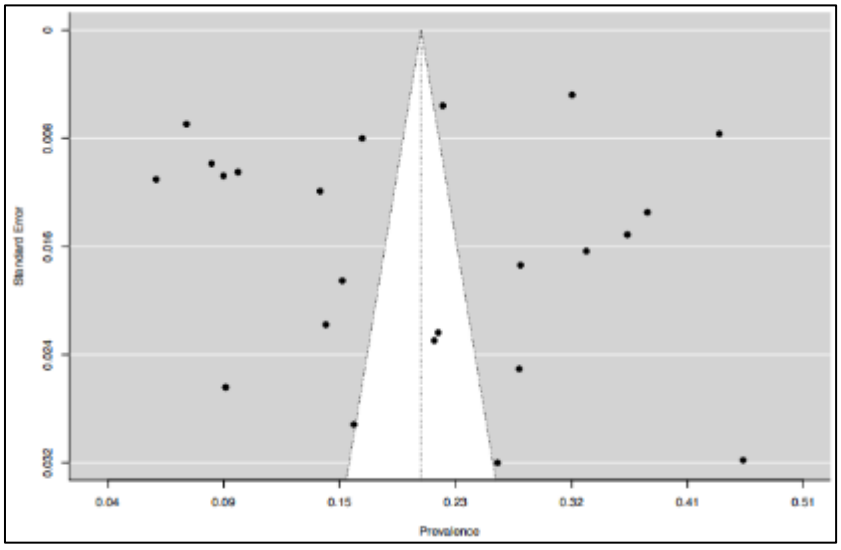

Figure 2 Funnel plot of prevalence rates of frailty among community-dwelling older adults in Asian countries

Evidence from Vietnam remains limited but indicates that frailty is becoming increasingly important. Studies conducted in community settings and outpatient clinics suggest that frailty prevalence among Vietnamese older adults generally ranges from approximately 12% to 25%, depending on assessment instruments and study populations (34–36). Prefrailty appears considerably more common and may affect nearly one-half of community-dwelling older adults.

Several demographic characteristics consistently influence frailty prevalence. Advanced age is the strongest predictor of frailty. Women generally experience higher prevalence than men, partly because women survive longer but experience greater cumulative morbidity and functional limitations (31,37). Educational attainment and income are also associated with frailty, with socially disadvantaged groups demonstrating greater vulnerability (38). Rural–urban disparities have also been reported. Older adults in rural regions frequently encounter poorer healthcare access, lower income, and greater dependence on family support, increasing risks of functional decline and frailty (39). Such inequalities are particularly relevant in Vietnam, where substantial geographic differences in healthcare resources remain.

Table 2 Prevalence of frailty among older adults in Vietnam and selected Asian countries

Country	Setting	Frailty prevalence (%)	Major assessment tool
Vietnam	Community-dwelling older adults	12–25	Fried Phenotype; FRAIL Scale
China	Community-dwelling older adults	7–18	Frailty Index; Fried Phenotype
Japan	Community-dwelling older adults	7–11	Fried Phenotype
Singapore	Community-dwelling older adults	6–14	FRAIL Scale
South Korea	Community-dwelling older adults	8–17	Frailty Index; Fried Phenotype

Source: Adapted from systematic reviews and epidemiological studies in Asia (9,31–39).

Table 2 demonstrates considerable heterogeneity in frailty prevalence across Asian populations. Vietnam appears to have prevalence estimates comparable to or slightly higher than those observed in several developed Asian countries. Differences may reflect demographic structures, socioeconomic conditions, and methodological variations in frailty assessment. Importantly, the high prevalence of prefrailty suggests that substantial opportunities exist for early intervention and prevention. Community-based screening and nursing-led preventive strategies could therefore play critical roles in reducing progression from prefrailty to frailty among Vietnamese older adults.

3.3. Determinants of frailty in Vietnamese older adults

Frailty is a multifactorial syndrome resulting from complex interactions among biological, clinical, behavioral, and social determinants. Advanced age remains the strongest predictor of frailty because physiological reserve progressively declines across multiple organ systems (17,25). Age-related changes in musculoskeletal, cardiovascular, endocrine, and immune systems collectively contribute to increased vulnerability. Multimorbidity is another major determinant. Older adults with multiple chronic diseases experience greater risks of physical decline, hospitalization, and mortality (40). Cardiovascular diseases, diabetes, chronic respiratory diseases, osteoarthritis, and chronic kidney disease frequently coexist and accelerate frailty progression. Sarcopenia has emerged as a central biological pathway linking aging and frailty. Loss of muscle mass and muscle strength contributes directly to weakness, mobility limitation, falls, and disability (18). Malnutrition, inadequate protein intake, and vitamin deficiencies further exacerbate sarcopenia and frailty. Psychological and social factors are also increasingly recognized. Depression, social isolation, loneliness, and reduced social participation have all been associated with frailty (41,42). In Vietnam, changing family structures and increasing migration of younger adults may reduce social support available to older individuals, potentially increasing frailty risks. Physical inactivity and polypharmacy represent modifiable determinants. Sedentary behavior contributes to muscle wasting and functional decline, whereas polypharmacy increases risks of adverse drug reactions, falls, and cognitive impairment (43). Because these factors are potentially reversible, they represent important targets for nursing interventions and healthy aging strategies.

3.4. Frailty and adverse health outcomes

Frailty is increasingly recognized as a major predictor of adverse health outcomes among older adults. Unlike chronological age alone, frailty reflects biological vulnerability and reduced physiological reserve, enabling better prediction of healthcare utilization and poor clinical outcomes (44). Numerous longitudinal studies have demonstrated that frailty substantially increases risks of falls, hospitalization, disability, institutionalization, and mortality. Falls are among the most common and devastating consequences of frailty. Frail older adults frequently experience impaired balance, muscle weakness, reduced gait speed, sarcopenia, and cognitive decline, all of which increase susceptibility to falls (45). Falls often initiate a vicious cycle of injury, fear of falling, reduced mobility, further deconditioning, and functional dependence. Evidence indicates that frailty approximately doubles the risk of recurrent falls compared with robust older adults (46). Hospitalization is another major consequence. Frail individuals are more vulnerable to acute illnesses and often experience poorer recovery following hospitalization or surgery (47). Hospital admissions may

accelerate muscle loss, functional decline, and dependence in activities of daily living (ADL). Moreover, frail patients tend to have longer lengths of stay, higher readmission rates, and increased healthcare expenditures (48). Frailty is also strongly associated with disability and loss of independence. Functional limitations frequently begin with impairments in instrumental activities of daily living (IADL) and subsequently progress toward dependence in basic ADL (49). This trajectory significantly reduces quality of life and increases demand for long-term care services.

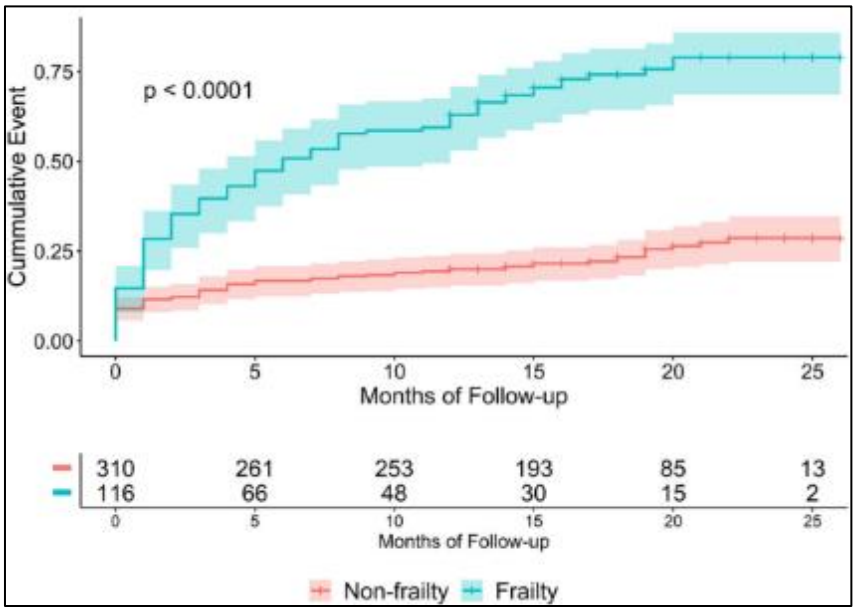

Figure 3 Association between frailty (CFS ≥ 4) and primary outcome

Mortality risk is considerably higher among frail older adults. Meta-analyses have consistently demonstrated that frailty is independently associated with all-cause mortality even after adjusting for age, sex, and comorbidity (50). Frailty therefore represents an important prognostic indicator that should be incorporated into clinical and community-based elderly care. The relationship between frailty and cognitive impairment has also received increasing attention. Frailty and cognitive decline frequently coexist and share common biological pathways, including chronic inflammation, vascular dysfunction, endocrine dysregulation, and nutritional deficiencies (51). Cognitive frailty, defined as the simultaneous presence of physical frailty and cognitive impairment without dementia, has emerged as a potentially reversible condition and an important target for intervention. Furthermore, frailty substantially affects health-related quality of life. Older adults with frailty often experience reduced social participation, depressive symptoms, mobility limitations, and increased dependence on caregivers (52). These multidimensional consequences indicate that frailty should be regarded not merely as a physical condition but as a complex syndrome requiring integrated and person-centered care.

Table 3 Adverse health outcomes associated with frailty among older adults

Outcome	Evidence	Clinical implications
Falls	Approximately 2-fold higher risk	Fractures, fear of falling, disability
Hospitalization	Increased admission and readmission	Functional decline and healthcare costs
Disability	Progressive loss of ADL and IADL	Increased dependence
Mortality	Significantly increased all-cause mortality	Poor prognosis
Cognitive decline	Increased risk of cognitive frailty and dementia	Loss of independence
Poor quality of life	Reduced physical, psychological, and social well-being	Greater care needs

Source: Adapted from systematic reviews and longitudinal studies of frailty outcomes (44–52).

Table 3 demonstrates that frailty has profound consequences extending far beyond physical weakness. Falls and hospitalization frequently initiate trajectories of disability and dependence, while cognitive impairment and reduced quality of life further compound vulnerability. Importantly, many adverse outcomes associated with frailty are

potentially preventable through early identification and intervention. Therefore, frailty screening should be integrated into routine geriatric assessment and community nursing services in Vietnam.

3.5. Implications for geriatric nursing practice

The increasing prevalence of frailty presents major challenges and opportunities for geriatric nursing practice. Because frailty is multidimensional and potentially reversible, nurses play central roles in early identification, prevention, and management. Comprehensive geriatric assessment (CGA) represents one of the most effective approaches for managing frailty (53). CGA is a multidimensional, interdisciplinary process that evaluates medical, functional, cognitive, nutritional, psychological, and social domains. Numerous studies have demonstrated that CGA improves functional outcomes, reduces hospitalization, and enhances quality of life among older adults (54). Screening for frailty should be incorporated into primary healthcare and community nursing services. The FRAIL Scale and Clinical Frailty Scale may be particularly suitable for community settings because they are simple, rapid, and require minimal resources (28,29). Early identification of prefrail individuals provides opportunities for preventive interventions before severe disability develops. Exercise interventions are among the most effective strategies for frailty prevention and management. Progressive resistance training, balance exercises, and multicomponent physical activity programs significantly improve muscle strength, gait speed, mobility, and functional independence (55). Nurses can promote adherence to exercise programs and educate older adults regarding the importance of physical activity.

Nutritional interventions also play important roles. Protein supplementation, adequate caloric intake, and correction of vitamin deficiencies may reduce sarcopenia and improve physical performance (56). Community nurses can conduct nutritional screening and provide individualized counseling. Medication review and deprescribing constitute another critical component of frailty management. Polypharmacy increases risks of adverse drug events, falls, hospitalization, and cognitive impairment (43). Nurses can collaborate with physicians and pharmacists to identify potentially inappropriate medications and improve medication adherence. Because family members remain the principal caregivers in Vietnam, caregiver education should be strengthened. Nurses can provide training on safe mobility assistance, fall prevention, medication administration, nutritional support, and recognition of warning signs requiring medical referral. Such interventions may reduce caregiver burden and improve care quality (57). Finally, geriatric nursing education should be expanded. As Vietnam rapidly transitions toward an aged society, the demand for nurses with gerontological competencies will increase substantially. Educational programs should include frailty assessment, comprehensive geriatric care, dementia management, long-term care, and healthy aging strategies.

Table 4 Nursing interventions for frailty prevention and management

Intervention	Main components	Expected outcomes
Comprehensive geriatric assessment	Multidimensional assessment and care planning	Early detection and individualized care
Frailty screening	FRAIL Scale, Clinical Frailty Scale	Identification of frailty and prefrailty
Exercise interventions	Resistance, balance, and multicomponent training	Improved mobility and reduced falls
Nutritional interventions	Protein and micronutrient supplementation	Reduced sarcopenia and improved strength
Medication review	Deprescribing and medication reconciliation	Reduced adverse events
Caregiver education	Home care and self-management support	Improved care quality and reduced caregiver burden

Source: Compiled by the authors based on evidence from geriatric nursing interventions and frailty management guidelines (28,29,43,53–57).

Table 4 highlights the pivotal role of nurses in addressing frailty and promoting healthy aging. Comprehensive geriatric assessment and frailty screening facilitate early identification of vulnerable individuals, while exercise and nutritional interventions target modifiable determinants of frailty. Medication review and caregiver education further contribute to reducing adverse outcomes and improving functional independence. Given the limited availability of formal long-term care services in Vietnam, community-based nursing interventions may represent one of the most feasible and cost-effective approaches for managing frailty among older adults.

4. Conclusion

Frailty has emerged as a major determinant of healthy aging and an increasingly important public health challenge in Vietnam. Current evidence indicates that frailty is highly prevalent among older adults and is closely associated with multimorbidity, sarcopenia, malnutrition, social isolation, and functional decline. Frail older adults experience substantially increased risks of falls, hospitalization, disability, mortality, and reduced quality of life. Importantly, frailty is potentially preventable and partially reversible, particularly during the prefrailty stage. Therefore, early screening, comprehensive geriatric assessment, exercise promotion, nutritional interventions, medication optimization, and caregiver education should be prioritized. Strengthening geriatric nursing competencies and integrating community-based frailty management into primary healthcare systems may play pivotal roles in promoting healthy aging and reducing the future healthcare burden associated with population aging in Vietnam.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no conflict of interest.

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