

Current Study of Daily Life Influences on Sarcopenia Under the Healthy China Initiative

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Abstract: The prevention and management of sarcopenia among the elderly are now a pivotal topic for healthy aging, in light of the Healthy China strategy's comprehensive advancement and the escalating demographic aging. Aging correlates with an increased prevalence of sarcopenia, a degenerative skeletal muscle condition. Data from a 2023 epidemiological study show that 5% of Chinese community-dwelling elderly aged 60 and above suffer from sarcopenia. 7% to 23.9%. This condition substantially diminishes the elderly's quality of life and impairs their functional autonomy, concurrently elevating risks for falls, disability, and all-cause mortality. This paper delves into the factors affecting sarcopenia in the elderly in everyday life, and appraises the existing prevention and therapeutic measures. The study's analysis of interventions' effectiveness and limitations forms a theoretical foundation for sarcopenia management in the elderly.

Keywords: Elderly; Sarcopenia; Daily Life

Progressive atrophy of skeletal muscle mass, strength, and physical function is indicative of sarcopenia, a syndrome associated with aging. Academic inquiry into sarcopenia in the elderly has surged, yielding substantial improvements in the knowledge of its pathophysiology, diagnostic standards, and treatment modalities. During 2023, Chinese researchers embarked on investigations into strategies for mitigating sarcopenia in the aging population^[1]. The research points to a significant gap, notably the absence of a systematic assessment of daily living environments. The article reviews the existing research on factors affecting sarcopenia in the elderly, highlighting the examination of the interactions between nutritional, exercise, psychosocial, and environmental elements. The objective is to construct a theoretical basis for the development of an integrated prevention and treatment model for sarcopenia, thereby bolstering the implementation of the Healthy China strategy in elderly health initiatives. The objective is to construct a theoretical basis for the development of an integrated prevention and treatment model for sarcopenia, thereby reinforcing the execution of the Healthy China strategy in elderly health initiatives.

1 Conceptual Correlates of Sarcopenia

Sarcopenia, synonymous with muscle reduction syndrome, was first utilized by Rosenberg in 1989. This classification is divided into two categories: primary and secondary, with the primary form being predominantly associated with aging, and the secondary form being linked to factors such as malnutrition, insufficient physical activity, and chronic diseases. Human skeletal muscle mass experiences a gradual reduction around 40 years, with an annual loss rate of roughly 8%, which intensifies post-70 years. Daily life is a key factor in sarcopenia research, with interventions including dietary alterations and enhanced physical activity capable of preventing its onset and progression, thus improving the elderly's quality of life.

2 Fundamental Aspects of Daily Life's Influence

2.1 Physiological Factors

Primarily, sarcopenia's occurrence in the elderly is ascribed to age-induced muscle loss mechanisms. Cellularly, diminished mitochondrial efficiency and compromised muscle cell metabolic processes impair muscle contraction and relaxation. The reduction of testosterone and growth hormone secretion in old age impairs muscle repair and growth, and protein synthesis. Concomitant chronic conditions are pivotal contributors. Lu Zhiming^[2] highlights the role of metabolic disorders, such as cardiovascular diseases, in exacerbating muscle loss and precipitating sarcopenia.

2.2 Nutritional Factors

Nutritional factors are essential to the daily management of elderly sarcopenia patients. Aging diminishes the sensitivity of the appetite center, impairs gastrointestinal motility, and decreases the secretion of gastric acid and digestive enzymes, thereby affecting protein metabolism. The interaction of diminished masticatory function contributes to a reduction in the intake and digestion of protein-rich foods. The “Dietary Reference Intakes for Chinese Residents”^[3] proposes a daily protein intake of 1 gram for adults over the age of 60.0 - 1. The standard dietary intake is 2 g/(kg d), while sarcopenia patients should aim for 1.2 - 1. For optimal muscle anabolism, a 5 g/(kg d) dosage is advised. Vitamin inadequacies drastically impair muscular operation. Suboptimal vitamin levels drastically affect muscle functionality.

2.3 Physical Activity Factors

A shift in the elderly’s lifestyle has resulted in an escalating incidence of inadequate physical activity. Prolonged sedentariness precipitates insufficient muscle activation, culminating in diminished contraction and relaxation rates, muscle fiber atrophy, and functional deterioration. The omission of resistance training is imperative for muscle hypertrophy and strength enhancement; its absence complicates muscle mass retention. The decrement in routine activities, including ambulation and domestic tasks, although seemingly mundane, warrants attention due to their role in enhancing muscular coordination and stamina. Meier^[4] documents the association between insufficient physical activity and sarcopenia, as well as its impact on the elderly’s quality of life.

2.4 Environmental Factors

Environmental elements exacerbate sarcopenia in the elderly, affecting both physical and social aspects. The physical environment’s lack of barrier-free facilities confines the elderly’s activity range, obstructing their capacity for fundamental movements such as walking and stair climbing, thus causing a chronic deficiency in muscle stimulation and muscle atrophy. Uninformed awareness of sarcopenia among family caregivers and community service systems hinders its prevention and intervention within the social environment. Uninformed awareness of sarcopenia among family caregivers and community service systems hinders its prevention and intervention within the social environment.

2.5 Other Factors

Extraneous to physiological, nutritional, and physical activity determinants, psychological, behavioral, and environmental factors also exert influence on sarcopenia in the elderly. The presence of negative emotions like depression and anxiety significantly curtails elderly motivation for engaging in activities. Social isolation and the absence of a supportive exercise framework exacerbate limitations on exercise behavior, concurrently, detrimental habits such as smoking and excessive alcohol consumption directly compromise muscle integrity. The lack of essential barrier-free amenities and exercise equipment within their living quarters synergistically exacerbates the risk of sarcopenia onset. The lack of essential barrier-free amenities and exercise equipment within their living quarters synergistically exacerbates the risk of sarcopenia onset.

3 Current Status Analysis

3.1 Nutritional Status

In accordance with the “Chinese Dietary Reference Intakes (2023 Edition),” the recommended daily protein intake is 72 grams for males aged 65 and above and 62 grams for females to support muscle synthesis and repair. Statistical analyses show that a considerable number of the elderly are not meeting the established protein intake thresholds^[3]. A considerable segment of the elderly population demonstrates a protein intake that is significantly below the recommended thresholds, particularly deficient in high-quality proteins rich in essential amino acids, such as meat, fish, shrimp, eggs, and dairy. Furthermore, a widespread scarcity of nutritional awareness is coupled with common misconceptions. Elderly individuals often adhere to the belief that meat consumption should be minimized, thereby refraining from ingesting high-quality protein-rich meat, which consequently results in inadequate protein intake and challenges in preserving muscle mass and func-

tion. The “Report on the Health Status of Elderly Chinese”^[5] omits sarcopenia; in contrast, a substantial body of research underscores the association with nutritional intake. Tooth loss and diminished masticatory capacity in the elderly compromise dietary intake, constraining the ingestion of protein-dense and other nutrient-rich foods, consequently impeding muscle upkeep and repair, and augmenting the likelihood of sarcopenia.

3.2 Exercise Status

Findings from the “2020 National Fitness Activities Survey Bulletin” reveal that merely 29. Physical activity participation among China’s elderly is at 5%, with a notable imbalance in the exercise structure. Walking and square dancing are prevalent low-intensity aerobic exercises among the elderly. Cardiovascular endurance benefits from these activities, yet their contribution to muscle strength and mass is modest. Conversely, the minimal participation in strength training contributes to an exercise modality imbalance, thereby impeding the elderly’s capacity for muscle growth through resistance training. The impediment to preserving muscle mass and strength precedes sarcopenia. Fear of falling deters individuals from engaging in high-intensity workouts, concurrently, bodily pain confines their mobility. The absence of professional oversight hinders the performance of scientifically supported exercise, thereby exacerbating the risk of sarcopenia^[1].

3.3 Current Status of Social Support

According to Deng Xiangwei^[6], caregivers’ insufficient knowledge of sarcopenia restricts their ability to prepare meals abundant in high-quality protein suitable for the elderly’s nutritional demands. The oversight of elderly exercise poses challenges, missing the essential muscle maintenance period. Insufficient coverage of community health services in some regions impedes the extensive implementation of sarcopenia-specific directives. Neglecting to tailor high-quality protein-rich diets to the elderly’s physical status and the lack of individualized resistance training programs in rehabilitation. Health lectures in some communities are infrequent and lack depth. Community health services’ deficiencies significantly hinder the effectiveness of early prevention and intervention for elderly sarcopenia.

3.4 Current Status of Medical Intervention

The rate of sarcopenia screening in the elderly is currently low^[1]. In relevant screenings conducted in Shanghai communities, 12.5% of individuals over 60 years old are diagnosed with sarcopenia, with the rate soaring to 27.1% among the older elderly. Nonetheless, 95% of the elderly subjects in the screenings were unfamiliar with sarcopenia, implying a considerable delay in the diagnosis of numerous patients. The multidisciplinary perspective underscores the significance of collaboration between geriatrics, rehabilitation medicine, and nutrition for sarcopenia’s management, yet its execution is suboptimal. The scarcity of professional nutritionists and the lack of rehabilitation training infrastructure in primary healthcare institutions impedes the execution of multidisciplinary joint management and diminishes the efficacy of early interventions for sarcopenia.

4 Summary

In the daily life of the elderly, sarcopenia is exacerbated by factors such as aging-related muscle degeneration, insufficient protein intake, physical inactivity, weak social ties, and delayed medical care. Manifest gaps are evident in the insufficiency of awareness, the absence of community services, and the lack of multidisciplinary management. Intervention should encompass multiple dimensions. In the process of disseminating knowledge on prevention and treatment, the advancement of intervention models like community exercise groups and nutritional meal plans is imperative. Policy support must be promoted for the inclusion of sarcopenia in geriatric health assessments, with a concurrent emphasis on improving screening protocols and multidisciplinary collaboration to elevate preventive and therapeutic efficacy. Policy support must be advocated for the inclusion of sarcopenia in geriatric health assessments, with a concurrent emphasis on refining screening protocols and multidisciplinary collaboration to enhance preventive and therapeutic efficacy.

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Research focus: Funding Project:Tianjin Science Popularization Project (Grant No.: 24KPXMRC00150)