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# Nutritional needs and dietary disease prevention measures of the elderly

**Tianyu Zhang**

College of Food Science and Technology, Nanjing Agricultural University, Nanjing, Jiangsu, 210095, China

zhang2ianyu@163.com

**Abstract.** In recent years, the phenomenon of population aging has become increasingly severe, and population aging and chronic diseases in the elderly have become a serious global challenge that must be addressed immediately. Due to deteriorating physiological functions, the elderly's metabolic rate has slowed, their ability to absorb and digest nutrients is poor, and their resistance to disease has progressively diminished. Therefore, the elderly should adhere to a rational and scientific diet to supplement the various nutrients their bodies require for optimal health. In this paper, the author examines the nutritional requirements of the geriatric and the diseases associated with nutritional deficiencies, such as osteoporosis, hyperglycemia, stomach diseases, intestinal diseases, and dental diseases, among others. Suitable preventative measures are also proposed, which can strengthen the dietary structure of senior citizens in China, improve their health, and reduce their risk of chronic diseases to a certain degree.

**Keywords:** senior citizen, nutrition, disease prevention, health.

## 1. Introduction

The elderly's life satisfaction is determined in part by their health status, and optimal longevity is influenced by the interaction of multiple factors. Diet and nutrition are crucial factors. Due to age-related social problems, the effects of various physiological declines, immune system decline, and chronic disorders, the risk of malnutrition and overnutrition in the elderly remains high [1]. In order to maintain their health, prevent diseases, slow down the aging process, and preserve their health, elderly people must understand the changes in their body as they age and moderately adjust their diet according to their nutritional needs to prevent over and undernutrition. This is essential and urgent for maintaining their health, preventing diseases, and delaying the aging process. Using a literature review with references to multiple literature and research reports, this paper contributes to the improvement of the nutritional status of the elderly population and provides a basis for reducing diseases associated with their nutritional problems, as well as contributing to the improvement of the well-being of the elderly.

## 2. Nutritional needs of the elderly

Several studies have found that the elderly consume significantly more energy than is recommended each day, and that this energy comes from foods that are higher in fat and protein and lower in carbohydrates, with the ratio of animal fat to total fat being particularly high. In contrast, the elderly

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consume much less calcium and Vitamin C than is recommended, and much more salt than is recommended.

### *2.1. Energy requirements*

The elderly's caloric intake should be appropriately reduced due to their diminishing physical stamina and decreased activity, but calories are essential nutrients for the elderly. Statistically, the caloric needs of elderly people over 75 years of age are reduced by more than 20 percent compared to those of youthful people, and those of elderly people over 60 years of age are reduced by more than 10 percent. The elderly's daily caloric consumption should be limited to 2000 kcal. The elderly's excessive calorie consumption makes them prone to obesity, which is not only a cause of hypertension, cardiovascular disease, and diabetes, but also a leading cause of death. Therefore, the diet should focus on the provision of sufficient calories to maintain body weight.

### *2.2. Protein requirements*

Due to diminished protein synthesis capacity, digestive and absorption functions, excretory capacity to differing degrees, and impaired liver and kidney functions, the daily protein intake of elderly individuals varies. The metabolic process of the elderly is predominantly catabolic, and they require a greater quantity and quality of protein to compensate for the consumption of tissue protein. The elderly have a low protein requirement, and approximately 50 percent of their protein intake should be of high quality. The elderly's protein consumption must be moderate, neither too little nor too much. Eggs, milk, soybean products, fish, shrimp, lean meat, and other foods are appropriate for the elderly to eat on a daily basis; however, the amount of protein consumed should be based on weight, with 1 gram of protein consumed for every kilogram of body weight. Consuming more protein than this can put a strain on the elderly's digestive and renal systems.

### *2.3. Fat requirements*

Due to their slower metabolism, increased body fat composition, diminished eating capacity, and delayed digestion and absorption, older adults are at a higher risk for malnutrition. Due to decreased bile secretion and lipase activity, older individuals are at a high risk of malnutrition, which results in a slower fat metabolism, decreased fat digestion, and elevated blood lipids [2]. Therefore, fat consumption must be rigorously regulated. Simultaneously, moderate fat can facilitate the assimilation of vitamin A and carotene; excessive fat is detrimental to the cardiovascular, digestive, and liver systems.

In addition, because unsaturated fatty acids are easily emulsified by bile in the body and more easily absorbed than saturated fatty acids, the elderly can increase their consumption of unsaturated fatty acids and decrease their consumption of cholesterol and saturated fatty acids in their daily diets, and can use soybean oil, peanut oil, vegetable oil, and corn oil as their primary cooking oils, while avoiding foods like ghee and lard.

### *2.4. Carbohydrate requirements*

Carbohydrates are the primary source of calories for the elderly because they are simple to digest and ingest. People ought to consume more complex carbohydrates, such as vegetables, fruits, and honey, and less disaccharides, such as maltose and sucrose. Because this type of carbohydrate can increase blood lipid levels, it can result in hyperlipidemia and weight gain. According to research, the proportion of carbohydrates in the total caloric intake of the human body is approximately 60% under normal conditions, and approximately 300 grams of carbohydrates per day is adequate [3].

In addition, elderly individuals should pay attention to the amount of fiber and pectin in their diets, which can stimulate intestinal peristalsis and help prevent senile constipation. In addition to promoting digestion and assimilation of food, dietary fiber also improves intestinal flora. Improve the metabolism of blood lipids and blood sugar and prevent diabetes and cardiovascular disease with soluble fiber.

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### *2.5. Vitamin requirements*

Vitamin E is an antioxidant that plays a significant role in the antioxidant function of the organism. As the antioxidant capacity of the elderly decreases, the risk of noncommunicable chronic diseases rises; therefore, it is essential for the elderly to ingest adequate amounts of antioxidant nutrients in their diet. Vitamin B6 performs a crucial supporting role in the metabolism of certain amino acids and proteins. Since protein synthesis and metabolism are diminished in the elderly, they require more vitamin B6 to metabolize amino acids. Osteochondrosis and osteoporosis are age-related bone diseases that can be easily avoided with a consistent vitamin D intake. Due to the decreased efficacy of vitamin D metabolism in the elderly, the daily intake of vitamin D should be increased to 15 μg, and the daily intake of coarse grains, legumes, milk, fish, fruits, vegetables, and egg yolk should be increased.

### *2.6. Mineral requirements*

Inorganic salts are involved in numerous significant physiological processes in the human body, and the elderly's adequate supply of inorganic salts is crucial to their health and longevity. A daily calcium intake of 1,000 milligrams is sufficient for elderly individuals to maintain bone health. Increasing the consumption of calcium-rich foods, such as milk, soybeans, and tofu, and insisting on spending time in the sun to enhance calcium assimilation are extremely beneficial for preventing osteoporosis. For sodium, excessive sodium intake can cause hypertension and a series of gastrointestinal diseases, particularly in elderly people with poor physical function; therefore, it is necessary to rigorously control sodium intake, typically 5-6g of salt per day and no more than 8g per day. Potassium requirements can be met with a daily supply of 3–5g [4]. Lean meat, legumes, and vegetables are potassium-rich foods. Additionally, certain trace elements, such as zinc and chromium, are essential for normal glucose metabolism.

### *2.7. Water requirements*

The decline of kidney function is a natural aging phenomenon, so urea nitrogen levels in the blood of the elderly are often higher than those of young people. However, many elderly people have urinary poverty and incontinence issues, so they reduce their water intake without realizing that this makes it difficult for the kidneys to eliminate metabolic waste. Constipation is common among the elderly because of a weakened colon, weakened rectal muscles, and a decreased ability to defecate, as well as a decrease in intestinal mucus secretion, a decrease in intracellular fluid, and a decrease in intestinal mass. Therefore, there should be ample water in the diet, and it is generally accepted that the amount of water can be maintained at approximately 2000ml per day. More water should be consumed during the day to aid renal clearance and not interfere with nighttime sleep.

## 3. Effects of nutrition on the health of the elderly

First, there are numerous causes of osteoporosis in the elderly; nutrition is one of the most essential. Due to the elderly's significantly diminished body function, their protein absorption capacity is very poor, resulting in the ineffective formation of organic matter and consequently osteoporosis. In addition, the lack of calcium in the elderly's daily diet is a significant factor contributing to osteoporosis.

Second, Hyperglycemia is a lifelong disease that is likely to develop into diabetes if not adequately treated, and diet and nutrition are also the leading causes of diabetes. The digestive system of elderly individuals deteriorates, and their ability to digest food is very poor. They enjoy eating foods with a high sugar content, but their bodies have a weak ability to digest sugar [5].

Gastric diseases in the elderly concentrate primarily on chronic gastritis and functional dyspepsia in the elderly. Chronic gastritis is one of the most prevalent diseases among the elderly, who frequently exhibit unique characteristics due to their multiple diseases and need to take multiple medications. Their response to disease is delayed than that of younger individuals, and they sometimes do not even realize that their stomachs have become ill [6-7].

Fourth, as people age, they eat less and move less, both of which reduce their digestive ability and increase the likelihood of constipation because food sits in the intestines for too long and too much water

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is absorbed from the food. Furthermore, older people tend to have lower dental retention rates, which encourages them to eat finer, lower-residue foods, which in turn reduces the size of their stools and slows down their gastrointestinal transit. Consequently, regulation of dietary structure is the first-choice treatment for geriatric constipation.

Fifthly, tooth wear, gingival recession, alveolar bone resorption, tooth loosening, disease, and tooth loss in the elderly population are caused by the poor oral hygiene practices of some elderly people when they were young, as well as the loss of calcium and organic matter as they age [8].

## 4. Dietary recommendations for the elderly

### *4.1. Adjusting your eating habits*

For optimal health, older individuals require adequate nutritional support and healthy eating habits. Regarding diet, three meals per day should be reasonable. The timing of the three meals is guaranteed for older individuals, but the quality and quantity of the three meals are difficult to guarantee. Due to the visit of their children, many elderly people prepare a large number of meals, which they do not want to waste, so they always consume excessively. Excess at lunch causes undereating at dinner. Due to the impaired digestive function of the elderly, overeating can easily result in diabetes and other diseases. It is essential for the elderly to consume a sensible diet and rigorously regulate their food intake to avoid overeating.

### *4.2. Controlling the diet structure*

The traditional belief is that meat and certain supplements have high nutritional value and must be supplemented for elderly individuals. With the improvement of people's living standards, an increasing number of individuals believe that the elderly should eat healthier; consequently, they consume a diet high in fat, leading to an increase in blood sugar and blood lipid, which poses a hidden risk for hypertension and heart disease. Similarly, in some areas the salt intake is excessive and the flavor of the food is too strong, which can also contribute to hypertension. It is essential to modify the structure of the diet and plan meals sensibly. We have options such as fish, poultry, and plant-based foods. In the diet, coarse and fine grains must be combined sensibly, high-dietary-fiber foods such as maize and oats may be consumed, and food processing need not be excessively fine to prevent the loss of minerals and vitamins [9]. Reducing fat and sodium consumption can effectively prevent numerous diseases. It is important to supplement the daily diet with vitamins, calcium, iron, zinc, protein, and other nutrients. To supplement various trace elements, consume more soy products, eggs, and milk, as well as more verdant leafy vegetables, fruits, and seafood. Avoid consuming burnt foods on a daily basis. Adjusting the diet to six meals per day with more snacks and other basic foods in between each meal, as well as drinking more water and tea, can prevent constipation [10].

### *4.3. Preventing drug abuse*

The decline in physiological functions of the elderly causes them to experience a great deal of discomfort and necessitates long-term medication. Long-term use of medications can cause toxic adverse effects. The use of medication by older adults should be guided by medical advice; they should not self-medicate or alter the dosage, as this may result in organ harm and malnutrition due to excessive intake [11].

## 5. Conclusion

The health of the elderly is closely tied to daily nutrition, so it is necessary to change unhealthy eating habits, modify the structure of the diet, supplement the necessary nutrients, and ensure that the list of diets is easy to digest. In order to improve their health and effectively prevent the occurrence of a number of diseases, senior citizens must establish health care awareness in their daily lives, actively learn about diet and health, comprehend the role of various nutrients for the body, and maximize their reasonable nutrient intake.

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