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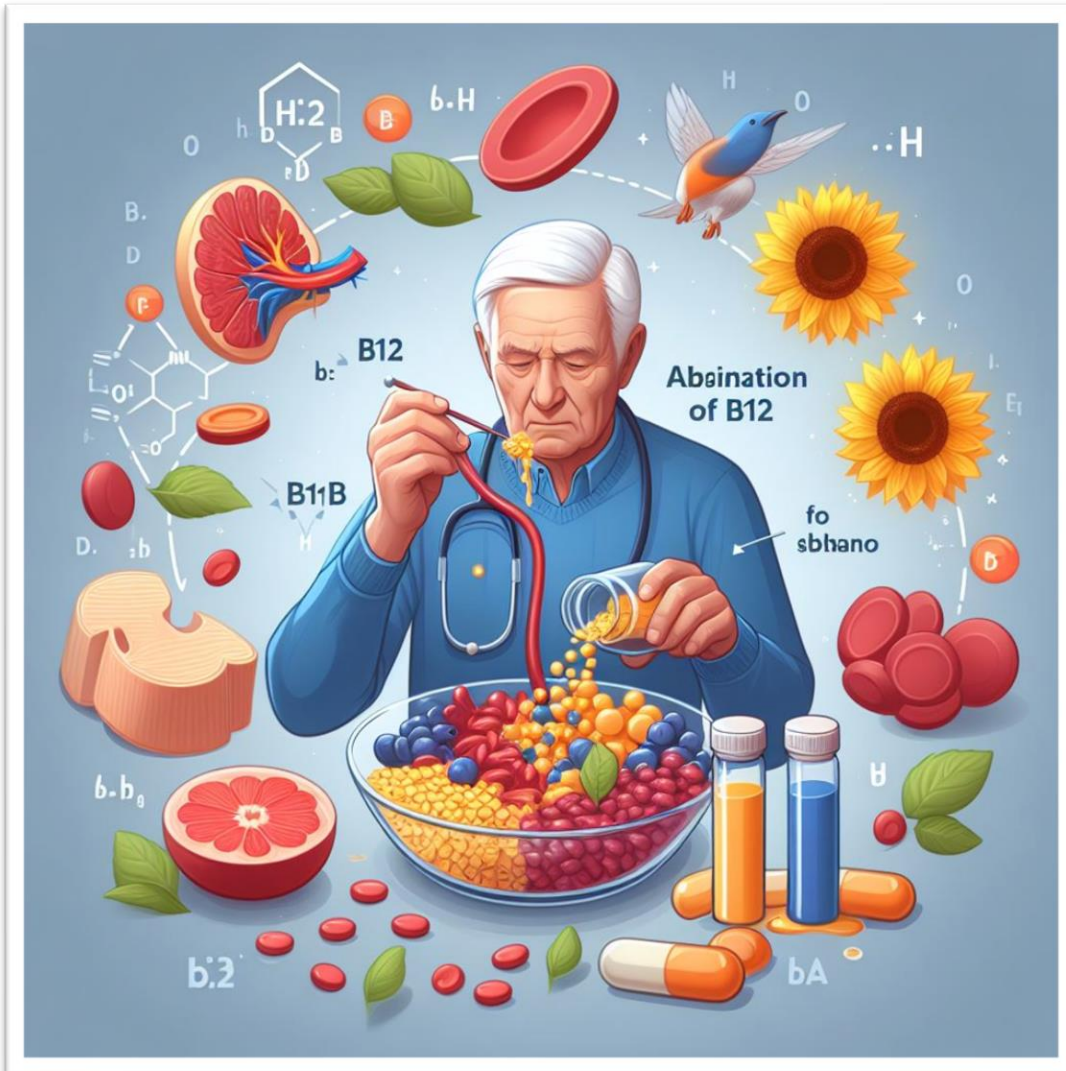


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# Micronutrient considerations

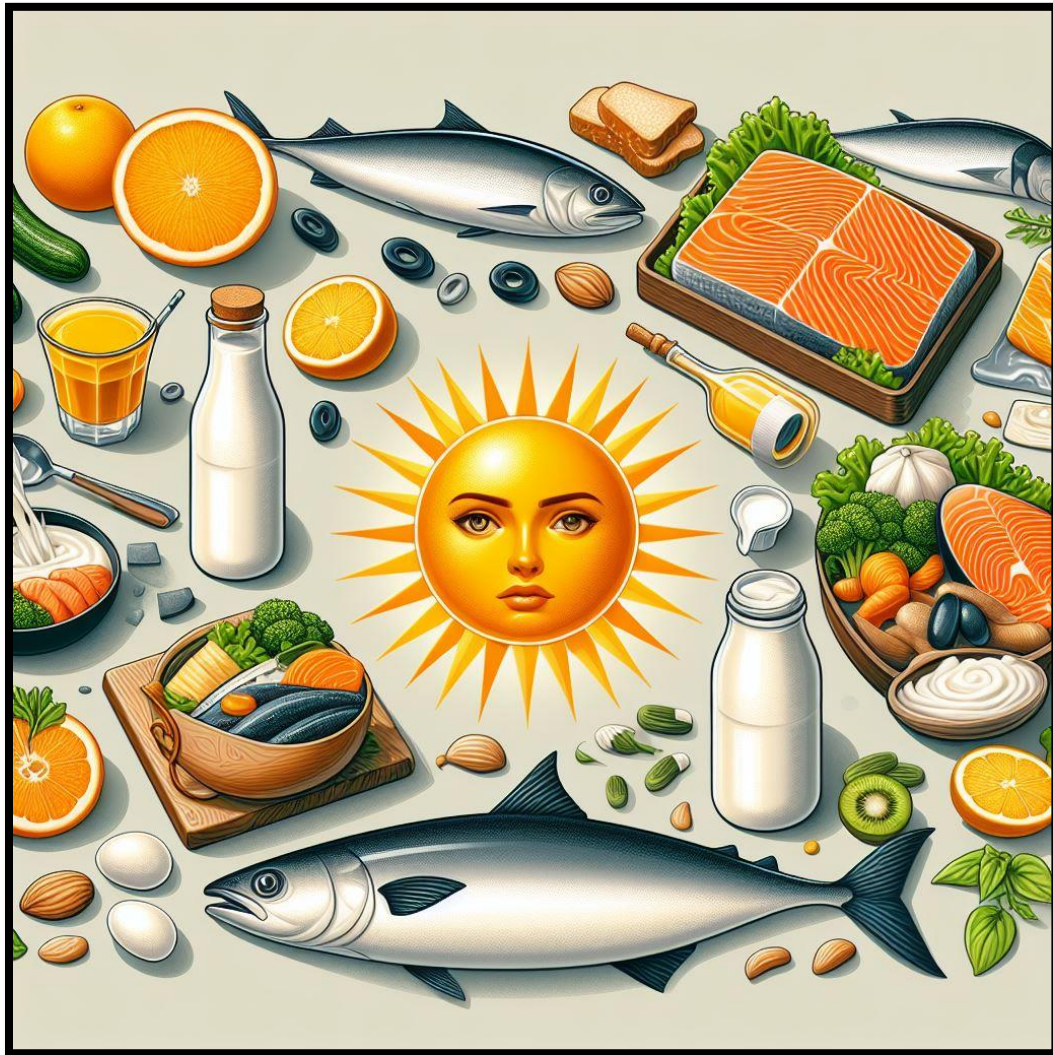
- ✓ Micronutrients play a crucial role in the health and well-being of older adults.
- ✓ As **we age**, our nutritional needs shift. **Metabolism slows down**, reducing the number of calories needed.
- ✓ The need for certain micronutrients increases due to **diminished nutrient absorption** and heightened risk of deficiencies.
- ✓ **Deficiencies in vitamins and minerals** can exacerbate age-related health issues. For example, vitamin D is essential for bone health, and a deficiency is linked to an increased risk of fractures and osteoporosis.

# Micronutrient considerations



- **Vitamin D**, synthesized upon sunlight exposure, is crucial in calcium absorption and bone health. Aging diminishes skin's capacity to produce vitamin D; thereby increasing deficiency risk. Vitamin D insufficiency can lead to osteomalacia or increase susceptibility to fractures.
- **B Vitamins**, particularly B12 and folate, are essential for neurologic function and red blood cell production. Absorption of B12 often decreases with age due to atrophic gastritis, a condition common in elderly, reducing stomach acid secretion necessary for B12 absorption.

# Micronutrient considerations



- Vitamin D can be obtained from sunlight exposure, fortified foods like milk or orange juice, and fatty fish such as salmon, mackerel, and sardines.
- B vitamins are abundant in whole grains, beans, peas, lean meats, eggs, dairy products, and dark leafy vegetables. Vitamin B12 is primarily found in animal products, which might necessitate supplementation for those on a plant-based diet.

# Micronutrient considerations

- **Calcium** is vital for bone health, muscle function and nerve transmission. **Aging increases** the risk of **reduced bone mass** and **fractures**; thus intake of sufficient calcium is crucial.
- **Antioxidants** combat oxidative stress caused by free radicals. The role of antioxidants gains importance with aging as the body's ability **to fight oxidative damage** declines. Vitamins C & E are powerful antioxidants that protect cells from oxidative harm, boosting overall immunity.



# Micronutrient considerations

- Dairy products are the most well-known sources of **calcium**. However, it can also be found in kale, spinach, tofu made with calcium sulfate, and fortified plant-based milks.
- **Antioxidants** (Vitamins C & E): Vitamin C is plentiful in citrus fruits like oranges and grapefruits, strawberries, bell peppers, and broccoli. Vitamin E sources include nuts & seeds, spinach & broccoli, and fortified cereals.



# Micronutrient considerations

**Decreased absorption:** Age-related changes in the gastrointestinal tract, such as reduced stomach acid production, can impair the absorption of certain nutrients like vitamin B12 and calcium.

**Medication interactions:** Certain medications commonly used by older adults, such as proton pump inhibitors or antacids, may further inhibit micronutrient absorption.

**Dietary restrictions:** Elderly individuals might have dietary restrictions due to chronic conditions like diabetes or heart diseases which could limit their intake of nutrient-rich foods.

**Reduced food intake:** Factors like decreased appetite, loss of taste or smell, dental issues or difficulty swallowing can lead to reduced food intake and potential nutritional deficiencies.

# Micronutrient considerations



!!! As health professionals:

- Emphasize the significance of a well-balanced diet rich in vitamins and minerals for promoting overall health in older adults. Adopting a diet rich in fruits, vegetables, whole grains, lean proteins and healthy fats can help ensure a sufficient intake of essential micronutrients. Optimal hydration also facilitates nutrient absorption.

- Be aware of specific micronutrient needs in the elderly and tailor recommendations accordingly. Consider including fortified foods in a diet (cereals fortified with B vitamins or milk fortified with vitamin D and etc.).

# Micronutrient considerations

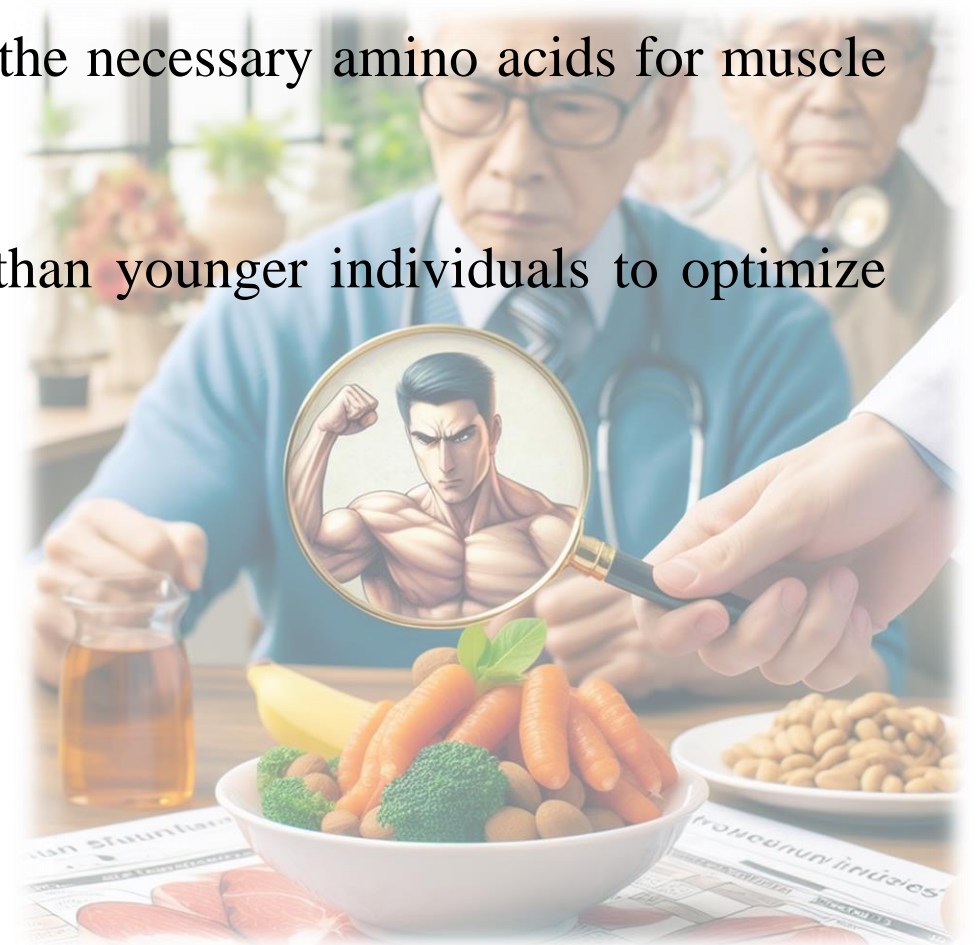


Nutraceuticals like omega-3 fatty acids (cardiovascular health), probiotics (gut health), or antioxidant-rich green tea extract can be integrated in dietary plans for the elderly. They offer targeted benefits alongside a balanced diet but should be used judiciously under professional guidance to avoid potential side effects or interactions.

# Protein intake for muscle health

- ✓ Maintaining muscle mass is vital for older adults to support mobility and prevent frailty.
- ✓ Adequate protein intake is essential as it provides the necessary amino acids for muscle protein synthesis.
- ✓ Older adults may require more protein per meal than younger individuals to optimize muscle health.

*Studies suggest that a higher protein intake in older adults is associated with better muscle function and reduced risk of sarcopenia.*



# Protein intake for muscle health

While individual needs vary, it is generally recommended that older adults consume 1.0 to 1.2 grams of protein per kilogram of body weight each day, spread evenly across meals.

Even distribution of protein intake across breakfast, lunch and dinner can enhance its use in the body. Consuming protein around physical activity can also optimize muscle repair and growth.

Protein metabolism requires adequate hydration. Ensure sufficient water intake when increasing dietary protein.

# Hydration and its importance

Dehydration is a common issue among older adults and can lead to serious health issues including urinary tract infections, kidney stones, constipation, and even increased risk of falls due to dizziness or disorientation. Chronic dehydration may also exacerbate chronic illnesses such as diabetes or heart disease. Aging can reduce the sensation of thirst, making it crucial for older adults to consciously maintain adequate fluid intake.

*About 20% of adults over 70 years old do not drink enough fluids daily.*



# Hydration and its importance

Age-related changes can increase the risk of dehydration in older adults. For instance, kidney function declines naturally with age, reducing the ability to concentrate urine and retain water. Reduced thirst sensation is another factor that might contribute to inadequate fluid intake.

Diuretics, laxatives, certain antihypertensives and psychotropic drugs can enhance fluid loss, necessitating careful monitoring of hydration status.

# Hydration and its importance

## Strategies for maintaining hydration:

- ✓ Regular monitoring can help prevent dehydration. Indicators include urine colour (light-coloured urine typically indicates good hydration), frequency of urination and rapid weight changes. If an elderly experiences persistent thirst, dry mouth or fatigue despite adequate fluid intake, medical advice should be sought as these could be signs of underlying issues.
- ✓ Encouraging regular fluid consumption throughout the day instead of large amounts at once.
- ✓ Options other than plain water - like soups, broths, fruit juices, milk or herbal tea - can also contribute towards daily fluid intake.

# Fiber and its role in digestive health



Aging is often associated with changes in the gastrointestinal system, including slowed motility, which can lead to constipation or other digestive issues.

A high-fiber diet can help manage or prevent certain health issues that are common in older adults such as constipation, diverticular disease, and heart disease.

Fiber can contribute to feeling full longer, helping to maintain a healthy weight.

# Fiber and its role in digestive health



Constipation is a common issue among seniors. A diet rich in insoluble fiber can enhance intestinal transit time and stool frequency, improving this condition. Foods high in insoluble fiber include whole grains, certain vegetables like carrots and broccoli, and fruit skins.

A high-fiber diet can help prevent diverticulosis - a condition characterized by small pouches (diverticula) along the digestive tract. High-fiber foods reduce pressure and inflammation in the colon, decreasing the risk of diverticula formation.

# Fiber and its role in digestive health

- ✓ With age, diversity of gut microbiota decreases. Consuming varied dietary fibers can promote diverse beneficial gut bacteria, which contribute to overall health beyond just the digestive system.
- ✓ Elderly individuals should increase their fiber intake gradually to minimize gastrointestinal discomfort like gas or bloating. Drinking plenty of fluids is essential when consuming more fiber to prevent it from slowing down digestion further.



# Specific dietary recommendations

A well-balanced diet can help manage chronic conditions, improve overall health and boost energy levels.

## Energy requirements:

Due to decreased physical activity and metabolic rate in the elderly, energy requirements are lower. However, nutrient requirements remain unchanged or may increase, necessitating nutrient-dense foods over empty-calorie foods.



# Specific dietary recommendations

## Macronutrients:

Protein requirements may be higher (up to 1-1.2g per kg body weight) to counteract sarcopenia (muscle loss). Carbohydrate intake should focus on complex carbs like whole grains, while fat intake should prioritize unsaturated fats from sources like fish, avocado and olive oil.

## Micronutrients:

Vitamin B12 absorption decreases with age due to atrophic gastritis - fortified cereals or B12 supplementation may be needed. Calcium and Vitamin D are essential for bone health; dairy products and fatty fish are good sources. Adequate potassium (fruits, vegetables) and reduced sodium can help maintain healthy blood pressure.



# Specific dietary recommendations

Age-related changes such as slower metabolism, reduced physical activity, and altered taste or smell can impact the nutritional needs of the elderly. Dietary strategies like portion control, increasing nutrient-dense foods, and enhancing flavors with herbs/spices can address these changes.



# Specific dietary recommendations

## Hydration:

Elderly individuals often experience decreased thirst sensation leading to inadequate fluid intake. Encourage regular consumption of water and other hydrating fluids like herbal teas or broths.

## Dietary considerations:

Chewing or swallowing difficulties may require modifications like softer foods or smaller, more frequent meals. A heart patient would need low-sodium meals. Polypharmacy can influence nutrition by affecting appetite or nutrient absorption - medication review is necessary in managing a patient's diet.



# Specific dietary recommendations

Different cultures have unique dietary practices influenced by religion, tradition, and regional availability of food. Health professionals should strive to understand these practices to offer respectful, personalized advice.

1. Learn about the common foods, meal patterns, and health beliefs in your patient's/client's culture.
2. Adapt dietary recommendations to be culturally appropriate. Suggest healthier options within their traditional diets instead of insisting on entirely new foods or meals.
3. Engage patients/clients in setting achievable dietary goals that respect their cultural preferences. This collaborative approach can lead to higher commitment and adherence rates.

# Specific dietary recommendations

Cultural sensitivity is important in creating effective dietary plans for elderly individuals. Understanding traditional food practices allows tailoring recommendations that respect cultural preferences while meeting nutritional needs. For example, recommending steamed dumplings filled with vegetables for an Asian elderly instead of a Western-style salad.

Interdisciplinary collaboration among healthcare professionals like doctors, dietitians, nurses, and pharmacists can enhance nutritional care provided to the elderly. Each brings unique expertise to manage complex issues like polypharmacy-nutrient interactions, meal planning for comorbid conditions, or addressing swallowing difficulties.

# Individualized dietary plans

## Example 1 - Heart health protection:

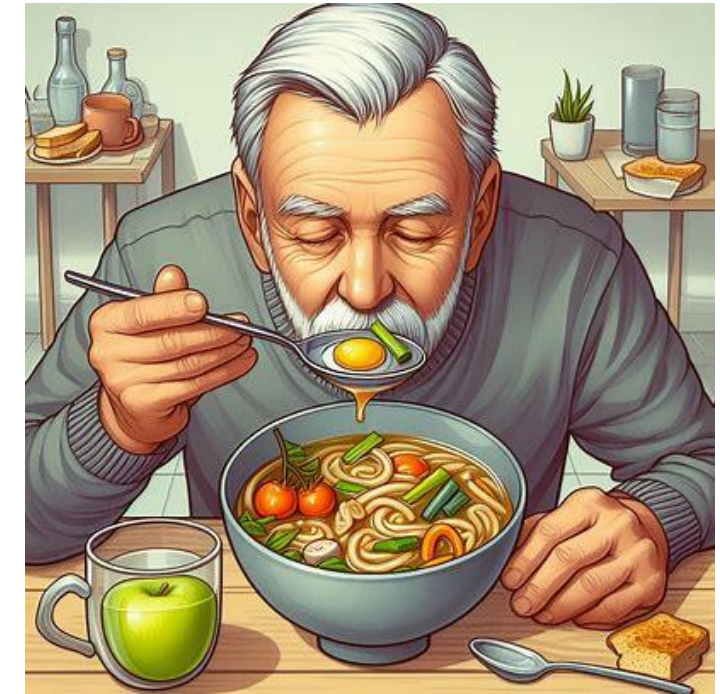
Considering the high-fat content in some traditional Central Asian cuisine, modifications may be needed for heart health.

**Breakfast:** Whole grain bread with light cheese and cucumber slices.

**Lunch:** Lagman soup (made with lean beef, whole wheat noodles and various vegetables).

**Dinner:** Grilled fish served with quinoa salad.

!!! Opt for baking or grilling methods over frying and prioritize lean meats.



*Sensory alterations in the elderly like diminished taste/smell can reduce appetite and affect nutritional intake. Strategies to address this include flavor enhancement (using spices/herbs), varied textures/colors in meals to stimulate visual appeal, and regular oral health checkups to rule out dental problems affecting taste.*

# Individualized dietary plans

## Example 2 - Improving heart health:

For an elderly person with heart disease, a low-sodium diet rich in fruits, vegetables, lean proteins, and whole grains can help manage blood pressure and cholesterol levels.

A sample plan could be:

**Breakfast:** Avocado toast on whole-grain bread.

**Lunch:** Baked turkey breast with sweet potatoes and green beans.

**Dinner:** Grilled fish with a side salad.

!!!Include omega-3 fatty acids from fish or flaxseeds for inflammation reduction.



# Individualized dietary plans

## Example 3 - General health maintenance:

For healthy Central Asian elderly, the dietary plan should incorporate traditional foods while ensuring balanced nutrition.

**Breakfast:** A bowl of hot Muesli (whole grains, nuts, dried fruits) with yogurt.

**Lunch:** Shorpo (traditional soup with lean meat and vegetables).

**Dinner:** Plov (rice dish cooked with carrots, onions, and lean meat like chicken).

Snacks can include fresh fruits, nuts, or a small portion of dairy products like fermented mare's milk known as 'kumis'.



# Individualized dietary plans

## Example 4 - Bone health maintenance:

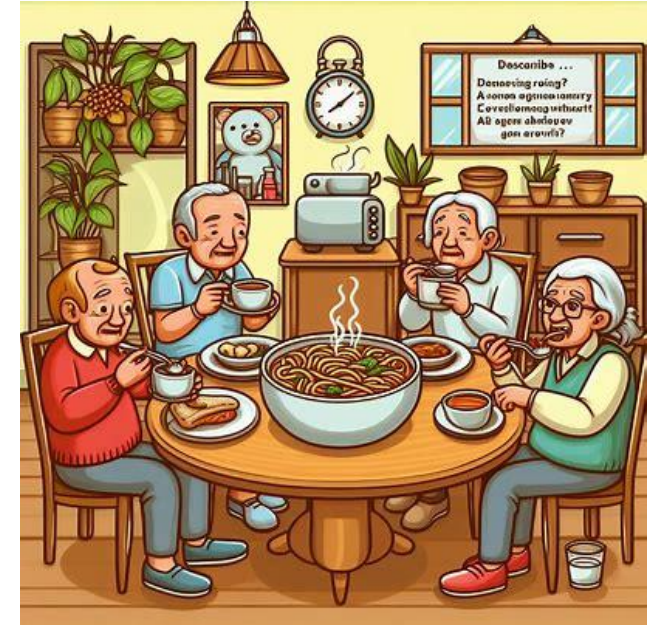
For healthy Central Asian elderly, the dietary plan should incorporate traditional foods while ensuring balanced nutrition.

**Breakfast:** Homemade yogurt served with budget-friendly seasonal fruits.

**Lunch:** Lentil soup (lentils are high in protein) paired with a spinach salad.

**Dinner:** Sardines with a side of boiled potatoes.

Canned fish like sardines or salmon can be cheaper alternatives to fresh fish but still provide essential nutrients like Vitamin D and calcium.



# Assignment: core open-ended questions to answer

1. How do age-related changes impact the nutritional needs of the elderly, and how can dietary strategies address these changes?
2. In what ways does cultural sensitivity play a role in creating effective dietary plans for elderly individuals? Can you provide examples?
3. How can interdisciplinary collaboration among healthcare professionals enhance the nutritional care provided to the elderly?
4. Discuss the challenges associated with sensory alterations in the elderly and propose strategies to address them in dietary planning.
5. Explore the role of technology in nutritional education for the elderly. How can technological tools contribute to better dietary habits?
6. What are the key components of a balanced diet tailored for the elderly, and how do they contribute to overall health and well-being?
7. How would you adapt a meal plan for an elderly individual with specific health conditions, considering nutritional requirements and potential challenges?
8. In your opinion, why is it important to involve elderly individuals in the decision-making process regarding their dietary choices? How can this empowerment be achieved?
9. Discuss the psychological impact of dietary changes on the elderly. How might emotional well-being influence adherence to dietary recommendations?
10. Explore the integration of nutraceuticals in dietary plans for the elderly. Can you provide examples of bioactive compounds or supplements that are beneficial?



# References



## TOPIC 4

### Strategy and tactics of healthy diet for elderly. Guidance and recommendations.

#### Materials:

1. **Chapter 2**: Achieving a Healthy Diet. <https://2012books.lardbucket.org/books/an-introduction-to-nutrition/>
2. **Article 1**: Roberts et al., 2021. Healthy Aging - Nutrition Matters: Start Early and Screen Often Advances in Nutrition, 12 (4) (2021), pp. 1438-1448, 10.1093/ADVANCES/NMAB032

**Article 2**: O' Mahony et al., A qualitative study of older adults' and healthcare professionals' perspectives on the potential of functional food products to support healthy ageing, Journal of Functional Foods, Volume 107, 2023, <https://doi.org/10.1016/j.jff.2023.105689>.

**Article 3**: Meeting Dietary Guidelines Recommendations: Older Adults What We Eat in America, NHANES 2013-2016. [https://www.ars.usda.gov/ARUserFiles/80400530/pdf/DBrief/28\\_Meeting\\_Dietary\\_Guidelines\\_Recommendations\\_Older\\_Adults\\_1316.pdf](https://www.ars.usda.gov/ARUserFiles/80400530/pdf/DBrief/28_Meeting_Dietary_Guidelines_Recommendations_Older_Adults_1316.pdf)

3. **Useful source**: Nutrition Guideline. Seniors Health overview. [https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary\\_Guidelines\\_for\\_Americans\\_2020-2025.pdf](https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf)

4. **Video 1**: Dietary Guidelines for Older Adults. <https://www.youtube.com/watch?v=gFM1hJkrMsQ&t=1s>

**Video 2**: Dietary Strategies to Augment Muscle Mass in the Elderly. <https://www.youtube.com/watch?v=kdVmMjrVc08>

# THANK YOU!!!

