

# A review of Nutritional Assessment, Strategies for Malnutrition Screening and Diet Therapy in Advanced Age Population

Vladimir Andreevski, Gregor Krstevski  
University Clinic of Gastroenterohepatology, Medical Faculty, Ss. Cyril and Methodius University  
Boulevard Mother Teresa 17, 1000 Skopje, Macedonia

## OVERVIEW

- Nutritional status of an individual is affected by genetic and environmental factors, access to nutrients, personal preferences, nutritional awareness, comorbidities and daily habits.<sup>1</sup>
- The number of individuals aged over 65 is increasing globally.<sup>1</sup> This review will look at strategies for nutritional screening and diet therapy in the elderly, taking into account phenomena that influence nutrition and commonly affect this age group.

## KEY FACTS

- The Academy of Nutrition and Dietetics and the American Society for Parenteral and Enteral Nutrition (ASPEN) recommend a standardized set of diagnostic characteristics to identify adult malnutrition:
  - Reduced energy intake.
  - Weight loss.
  - Loss of muscle mass.
  - Loss of subcutaneous fat.
  - Decreased functional status assessed by strength of a handshake.<sup>2</sup>
- Weight loss should be considered clinically significant as follows:
  - ≥ 2% reduction in body weight in 1 month,
  - ≥ 5% reduction in 3 months,
  - ≥ 10% in 6 months
- Serum visceral proteins (albumin, transthyretin/prealbumin, transferrin, and retinol binding protein) are biochemical markers of malnutrition given the absence of inflammation and kidney and liver disease. Other markers include urinary creatinine, urinary 3-methylhistidine, serum cholesterol and IGF-1.<sup>3</sup>
- Involuntary loss of 5-10% of body weight or more within one year is associated with an increased risk of mortality, and warrants investigation.<sup>4</sup>
- Involuntary weight loss is a consequence of the following:
  - Improper diet - loss of appetite (anorexia)
  - Muscle atrophy (sarcopenia)
  - Inflammatory effects of some diseases (cachexia)<sup>5</sup>
- Anatomical and physiological changes of the digestive system include bad teeth, gingival problems, decreased salivary secretion, impaired taste, smell and sight, impaired esophageal and intestinal motility, reduced gastric juice secretion and delayed gastric emptying, and changes to regulatory hormones.<sup>6</sup>
- Inactivity accelerates loss of lean muscle mass.<sup>7</sup> Physiological and body composition changes include an increased fat to muscle ratio, a decrease in body proteins, and an impaired immune response.<sup>8</sup>
- Cardio and cerebrovascular disease, chronic degenerative conditions, dysphagia, neurological disease, dementia, malignancy and depression negatively affect nutrition.<sup>9</sup>

**Table 1. Equations for calculating caloric needs recommended by the Institute of Medicine and the US National Academy of Nutrition**

Gender	Equations
Women	$354.1 - (6.91 \times \text{age [years]}) + \text{CFA} \times (9.36 \times \text{body weight [kg]} + 726 \times \text{height [m]})$
Men	$661.8 (9.53 \times \text{age [years]}) + \text{CFA} \times (15.91 \times \text{body weight [kg]} + 539.6 \times \text{height [m]})$

\* CFA - Coefficient of physical activity

## PRINCIPLES OF DIET THERAPY

- Requirements should be tailored to gender, body weight and physical activity.<sup>10</sup>
- Daily requirements are: energy needs 25 – 35 kcal/kg body weight; protein 0.8 - 1.0 g/kg body weight; dietary fibre 25 - 30 g/day; fluids 1.6L in females and 2L in males.<sup>10</sup>
- Micronutrients and minerals that should be supplemented are: vitamin D (at least 10-15 mcg/day), vitamin B12, calcium (1200mg/day) and iron (8mg/day).
- Fat requirements do not change with age.<sup>10</sup>

**Table 2. Distribution values of the coefficient of physical activity**

Activity of the person	Value of the CFA
Inactive person	1.0
Slightly active person	1.12
Active person	1.27
Very active person	1.45

- Low intake dehydration can be detected via a measured osmolality of 300mOsm/kg or a calculated osmolality of 295mmol/L.
- Snacking between meals should be encouraged.
- High quality animal and vegetable proteins are preferable.<sup>10</sup>

## OTHER CONSIDERATIONS

- Involuntary weight loss and anaemia should prompt further investigation.
- Soft, grated and mashed food is best for chewing and swallowing difficulties.
- Companionship during meals has a significantly favourable effect.
- Socioeconomic status must be taken into consideration.
- Fecal and urinary incontinence can spark a fear that leads to reduced eating.
- Enteral feeding should be considered if oral feeding is insufficient.
- Parenteral feeding should be considered if enteral feeding is insufficient.
- Gastrostomy should be considered if feeding is required on a longer term.<sup>10</sup>

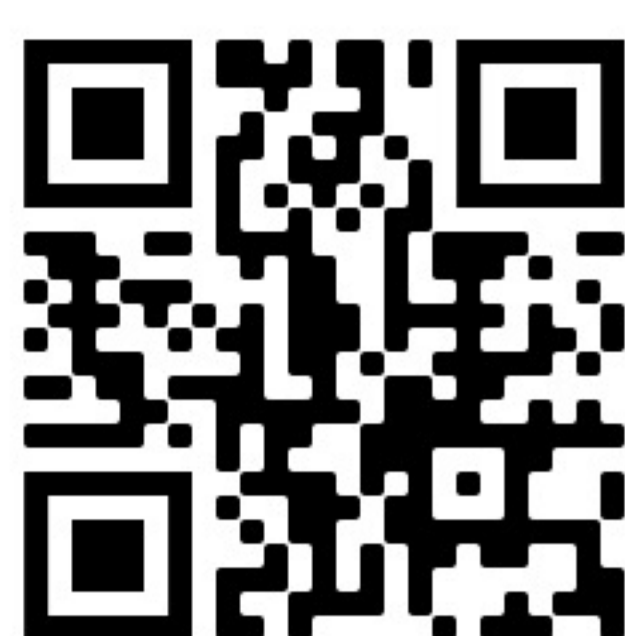


## CONCLUSIONS

- Focused nutritional assessment can aid in timely detection of malnutrition and its constituent components, which include anorexia, cachexia and sarcopenia. This also provides the opportunity to identify underlying malignancy, and systemic and psychiatric conditions.
- Diet therapy can then be tailored to accommodate for these conditions and to the changes known to occur in the elderly, potentially mitigating malnutrition and reducing mortality risk.

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# Food Quality and Safety, Health and Nutrition

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## BOOK OF NUTRICON 2021 ABSTRACTS



# NUTRITION IN ADVANCED AGE POPULATION

Vladimir Andreevski<sup>1</sup>, Gregor Krstevski<sup>1</sup>

<sup>1</sup>University Clinic of Gastroenterohepatology,  
Medical Faculty, Ss. "Cyril and Methodius" University,  
Boulevard Mother Teresa 17, 1000 Skopje, Macedonia

e-mail: banebumbar\_med@hotmail.com

## Abstract

Nutritional status of an individual is affected by genetic and environmental factors, access to nutrients, personal preferences, nutritional awareness, comorbidities and daily habits. The number of individuals aged over 65 is increasing globally. This review will look at strategies for nutritional screening and diet therapy in the elderly, taking into account phenomena that influence nutrition and commonly affect this age group.

Malnutrition can be assessed via criteria that account for loss of weight, muscle and subcutaneous fat, in combination with decreased energy intake and functional status. Malnutrition and involuntary weight loss are associated with an increased mortality risk, while some studies show that voluntary weight loss reduces this risk. Malnutrition leads to a plethora of negative outcomes, and may signal dire underlying disease such as malignancy. Factors that predispose to malnutrition in the elderly include: anatomical and physiological changes of the gastrointestinal tract, endocrine system and body composition, and impairment of sight, smell and taste. Concomitant illnesses affecting the heart, lungs, liver and kidneys, and depression and dementia also negatively impact nutrition, while socio-economic changes interfere with access to food. Once identified, malnutrition can be mitigated via diet therapy which aims to tailor nutrition to the aforementioned changes, compensate any deficiencies and prevent future recurrence. Special attention should be paid to caloric, protein and fat requirements and diet supplementation with vitamin D, B12, iron and calcium.

Focused nutritional assessment can aid in timely detection of malnutrition and its constituent components, which include anorexia, cachexia and sarcopenia. This also provides the opportunity to identify underlying malignancy, and systemic and psychiatric conditions. Diet therapy can then be tailored to accommodate for these conditions and to the changes known to occur in the elderly, potentially mitigating malnutrition and reducing mortality risk.

**Key words:** *Nutrition, Elderly people, Diet therapy.*



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# ORAL AND POSTER PROGRAM

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