

Practical Identification and Treatment of Micronutrient Deficiency in the Older Adult

An individual approach



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About the author: Natalie Harrison is a Consultant Dietitian with 26 years of NHS experience across multiple clinical specialities in both acute and community settings. She has a particular passion around interpreting guidelines and research for use in the practical situations encountered by dietitians in their clinical practice.

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In 2024, the Malnutrition Task Force estimated that one in ten people over 65 in the UK, around 1.3 million individuals, are at risk of, or are already experiencing, malnutrition.¹ While protein-energy undernutrition is widely recognised, micronutrient deficiency, or 'hidden hunger', is often overlooked. Malnutrition and micronutrient deficiencies represent significant concerns in older adults, leading to adverse health outcomes.²

Introduction

Micronutrients are essential vitamins and minerals required in small amounts to maintain physiological function and health. Adequate dietary micronutrient intake is essential for healthy ageing, with deficiencies increasing the risk of dysfunction across multiple physiological systems. Calcium, vitamin D, magnesium and potassium are integral to bone health, while insufficient chromium, selenium and zinc are associated with greater risk of cardiovascular disease and impaired immune function.³⁻⁵ Iron is critical for maintaining physical performance, with low intakes reducing capacity for work and activities, and potentially increasing dementia risk.⁶⁻⁷

Impairments caused by micronutrient deficiencies may be initially difficult to recognise but can progress to have a significant impact on health and wellbeing.⁸ These deficiencies can arise from multifactorial causes, including inadequate dietary intake, malabsorption, chronic disease affecting nutrient metabolism, polypharmacy and drug-nutrient interactions, all of which are particularly relevant in older adults.⁹

For dietitians, recognising the multifactorial causes of deficiency and knowing how to assess and address these issues is essential to effective practice. This article highlights current evidence and practical considerations to support you in optimising micronutrient status among older adults.

Defining 'older adult' and population trends

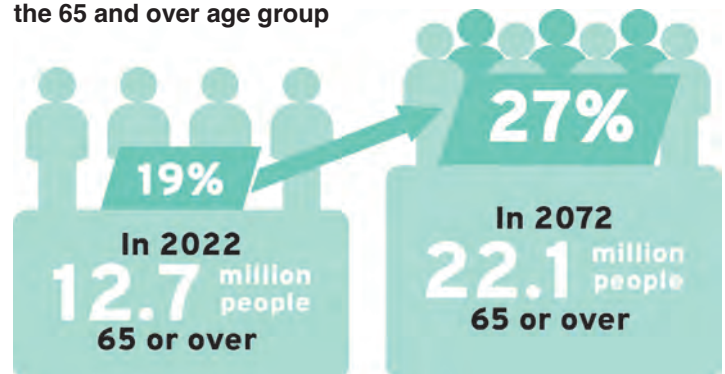
The terms 'older adult' and 'elderly' are often used interchangeably in the literature. However, the British Geriatric Association recommends 'older adult' as a more respectful and person-centred term which avoids generalisations and promotes individualised care.¹⁰

Generally, people aged 65 and over are considered 'older adults'. Yet chronological and biological ageing can differ substantially depending on health and social factors, making this group highly diverse.¹¹ As a result, applying a one-size-fits-all approach is rarely appropriate.

In any case, the UK's population is ageing rapidly: in 2022, approximately 12.7 million people were aged 65 or over (19% of the population), with projections suggesting this will rise to 22.1 million (27%) by 2072.¹²

As more people live longer, the challenge of preventing and managing micronutrient deficiencies will only grow. Proactively identifying and addressing these deficiencies can have a profound impact on health, independence and quality of life, making practical expertise in this area increasingly important for effective nutritional care.

Figure 1: Percentage population at risk of malnutrition in the 65 and over age group



Gaps in the evidence on micronutrient requirements for older adults

The 1992 UK Committee on Medical Aspects of Food and Nutrition Policy (COMA) report, *The Nutrition of Elderly People*, highlighted the need for further research to accurately determine protein and micronutrient requirements in older adults.¹³ It appears that no comparable review has been published since, leaving few robust, age-specific guidelines for UK adults aged 65 and over.¹⁴ This gap makes it challenging to provide tailored nutritional advice, especially given the wide variation in health and social circumstances within this population group.

A recent literature review identified evidence supporting age-specific UK recommendations for adults aged 65 and over for protein (1.2 g/kg/day), calcium (1000 mg/day), folate (400 µg/day), vitamin B12 (2.4 µg/day), and fluid (1.6 L/day for women, 2.0 L/day for men). However, little evidence was found to support recommendations for other nutrients.¹⁴

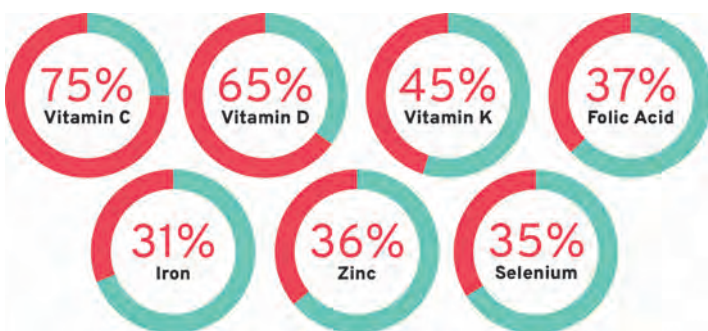
The authors conclude that significant gaps remain in nutrition research for older adults, underscoring the need for further evidence to guide tailored dietary advice for this population.¹⁴

Incidence of micronutrient deficiency in older adults

Despite a lack of cohort-specific recommendations, micronutrient deficiencies are common among older adults. The UK National Diet and Nutrition Survey (2016–2019) reports widespread inadequacies in vitamin D, folate, calcium and iron intake in this population.¹⁵

A recent review of older hospital inpatients found that 90% of patients had deficiencies in three or more micronutrients, and all patients presented with at least one deficiency. The most common deficiencies were in vitamin C (75%), vitamin D (65%), vitamin K (45%), folic acid (37%), iron (31%), zinc (36%) and selenium (35%).²

Figure 2: Prevalence of micronutrient deficiencies in older hospital inpatients²



Malnutrition remains highly prevalent in older adults and places a substantial burden on health and care systems.¹⁶ Because micronutrient deficiencies often accompany or contribute to malnutrition and may go undetected, the true incidence is likely underestimated.

Based on the author's experience, both overt and subclinical deficiencies, as well as their underlying causes, should be considered during nutritional assessment to inform effective prevention and management.

Multifactorial causes of micronutrient deficiency in older adults

Micronutrient deficiency in older adults is complex, with overlapping physiological, practical and social causes. Understanding these risk factors is essential for dietitians aiming to identify and address malnutrition in this group.¹⁷

Physiological factors: Ageing is associated with reduced appetite, diminished thirst sensation and changes in gastrointestinal function. Symptoms such as dysphagia, oral health issues, altered taste and constipation can further limit food variety and intake. Cognitive impairment and neurological disorders may also disrupt eating patterns and food choices.¹⁸

Polypharmacy: The use of multiple medications is common in older adults. Drug–nutrient interactions, as well as the physical burden of taking several medicines, can reduce appetite and interfere with nutrient absorption and metabolism, increasing the risk of deficiency.⁹

Reduced appetite and eating patterns: Appetite and overall food intake often decline with age. This can result in smaller portions and a shift towards snacks or light meals that are typically low in micronutrients, the so-called 'soup or cup of tea and biscuit diet'.¹⁸

Practical barriers to food preparation: Physical limitations, fatigue, or concerns about safety can make shopping for and preparing food challenging.¹⁸ In the author's experience, many older adults find that standing for prolonged periods or using ovens and other kitchen appliances can feel too demanding or unsafe. These challenges often lead to increased reliance on pre-prepared meals or meal delivery services, where convenience may be prioritised over nutritional value.

Food environment and ready meal consumption: Older adults are significant consumers of commercially prepared foods, including supermarket ready meals, home deliveries and institutional catering.¹⁹ Around 405,000 older people in the UK live in residential or nursing homes, where meals are predominantly provided by such services. The micronutrient content of these foods is not always regulated, highlighting the need for dietetic oversight in menu planning and food policy.¹⁹

Social isolation and loneliness: Globally, up to 50% of people over 60 are at risk of social isolation, and about one-third experience loneliness in later life. In the UK, over one million older people are chronically lonely. Factors include widowhood, bereavement, poor mobility, lower income and retirement. The COVID-19 pandemic further intensified these risks by reducing access to community support, social contact and shared eating opportunities, such as lunch clubs, day centres and community gatherings.²⁰

More broadly, social isolation can lead to fewer shared meals and less exposure to dietary advice or encouragement, reducing dietary variety and quality.

The challenges of identifying micronutrient deficiencies

As with all forms of malnutrition, early identification and intervention is essential. The Department of Health and Social Care states that the majority of nutrient requirements should be met when following a varied and balanced diet, apart from vitamin D where routine supplementation of 10 µg is recommended for people at risk, including older adults.²¹ However, there are currently no routine or validated screening tools specifically for micronutrient deficiency in older adults.

Existing approaches, such as the Global Leadership Initiative on Malnutrition (GLIM) criteria,²² which, based on the author's experience, are not routinely implemented in UK practice, and the 'Malnutrition Universal Screening Tool' ('MUST'),²³ primarily focus on general malnutrition and weight status, making them unlikely to detect micronutrient insufficiencies in this population.

While many studies have investigated the impact of macronutrient (e.g. protein) intake on frailty, fewer have explored associations between frailty and circulating micronutrient levels such as B12, folate and vitamin D.²⁴

Confirmation of specific deficiencies relies on blood testing, which can be costly, complex and dependent on patient access, and is not routinely performed in the author's experience. Therefore, symptoms may need to become severe before deficiencies are suspected. This highlights a significant gap in practice and underscores the need for increased awareness and more comprehensive assessment strategies to better identify micronutrient deficiencies in older adults. Including targeted questions and symptom review in your own assessment can help identify those at risk and support more effective, personalised nutrition care.

Insights from dietetic practice in supporting micronutrient health in older adults

As part of a holistic assessment of an older adult's nutritional status and needs, I consider social and environmental factors, overall diet quality and variety, macronutrient and fluid intake, and any indications of specific micronutrient deficiencies.

For example, patients with poor appetite and early satiety are often encouraged to prioritise energy-dense foods over bulkier, lower-calorie options like fruits and vegetables. While this helps meet calorie needs, it increases the risk of micronutrient deficiencies if alternative sources are not included. Frequently, meals are replaced with low-nutrient snacks, which may supply calories and macronutrients, but are often poor sources of essential vitamins and minerals.

Certain signs and symptoms, such as impaired skin integrity, pressure sores or wounds (which may increase vitamin C and zinc requirements),²⁵ and oral health issues including glossitis, sore gums, angular stomatitis and taste changes, direct my attention to potential micronutrient gaps.

Older adults at risk of malnutrition may already be prescribed oral nutritional supplements. While these can address some deficiencies, it is important to consider if the amounts taken are sufficient to meet micronutrient needs; some may require additional vitamin or mineral supplementation if they cannot tolerate 'nutritionally complete' doses.

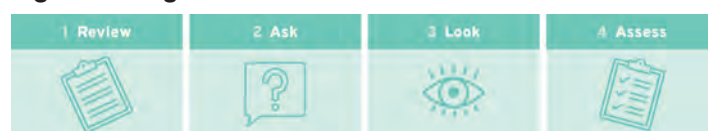
In my clinical experience, addressing micronutrient deficiencies has led to improvements in these symptoms, enhanced wellbeing and better appetite, often resulting in greater enjoyment and ability to eat. Given the low cost and minimal risk of intervention, I maintain a low threshold for starting vitamin or mineral supplementation in such cases. Naturally, it is important to review other prescribed and non-prescribed medications and consult with a pharmacist or GP to ensure safety and minimise drug–nutrient interactions before introducing new supplements.

Seeing tangible improvements in patients' health and wellbeing after addressing micronutrient deficiencies is a powerful reminder of the important role that personalised nutrition care plays in older adulthood.

Take-home messages and a checklist for practice

Older adults are a diverse group with varying nutritional needs and are at high risk of malnutrition, including micronutrient deficiencies. Current screening methods may overlook these deficiencies, so it is essential to integrate targeted assessment into routine practice.

Figure 3: Targeted assessment



In practice, dietitians can:

- 1. Review** dietary variety and patterns (e.g. reliance on ready meals, monotonous diets, reduced intake of fruits/vegetables).
- 2. Ask** about difficulties with food shopping, preparation, chewing, swallowing, or recent appetite changes.
- 3. Look** for 'red flag' symptoms, such as unexplained fatigue, poor wound healing, cognitive changes, glossitis and angular stomatitis.
- 4. Assess** the use and adequacy of oral nutritional supplements and consider the need for additional micronutrient support.

Awareness of subtle clinical indicators and adapting nutrition care to individual needs, including food-first strategies, supplements, or tailored interventions, will help ensure optimal nutritional status and quality of life for older adults.

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Vitamin A (as 8-Carotene); Vitamin B1; Vitamin B2; Vitamin B6; Vitamin B12; Vitamin C; Calcium; Chromium; Copper; Vitamin D2; d-Biotin; Vitamin E; Folic Acid; Iodine; Iron; Magnesium; Manganese; Molybdenum; Nicotinamide; Pantothenic Acid; Phosphorus; Potassium; Selenium; Zinc.