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Nutritional management for people living with obesity:

Information for primary care professionals on micronutrient considerations including during weight-loss interventions

Introduction

Obesity is a complex global health condition linked to reduced life expectancy and increased risk of chronic diseases such as cardiovascular disease, type 2 diabetes and some cancers.[1,2] In the UK, one in three people now live with obesity, contributing to an estimated annual cost of over £11.4 billion to the NHS and a wider societal annual cost of £74.3 billion.[2]

Obesity in England[3,4]

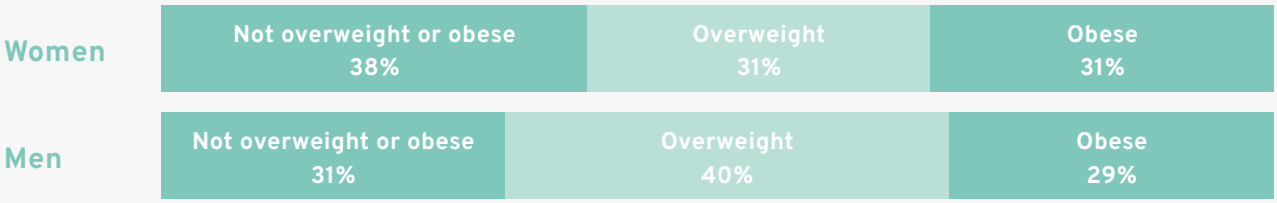


Figure 1: Health Survey for England 2024 Data Tables. Table 3 Adult and Child Overweight and Obesity Tables. % per BMI category of Men and Women in England over age 16, 2024. n=6,432.

Whilst the clinical focus on obesity usually centres on weight reduction strategies and helps to reduce the risk of developing chronic diseases,[5] an often-overlooked aspect of care is the prevalence of malnutrition for this patient population.[6] People living with obesity can present with nutritional deficiencies despite excess caloric intake.[6] As weight loss medications become increasingly established in obesity treatment pathways, understanding and addressing the nutritional needs of these patients can help with holistic care.[6,7]

This article:

- Explores the micronutrient deficiencies associated with obesity
- Examines how weight loss strategies may impact nutritional status
- Provides practical advice for primary care practitioners on integrating nutritional management into comprehensive obesity care.

Obesity and malnutrition

A critical consideration that can be overlooked in clinical practice is that obesity and malnutrition are not mutually exclusive states. Despite excess energy intake, individuals living with obesity can still experience malnutrition.[6]

The combined burden of obesity and malnutrition carries significant health risks, including impaired immune function, delayed wound healing, anaemia and metabolic disturbances.[6]

Obesity and micronutrient deficiencies

The definition of malnutrition can also encompass insufficient intake, availability or utilisation of vitamins, minerals and trace elements and is an important element in managing malnutrition.[8] Evidence demonstrates that micronutrient deficiencies are common in obesity, even before weight loss interventions commence.[6,9,10] The term 'hidden hunger' is used to describe individuals who have adequate energy consumption but suboptimal micronutrient intakes, placing them at risk for nutrition-related health issues.[11]

Figure 2: Data extracted from the Dietary and lifestyle determinants of vitamin D status in the UK Biobank Cohort study for predictive modeling 2025. Biobank data analysed 500,000 adults aged 40-69 from 2006 to 2010, with 63,759 adults meeting the eligibility inclusion criteria. Compared to normal weight, being overweight increased the odds of vitamin D deficiency by 18%, while obesity did so by 96%.[12]

Analysis of US dietary survey data indicates that inadequate intake is common across multiple micronutrients in individuals with obesity.

Table 1. Estimates of micronutrient intake and deficiency in individuals with obesity (Almandoz et al, 2024; Frankenfeld & Wallace, 2020; Christancho et al, 2024). As UK data and research is currently limited in micronutrient deficiencies, below data is taken from a US population.

Miconutrient	Obesity intake/deficiency
Vitamin A	Inadequate intake: >50%[9] Deficiency: 14–24%[9]
Vitamin B1	Deficiency: 15–29%[9]
Vitamin B6	Deficiency: 23%[10]
Vitamin B12	Deficiency: 2–18%[9,10]
Vitamin C	Inadequate intake: >40%[9]
Vitamin D	Deficiency/ insufficiency: 70–90%[9,10]
Vitamin E	Inadequate intake in >90%[9] Deficiency: 2%[9]
Calcium	Inadequate intake: >50%[9]
Iron	Deficiency in up to 45%[9]
Magnesium	Inadequate intake: >60%[9]
Zinc	Deficiency: 24–50%[6,9]

Why do micronutrient deficiencies occur in obesity?

Several interconnected factors contribute to the high prevalence of micronutrient deficiencies observed in this population.

Ultra-processed foods[6,13]

Ultra-processed foods, which are typically consumed in greater quantities by individuals with obesity, are often stripped of essential micronutrients.

Inflammation[6,13-18]

Chronic low-grade inflammation associated with obesity may interfere with nutrient metabolism and transporter synthesis. Inflammatory cells in adipose tissue can interfere with the metabolism of various vitamins and minerals.

Increased metabolic demands[6,13,14,16,19,20]

Low-grade inflammatory states in obesity can increase metabolic demands and may require higher intake of some micronutrients.

Given these pre-existing nutritional factors, understanding how weight loss interventions may impact micronutrient status further is critical. Current UK guidance recommends a tiered approach to weight management.

Weight loss strategies[5,21,22]

Obesity is initially assessed using BMI alongside waist-to-height ratio to identify central adiposity. First-line management includes dietary strategies that reduce energy intake whilst achieving nutritional balance, combined with increased physical activity. Further information is available on page 7 which summarises NICE Guidelines on overweight and obesity management.

When more intensive support is needed, patients may be referred to local NHS secondary care specialist weight management services. The NHS Digital Weight Management Programme is a national programme offering a 12-week online service to help people lose weight.

When lifestyle interventions have been appropriately initiated, but are inadequate, alternative weight management therapies may be considered by healthcare professionals who may consider weight loss medications after assessing an individual's health needs to ensure appropriate eligibility.

Dietary restriction and micronutrient intake

Calorie-controlled diets, whilst fundamental to weight-loss management, inherently restrict total food intake and may limit dietary variety, with the risk of inadequate micronutrient consumption increasing.[23-25]

Nutritional considerations with weight loss medications

When lifestyle interventions alone are insufficient, pharmacological options may be considered, each with specific nutritional considerations.[5,21]

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs)

Overview and efficacy

In the UK, the GLP-1 RAs indicated for weight management and obesity, when used alongside diet and exercise, are Wegovy (semaglutide), Mounjaro (tirzepatide) and Saxenda (liraglutide).*[26-28] Of these, only tirzepatide can currently be prescribed in primary care settings, with semaglutide and liraglutide restricted to specialist weight management services.[5] Semaglutide and liraglutide are selective GLP-1 RAs and tirzepatide is a dual GLP-1/glucose-dependent insulinotropic polypeptide (GIP) RA. They stimulate insulin secretion, suppress glucagon release, slow gastric emptying and induce satiety.[26-28]

Clinical efficacy

Randomised clinical trials on obesity have shown that average weight reduction with GLP-1 RAs compared to placebo, range from 5% to 18% after 56 to 72 weeks and are effective in achieving clinically significant results in improving:[29]

- Glycaemic control
- Cardiometabolic risk factors
- Prediabetes
- Obstructive sleep apnoea
- Enhancing quality of life

Data extracted from Mozaffarian D, et al. Obes Pillars 2025.

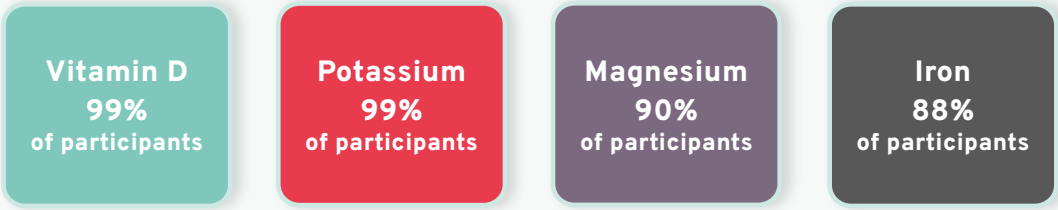
Potential nutrition impact

Patients taking these medications typically reduce their overall food intake and variety considerably, which may be associated with a corresponding decrease in micronutrient consumption. Given that people with obesity often have pre-existing micronutrient deficiencies, this further reduction in nutrient intake may further compromise nutritional status.[6,29-31]

Currently the evidence base examining nutritional status during GLP-1 RA therapy is still evolving. Whilst randomised controlled trial data remains limited, emerging observational evidence, primarily from US populations, provides early insights, though further research is needed to greater understand the link between GLP-1RAs and nutrition.

* Wegovy® and Saxenda® are registered trademarks of Novo Nordisk Ltd. Mounjaro® is a registered trademark of Eli Lilly and Company Ltd.

One cross-sectional US study examining dietary intake in 69 participants taking GLP-1 RAs found that nutrient intakes commonly fell below dietary reference values. The most common nutrient intakes that fell below the 100% US Dietary Reference Intake included:[32]



Adapted from Johnson B, et al. Front Nutr 2025. A cross sectional study using self reported demographics, GLP-1 usage and dietary habits.

The nutritional challenges associated with GLP-1 RA therapy extend beyond micronutrient intake alone. Gastrointestinal adverse effects commonly reported with GLP-1 RAs, may influence food choices and potentially affect both overall nutrient intake and the types of foods consumed.[26-33]

Rapid weight loss and reduced appetite can also lead to low protein consumption, which may contribute to loss of bone and lean muscle mass and an increased risk of sarcopenia. This is particularly true for older people and those who are sedentary or do not engage in resistance or strength training. Therefore, alongside medication, people should receive advice on diet and physical activity to help maintain muscle mass and function.[18,29, 30,34-36]

Long-term nutritional considerations

As patients may remain on GLP-1 RAs for extended periods or indefinitely, nutritional considerations may become a long-term concern rather than a short-term issue.[37,38] However, the long-term nutritional impact of continuous GLP-1 RA therapy is not yet well understood, with current evidence limited to short and medium term studies in US populations.[32,39]

Lipase inhibitors

Overview and efficacy

Orlistat is a lipase inhibitor and works by inhibiting gastric and pancreatic lipases. When used at the correct dosage and as an adjunct to a calorie controlled diet, it has been seen to inhibit the absorption of dietary fat by 30% compared to placebo.[40,41]

Pooled results of 796 patients, showed clinically significant weight loss, with 47% (vs 26% placebo) achieving ≥5% and 16% (vs 7% placebo) achieving ≥10% weight loss at 6 months.[42]

Potential nutrition impact

The Summary of Product Characteristics for orlistat states that “treatment with orlistat may potentially impair the absorption of fat-soluble vitamins (A, D, E, and K).” The vast majority of patients receiving up to four years of orlistat treatment in clinical studies maintained vitamin levels within normal ranges; however, patients are advised to use a multivitamin supplement at bedtime to help ensure adequate vitamin intake.[42]

Current guidance on nutritional support in obesity and weight loss management

Recognition of the challenges associated with obesity and weight loss interventions has led to the development of specific clinical guidance.

NICE Guidelines NG246: Overweight and obesity management[5]

The NICE guideline on overweight and obesity management, published in January 2025, provides comprehensive recommendations covering:

- Information and support on preventing obesity
- Identification and assessment using BMI and waist-to-height ratio
- Lifestyle interventions including dietary and physical activity advice
- Behavioural weight management interventions
- Medicines and surgery for appropriate patients
- Long-term monitoring, support and multidisciplinary care

Primary care lifestyle strategies

The guideline emphasises that initial management in primary care should focus on lifestyle interventions. A flexible, individualised dietary approach that reduces energy intake below energy expenditure whilst maintaining nutritional balance is recommended, alongside 45-60 minutes of moderate-intensity physical activity daily (60-90 minutes daily for weight maintenance after loss). All dietary approaches should be offered with support and follow-up.

Nutritional supplementation

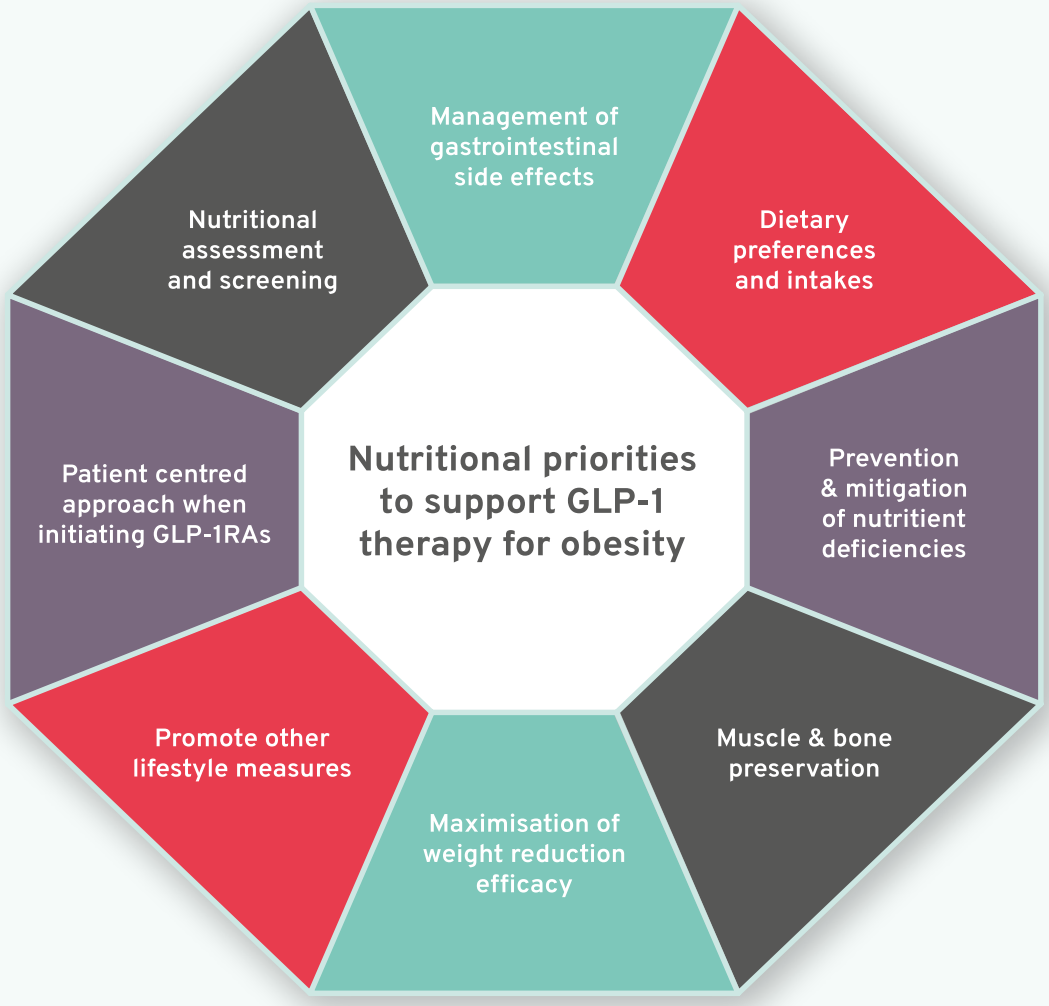
For people living with obesity taking GLP-1 RAs, a supplement for all vitamins and minerals should be considered if there is concern about micronutrient deficiency. This consideration is particularly relevant for older people who may be at risk of malnutrition and younger people who require vitamins and minerals for growth.

Read full guidance >

International expert consensus[29]

A joint advisory published in 2025 from four major US organisations, the American College of Lifestyle Medicine, American Society for Nutrition, Obesity Medicine Association, and Obesity Society, provides a comprehensive framework for nutritional priorities supporting GLP-1 therapy. This consensus recommends that patients taking weight loss medications should complete a baseline nutritional assessment and screening. A thorough history should include nutritional needs and dietary habits assessment. Dietary supplements can be proactively considered in at-risk patients, including vitamin D, calcium, and vitamin B12. Prevention of nutrient deficiencies represents one of the key elements in their framework for supporting patients on these therapies.

Read full advisory >



Adapted from Mozaffarian D, et al.[29]

Practical approach to nutrition in patients living with obesity: Primary Care

Nutritional management is critical for people living with obesity, particularly those with pre-existing comorbidities and those on weight loss medications. Primary care practitioners are ideally positioned to 'make every contact count' by providing holistic nutritional support through initial assessment, ongoing support, dietary counselling focused on nutrient-dense foods and supplementation consideration, if required.[5,29,43,44]

Identification and risk assessment

A validated screening tool, such as the Malnutrition Universal Screening Tool ('MUST') can be used to identify adults at risk of malnutrition.[45] Whilst MUST can be used in people living with obesity, identifying malnutrition in this patient population can be challenging due to the tool's reliance on BMI and weight loss.[46,47] The Malnutrition Pathway resources on 'managing adult malnutrition in the community' recommend assessing the following when evaluating malnutrition risk in overweight or obese individuals:[18]

- 5% unplanned weight loss over the previous 6 months or 10% unplanned weight loss over more than 6 months
- Reduced food intake of ≤ 50% of energy requirement for 7 days, or any reduction for more than two weeks
- Presence of any chronic gastrointestinal condition which adversely impacts food assimilation
- Absorption and/or inflammation caused by acute disease/injury or chronic disease related

When identifying malnourished patients, it may also be useful to consider:[9,11,29]

Anthropometric data:

Height, weight and weight history

Diet/nutrition history e.g. types of food consumed, access to food, cooking/ shopping habits

If they have been prescribed weight loss medications

If they are experiencing any gastrointestinal symptoms

If they have had had bariatric surgery

If they are sedentary or not engaging in resistance or strength training

Once patients at nutritional risk have been identified, dietary guidance can help optimise nutrient intake whilst supporting weight management goals.

Diet advice for all patients living with obesity[29,48-51]

It is important to manage dietary variety and quality to maximise nutrient intake whilst maintaining reduced calorie intake. Provide patients with information about maintaining adequate micronutrient intake despite reduced overall food consumption.

Emphasis should be placed on consuming a variety of nutrient-dense, minimally processed foods, including fruits, vegetables, lean proteins, nuts, and seeds and encourage dietary variety. Practical recommendations include consuming nutrient-dense, low-volume protein foods such as fish, eggs and nuts and seeds.

The NHS Better Health website offers healthy food swap advice and recipes for patients looking to lose weight. **Go to website >**

Consider referral to dietetic services for patients requiring more intensive support, those with complex nutritional needs, or when significant deficiencies are identified.[5] The NHS Digital Weight Management Programme may provide additional support for appropriate patients.[5,21,22]

Supplementation[5,42,52]

If there are any concerns about micronutrient intake or absorption, consider recommending a multivitamin and mineral supplement for patients living with obesity or on weight loss medications, particularly those on restricted diets or with identified deficiencies. For patients taking orlistat, supplementation is advised at bedtime to optimise absorption of fat-soluble vitamins.

Supporting physical activity[5,31,36,48]

Provide advice on physical activity to help maintain muscle mass and function. Encourage gradual increases in moderate-intensity activity appropriate to current fitness level, including everyday activities such as brisk walking, gardening or cycling for 45-60 minutes daily, alongside strength training 2-3 times per week.

Conclusion

Micronutrient deficiencies are common in people living with obesity even before weight loss interventions commence, and weight loss strategies including both dietary restriction and medications may exacerbate these deficiencies.[6,9,10,23-25]

Primary care practitioners are ideally positioned to provide holistic nutritional support for patients undertaking weight loss treatment to optimise treatment outcomes whilst minimising nutritional risks. Current guidance supports considering multivitamin and mineral supplementation for patients on weight loss medications where there is concern about micronutrient deficiency, with individualised approaches based on patient-specific risk factors and needs.[5,42]

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