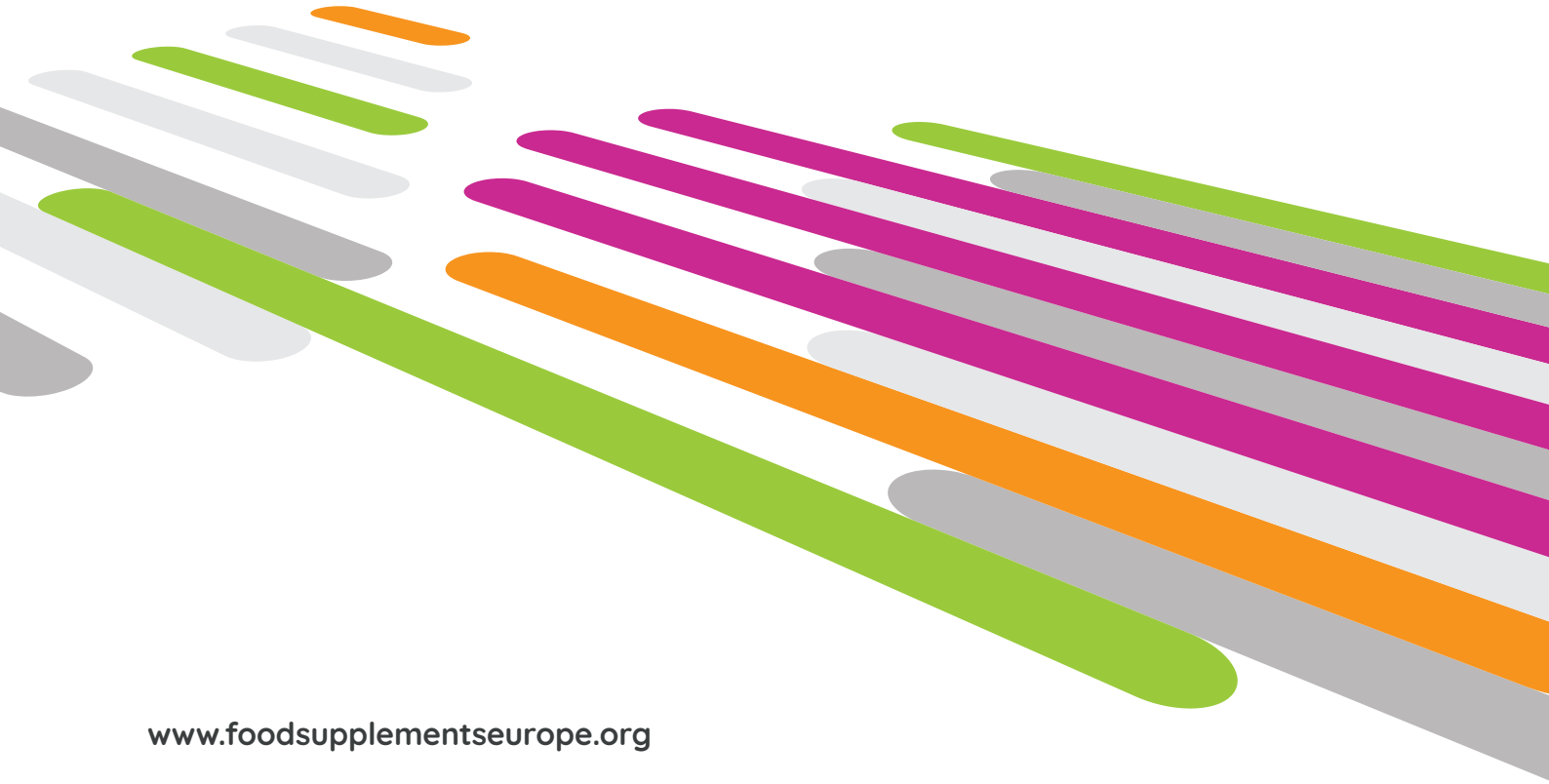
food supplements europe

How food supplements can help contribute to public health in Europe



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1. Introduction

As health spending continues to rise, governments are seeking policies that can begin to drive down health costs and improve population wellbeing. Current health spending in Western Europe was €1.4 trillion annually in 2015 and is estimated to rise by 4% to nearly €1.8 trillion a year by 2020[1]. With the added health burden of an ageing population, these levels of spending could become unsustainable.

Four in ten nutrition-related diseases are established before the age of 70 years[2] while 30% of cancers and up to 80% of early deaths due to heart disease, stroke and type 2 diabetes are believed to be preventable. Despite gains in longevity, adults spend the last fifth of their lives with a disability or chronic illness[3]. Clearly, new solutions are needed to manage healthcare costs and improve population wellbeing.

Good nutrition is essential for the maintenance of normal health, and a significant part of this is ensuring that people consume the right amounts of vitamins, minerals, fibre and fatty acids. At EU level, Nutrient Reference Values have been set by expert bodies, and most countries have published their own population recommendations. However, simply preventing deficiency does not deliver optimal health nor disease risk reduction. Instead, these enhanced states of wellness often require higher intakes of nutrients than can be achieved by the average person's diet, especially for vulnerable groups or those at greater risk of disease such as children, the elderly, smokers and those who are obese.

Dietary advice remains the central tenet of public health nutrition. Yet, despite the consistent promotion of mainstream dietary advice, the reality is that millions of people are falling short of recommendations for key nutrients. Eating a healthy, varied diet is the foundation to good nutrition, but the ability of individuals to achieve this varies considerably depending upon income, disability, food access, attitudes, cooking skills and knowledge.

“ Supplementation is an effective way of bridging the gap between current status and optimal intakes

Scientific evidence combined with economic impact studies reveal that topping up diets with supplemented nutrients not only prevents deficiency but could lead to significant health savings as a consequence of the beneficial impact on chronic disease risk. Supplementation is an effective way of bridging the gap between current status and optimal intakes. Indeed, this is already recognised for certain nutrients as illustrated by the example of vitamin D supplementation which is now broadly recommended across the European Union.

This article presents the evidence for nutritional recommendations, intakes and status, exploring how routine supplementation of the diet can be a cost-efficient policy to bridge nutrition gaps and potentially deliver valuable health cost savings.

2. Optimal intakes for optimal status

Dietary Reference Values (DRVs) are designed to meet the nutritional requirements of most people in a population by combating the risk of deficiency and helping to underpin normal health. But, as we will reveal in this section, preventing deficiency is only the first step towards optimal nutritional status.

2.1 Current dietary advice

Individual countries publish DRVs for their own populations, including specific intakes for different ages and genders. These underpin dietary advice and enable the assessment of diet adequacy. Public health campaigns are typically based on DRVs.

At EU level, Nutrient Reference Values for vitamins and minerals are aimed at the general population and are used for the labelling of foodstuffs and food supplements, as well as nutrition and health claims. DRVs have also been set by the European Food Safety Authority (EFSA) and include terminology such as Population Reference Intakes[a] and Adequate Intakes[b] depending on the certainty of the evidence.

2.2 Millions failing to meet dietary targets

Despite clear guidance on DRVs, dietary surveys reveal time and again that specific nutrients pose a concern[4]. The World Health Organisation highlighted several nutrients which tend to fall below DRVs including iron, iodine and vitamin D. Women, girls and elderly women were most likely to be at risk from low intakes[5].

Similarly, a review of 21 European countries for which adult data were available[6] found that none of the countries met more than 40% of the recommendations for macro or micronutrients, illustrating just how far removed populations are from DRVs. Indeed, global estimates reveal that only 20% of populations meet targets for omega-3 fatty acids, and very low blood levels of these are common across Europe[7]. Therefore, millions of Europeans are failing to achieve DRVs, let alone the intakes required for optimal nutritional status.

a. A Population Reference Intake is the level of nutrient intake that is adequate for virtually all people in a population group.

b. An Adequate Intake is the average nutrient intake observed or estimated from consumption data relating to healthy populations. It is set when there is insufficient evidence for a Population Reference Intake.

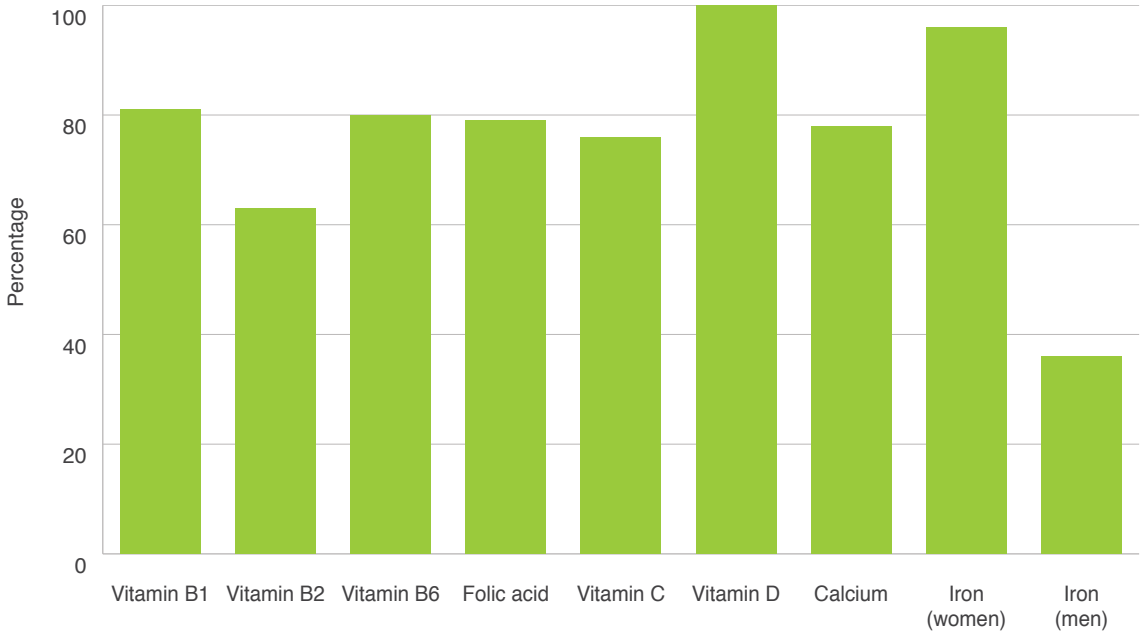


Figure 1: Percentage of Belgians failing to achieve nutrient recommendations[8]

As an example, in Figure 1, the Belgian Food Consumption Survey[8] reported a high proportion of nutrient inadequacy in the population, as expressed by the percentage of people failing to meet the recommended intake. In addition, fewer than one in ten Belgians eats the recommended intake of fruit or vegetables, an acknowledged source of fibre, vitamin C and potassium. This pattern is seen across the European Union.

2.3 Optimal nutritional status needs more

For many individuals, due to their requirements, baseline nutritional status, disease state, or absorption capability, DRVs may not be enough to deliver optimal nutritional status – which goes beyond an absence of deficiency and provides a nutritional platform for optimal health and function. Optimal nutritional status also appears to lower the risk of chronic diseases and, beyond this, higher doses of nutrients may be used therapeutically to prevent or manage specific medical conditions.

One example is vitamin C. The Population Reference Intake is 110 mg per day but an analysis of metabolic and pharmaco-kinetic studies, combined with the results of observational studies and randomised controlled trials, concluded that the optimal vitamin C intake is 200 mg per day. This was the level found to maximise potential health benefits with the least risk of inadequacy or adverse health effects[9].

Another is vitamin D since both intakes and status of this nutrient can be highly inadequate. Indeed, some experts suggest that vitamin D deficiency in Europe has reached ‘pandemic’ levels.

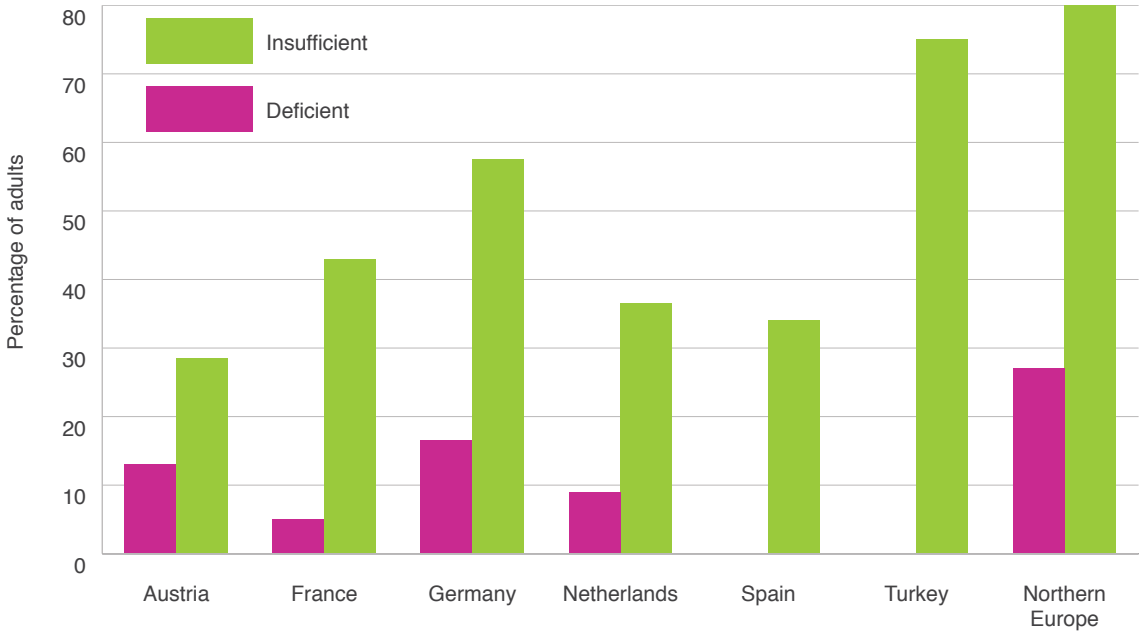


Figure 2: Percentage of adults with vitamin D deficiency (25-hydroxyvitamin D below 25 nmol/L) or insufficiency (25-hydroxyvitamin D below 50 nmol/L)[10]

Low vitamin D status is a concern as the nutrient is vital for normal bone health and muscle function, and could have an inhibitory role in the development of autoimmune conditions, such as multiple sclerosis or type 1 diabetes. A review of 55,000 European adults and children[11] reported that 40% had a sub-optimal vitamin D status, while an alarming 15% were clinically deficient. The extent of the pandemic is illustrated in Figure 2.

The vitamin D intake required to lower the risk of deficiency differs from that needed to promote optimal health and wellbeing. The EFSA determined an Adequate Intake of 15 µg per day for healthy individuals over one year of age. However, two authorised health claims have recommended higher intakes to deliver optimal health.

> **“ Vitamin D deficiency in Europe has reached ‘pandemic’ levels**

The first claim relates to prevention of bone mineral loss in post-menopausal women which recommends a daily vitamin D intake of 20 µg plus 1200 mg of calcium from all sources. The Population Reference Intake for calcium is only 950 mg while the Adequate Intake for vitamin D is 15 µg per day. Low bone mineral density is a risk factor for osteoporotic bone fractures[12].

Figure 3: Average vitamin D intake in adults (mcg/day) compared with DRVs and intakes set for EU authorised health claims[10]

The second claim, relating to prevention of falls associated with postural instability and muscle weakness, recommends at least 15 µg of vitamin D per daily portion of product (where a health claim is made) and an overall daily intake of 20 µg of vitamin D from all sources. Falling is a risk factor for bone fractures among men and women 60 years of age and older[13]. The European Commission reports that around one third of older adults fall every year with 20-30% sustaining injuries. Worryingly, the risk of death is around 20% due to complications associated with hip fracture.

The recommendations to prevent deficiency (>15 µg per day) and support optimal health (>20 µg per day) are far higher than typical dietary intakes in most European countries as shown in Figure 3. Only Norway has reported reasonable intakes due to the popularity of traditional marine foods.

3. Addressing healthcare costs

3.1 Ingredients that can play a potential role in reducing healthcare costs

In an ideal world, all nutritional requirements for health would be met by an adequate and varied diet. But, as discussed in section 2, millions of Europeans are not achieving DRVs, let alone the levels required for optimal nutritional status and health.

One response to this could be better emphasis on public health campaigns, more leaflets and more policies to drive dietary compliance, but is this really an effective option? Can healthcare services and budgets wait that long? Or is it time for a different approach to close the long-term nutrition gap?

A cost-effective way of helping individuals to achieve recommended intakes is supplementation of the full spectrum of micronutrients and fatty acids, at appropriate levels. Supplementation can also target nutrients which are acknowledged as more difficult to achieve through food choice – this includes vitamin D and long-chain omega-3 fatty acids where natural food sources are limited and there are issues around sustainability.

A. Folic acid

Folic acid (natural form, folate) is a B vitamin with a Nutrient Reference Value of 200 µg. However, the optimal intake for women planning a family and in the first trimester of pregnancy is 400 µg in order to lower the risk of neural tube defects[14], which affect more than 4500 pregnancies annually in the EU[15]. Achieving this level of intake through supplementation is a low-cost option and widely recommended by healthcare professionals.

B. Phytosterols

Plant sterols and stanols (phytosterols) are widely known to lower blood cholesterol and help reduce the risk of cardiovascular disease (CVD) by inhibiting the re-absorption of cholesterol within the gut[16]. A large number of studies and meta analyses have confirmed that an amount of 1.5 to 3 g phytosterols is needed per day, for two to three weeks, in order to lower LDL cholesterol by 7-12%. It is not possible to achieve this level of intake from the normal diet, which typically contains just 300 mg/day, emphasising the need for fortification and supplementation.

C. Other nutrients

Several other nutrients have been associated with clear health benefits yet are consumed by certain populations in amounts below optimal levels. These include:

Bone health nutrients: Low levels of calcium, magnesium and vitamin D in the body increase the risk of bone diseases, such as osteoporosis and osteomalacia, which represent huge societal costs as well as limiting the wellbeing and independence of individuals[17].

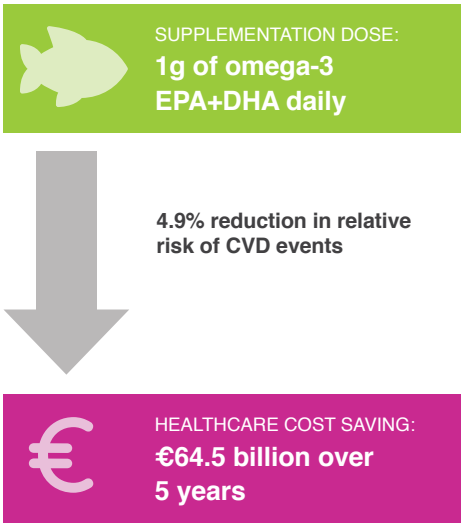
Heart health nutrients: Inadequate B vitamin intakes have been linked with higher blood levels of homocysteine, a risk factor in the development of CVD. Research suggests that B vitamins can also support optimal cognitive function in older people[18].

Omega-3 fatty acids: These have wide-ranging health impacts including heart and vascular health, anti-inflammatory properties and support for normal cognitive function. Intakes across Europe are acknowledged to be far lower than optimal. Fish oils and supplements based on algae are safe, effective and sustainable sources of omega-3s[19,20].

3.2. Case studies

As mentioned in the Introduction, European health care costs are rising year on year and are estimated to reach nearly €1.8 trillion a year by 2020.

A series of independent economic analyses commissioned by Food Supplements Europe revealed significant savings in healthcare costs – up to €64.5 billion over 5 years – by providing targeted daily supplementation with omega-3 fatty acids (fish oils), phytosterols, or calcium + vitamin D. The findings of these reports are illustrated below.



Case study A: Cost savings with EPA/DHA supplementation

Studies reveal that fish oil supplementation reduces all-cause mortality and sudden death[21]. A review of the evidence[22] suggested that 24% of adults aged over 55 years are expected to have a CVD-attributed hospital event in the next 5 years at a cost of €34,637 per event; a total of €1.33 trillion over 5 years.

The low cost of supplementation means that every €1 spent on EPA/DHA supplements would realise a **€2.29** benefit for at risk groups.

PHYTOSTEROLS

SUPPLEMENTATION DOSE:
1.7g of phytosterols daily

LDL-cholesterol reduced by 0.37 mmol/L for older adults with severe raised cholesterol levels

2.3% reduction in relative risk of CVD events

HEALTHCARE COST SAVING:
€26.5 billion over 5 years

Case study B: Cost savings with phytosterol supplementation

Raised serum LDL-cholesterol is a risk factor for CVD, affecting 31 million European adults aged 55+ years. For every 1 mmol/L reduction in LDL-cholesterol, the relative risk of a cardiovascular event is reduced by 26.6%[23], irrespective of whether this is achieved by diet or medication. €1.33 billion is likely to be spent targeting CVD over the next 5 years.

In terms of cost-benefit ratio, every €1 spent on phytosterols would result in a **€4.37** saving on avoidable heart health costs[24].

CALCIUM + D

SUPPLEMENTATION DOSE:
1000mg calcium + 15µg vitamin D

15% reduced incidence of fractures

186,690 fewer osteoporosis attributed bone fractures per year

HEALTHCARE COST SAVING:
€19.8 billion over 5 years

Case study C: Cost savings with calcium and vitamin D supplementation

Osteoporosis is a huge health burden affecting over 27.8 million older adults, most of these women. The cost of treating osteoporosis-attributed bone fractures is over €26.4 billion per year in Europe, a cost which is expected to grow as populations age.

Analyses[25] reveal that a targeted calcium and vitamin D supplement would deliver a benefit/cost ratio of **€3.47** avoided costs for each €1 spent on supplements.

As the public are unlikely to achieve these levels of vitamins, minerals, phytosterols and fatty acids through current population-based dietary advice, healthcare systems are missing out on the potential savings that delivering optimal nutrition could achieve.

4. The role of policy

Business as usual in nutrition is not working. Despite the best efforts of health educators, significant groups in the populations are either at risk of deficiency, or failing to achieve optimal nutrient intakes. This is having an impact on health outcomes, particularly for vulnerable groups of people, and those experiencing social deprivation who tend to have less healthy diets.

Targeted use of food supplements is a cost-effective way to bridge the gap between dietary recommendations and current intakes.

The benefits of supplementation can help to save lives and significantly reduce healthcare costs. The scientific evidence is in place – all that is now needed to leverage these benefits is the will of policy leaders to integrate this into policy.

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