

Hidden micronutrient deficiencies across the UK:

A call for government action



Dr Harry Jarrett
PhD MRSB

Director of Science and
Research, Heights

The UK is one of the wealthiest nations, yet a large proportion of our population is deficient in vitamins and minerals essential for healthy brain function, immunity, cardiovascular health and successful pregnancy. There is a crisis of hidden micronutrient deficiencies, largely unaddressed by public health policy.

The problem – hidden micronutrient deficiencies

Micronutrients such as vitamins and minerals play fundamental roles in the human body; without them the body simply could not function. Yet, when policymakers discuss diet and health, the conversation centres on calories and obesity rates. However, a parallel crisis exists: the widespread depletion of the vitamins and minerals across UK diets – “Hidden Micronutrient Deficiencies”.

The scale of the problem

The UK's National Diet and Nutrition Survey (NDNS) is the government-run, national surveillance programme, reporting nutritional levels across the UK. Its findings reveal a consistent and alarming picture of widespread hidden micronutrient deficiencies. The examples below are among the most striking, but the problem extends well beyond these nutrients alone:

Folate (Vitamin B9)

Folate is essential for DNA synthesis, forming healthy blood cells, and supporting fetal development. Inadequate folate status is the single most important preventable risk factor for neural tube defects (NTDs) such as anencephaly and spina bifida. Anencephaly is usually fatal shortly after birth; spina bifida carries significant mortality and lifelong care.

Beyond the profound toll on families, NTDs carry a substantial economic cost. The UK Government's analysis puts the lifetime societal cost of a single severe NTD case at up to £3 million.

Alarmingly, the most recent NDNS reports 83% of UK women of childbearing age had blood folate levels too low to minimise the risk of a neural tube defect-affected pregnancy. This is not an isolated finding: longitudinal analysis of NDNS data documented a significant decline of 3% per year in blood folate concentrations across the UK. The evidence is clear, there is urgent need to improve folate levels across our population, and above all among women of childbearing age.

The UK Government's new mandatory folic acid fortification policy, due December 2026, is anticipated to prevent approximately 200 NTD cases each year. A welcome step, but one that comes decades after the United States and over 70 other countries acted. Modelling indicates that US-level fortification from 1998 would have prevented an estimated 2,014 NTDs by 2012. That such clear evidence went unactioned for more than two decades represents a failure of public health policy that should not pass without scrutiny and one we cannot afford to repeat for other deficiencies. This new policy will prevent roughly one in five NTDs; the evidence shows there is considerably more government could, and should, do.

Riboflavin (Vitamin B2)

Riboflavin is a widely overlooked but essential nutrient crucial for energy metabolism, healthy blood cells and required to convert folate into its active form. While the UK is one of the few countries to measure riboflavin levels, it has failed to act on the evidence of widespread deficiency, and riboflavin remains almost entirely absent from UK food policy.

I recently co-authored a study in *The Journal of Nutrition*, the first to quantify riboflavin biomarker status worldwide, recognised with two awards at STEM for Britain in Parliament. We report that among healthy adults, half of women and 45% of men were riboflavin deficient. Worryingly, over half of children aged 11–17 years were also deficient. These findings are mirrored in a clinical trial we recently completed at Heights, in which 83% of healthy UK adults had suboptimal or deficient riboflavin status.

Vitamin D

Vitamin D is essential for bone and muscle health and supports normal immune function. The UK's northern latitude creates a structural deficit: between October and March, leaving the population reliant on diet and supplements – sources that fall short for most people. The most recent NDNS data show that 18% of UK adults are vitamin D deficient year-round, rising to 31% over winter. Among 11–18-year-olds, the rate climbs from 23% to 36%, more than one in three adolescents deficient during a critical period for building bone strength. The NHS already advises daily supplementation through autumn and winter, but these figures show advice aimed at individuals has not closed the gap; government action is needed.

Iodine

Iodine is essential for the synthesis of thyroid hormones, which regulate metabolism, growth and neurological development throughout life. Similar to folate, adequate iodine levels during pregnancy are critical for fetal brain formation.

The cost of UK inaction on folic acid fortification

Neural tube defects are serious malformations of the brain and spine, mainly spina bifida and anencephaly. Anencephaly is usually a fatal shortly after birth: spina bifida, causes, serious, lifelong disability.

2,014 Estimated NTD-affected pregnancies prevented, 1998–2012

1,1799 England & Wales
152 Scotland
64 Northern Ireland

Estimated neural tube defect-affected pregnancies that could have been prevented each year – had the UK fortified from 1998, like the US



Morris JK et al. (2016) Prevention of neural tube defects in the UK: a missed opportunity. Arch Dis Child, doi: 10.1136/archchild-2015-309266.

The most recent NDNS data show iodine status is now inadequate across much of the UK population, including adolescent girls and, increasingly, adults more widely. Women of childbearing age are among the lowest status of all, falling below the level needed to support a healthy pregnancy- the group for whom, the consequences of deficiency are most serious.

At present the UK has no strategy to address decreasing iodine levels across the population.

Built into the food system

Hidden micronutrient deficiencies are not, at root, a matter of personal choice; they are a product of the food system that shapes what the population eats and what that food contains. The contributing factors are many, but two significant elements are set out below.

Dietary patterns

First, dietary patterns have shifted in ways that lower micronutrient intake. The move towards plant-based diets, including switching from cow's milk to plant-based alternatives reduces dairy intake and, with it, both riboflavin and iodine. Persistently low intakes of vegetables further limit folate, while ultra-processed foods- now over 50% of adult's energy intake are energy-dense but typically low in micronutrients.

Declining nutrient density

Food supply has become less nutrient-dense. Analysis of the UK Government's Composition of Foods tables- found that the nutrient content of British fruit and vegetables has fallen markedly over eight

decades, for example iron dropped by ~50%, copper by 49% and magnesium by 10%.

Modern crops are bred for high yield and energy rather than nutrient quality and rising atmospheric CO₂ further dilutes the nutrient content of staple crops. Across the modern food supply, our food may now deliver less than it did for earlier generations.

The result is a food system that is making adequate micronutrient intake from diet alone harder to achieve. Urging individuals to simply eat better is not a solution. The truth is that structural problems have structural solutions and delivering them lies within Parliament's power.

What Parliament can do

Food policy has not kept pace with our evolving food system. The UK has never systematically addressed riboflavin, vitamin D or iodine, and was among the last high-income nations to act on folate. These gaps cannot be closed by individual effort; they require policy action, for both the health of our population and the wider economy. We urge Parliament to consider the following steps.

1. Extend mandatory flour fortification to riboflavin and vitamin D. UK flour is fortified with several nutrients, but not riboflavin, despite deficiency affecting around half of UK adults. Further fortifying flour with vitamin D is modelled to prevent around a quarter of all new cases of deficiency saving the NHS and public services an estimated £65 million.

2. Introduce mandatory salt iodisation.

The UK is one of few European countries with no iodine fortification policy. UK modelling found that addressing iodine deficiency in pregnancy could save society approximately £4,500 per pregnancy.

3. Monitor and strengthen the 2026 folic acid fortification policy. The Government estimates it will prevent 200 NTDs a year, a 20% reduction, translating to NHS savings of £20 million and wider economic benefit of >£90 million across a decade. However, it could go further: a higher level, applied to all flour and rice, could prevent around 80% of cases. With each severe case carrying a lifetime cost of up to £3 million, the case for stronger fortification is compelling. The NDNS should track folate and related B-vitamin levels, and we urge the Government to act on what that monitoring reports.

4. Commission an independent review of UK fortification policy. The nutrients above are illustrative; the literature documents widespread deficiency across a broader set of micronutrients. A systematic review should identify those of greatest concern, put in place the public health measures needed to address them, and monitor the results.

Hidden micronutrient deficiencies are preventable. The data exist, the policy tools are proven, and the economic case is robust. What has been missing is not evidence, but the political will to act on it. We urge Parliament to act.