

Key Micronutrient Challenges for Aotearoa



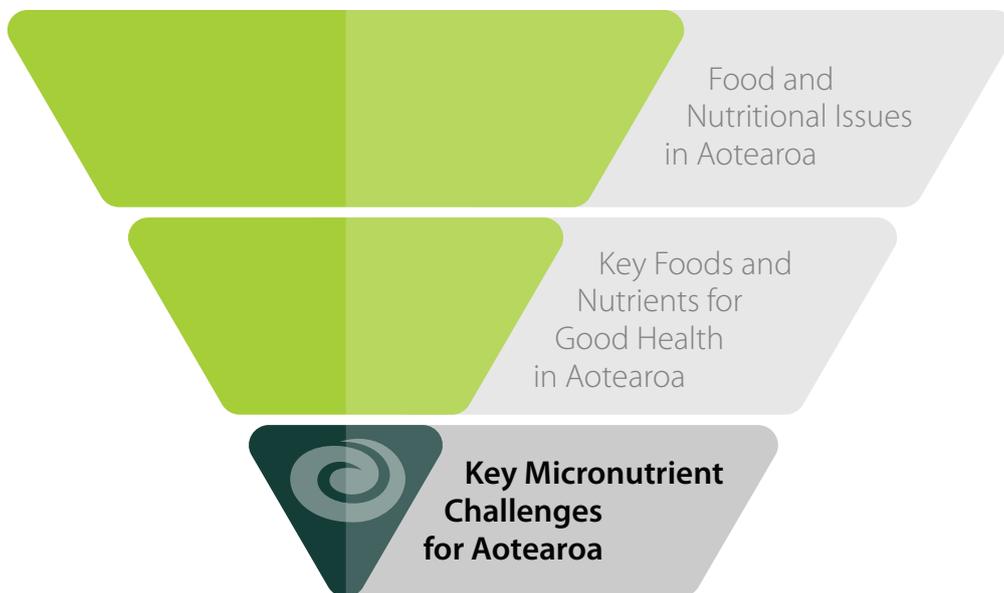
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Everyone in Aotearoa New Zealand has a right to live, grow, learn, and work in an environment that provides access to healthy, affordable, and safe food.

Activity and Nutrition Aotearoa (ANA) is a national organisation with a vision that everyone in Aotearoa can and does eat well and leads an active life.

ANA is often asked, what is the current nutritional status of people living in Aotearoa?

These issues papers, for the first time, collate the latest research in one place. Together they give an integrated picture covering selected nutritional issues in three papers. Key Micronutrient Challenges for Aotearoa is the third paper:



CALL TO ACTION

ANA urgently demands the regular, robust collection of data to monitor food and nutrition trends and identify emerging nutritional issues and ways to address them.

In addition, a national nutrition strategy is needed to underpin research, interventions, policies, evaluations and future strategies.

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1. Introduction

In this paper, ANA has summarised data on vitamins and minerals of concern in the New Zealand population. The purpose of this paper is to bring together data on micronutrients of concern in one place; and to document the lack of data collected to enable monitoring of progress towards achieving optimum nutrition for everyone living in Aotearoa.

Data available to help shape nutrition intervention strategies and policies is out of date. Alarming, decisions are made on data that in some cases is 18 years' old.

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2. Monitoring

Monitoring of specific nutrients at a population level is important to prevent and rectify dietary deficiencies and associated health implications.

Information on the micronutrients of concern come from the following data sources:

- Adult nutrition survey 2008/09: data on food and nutrient intake
- Total Diet Survey 2016: selection of common foods tested based on the 2008/2009 Adult Nutrition Survey data
- New Zealand Health Survey: a biomedical module was added to the annual data collection in 2014/15, biomedical tests were conducted for iodine, blood folate, sodium, and potassium. N.B. The biomedical module provides information on nutrient status that cannot be determined by self-reported food consumption ⁽¹⁾. For many nutrients, biomedical testing is the only reliable way to determine intake or the amount of nutrient functioning in the body.

A wide range of nutrients are needed by the body, some in larger amounts known as macronutrients (energy, fat, carbohydrate, protein) (covered in Key foods and nutrients for good health in Aotearoa) and others in smaller amounts, known as micronutrients (vitamins and minerals).

This paper describes specific micronutrients that have been previously shown to be sub-optimal in the diet of New Zealanders either overall or in sub-groups of the population and therefore require ongoing monitoring to assess the effectiveness of current intervention strategies and determine if new or additional interventions are needed. These are Iron, Calcium, Vitamin D, Iodine, Selenium, Zinc and Vitamin B12.

ANA is committed to achieving health equity in Aotearoa and seeking ways to eliminate health inequities between population groups.

ANA calls for regular food and nutrition surveys to be reinstated, for both children and adults, to provide evidence for policy, evaluation of interventions and research decision making. In monitoring, place greater emphasis on collecting data on Māori and Pacific women and children's nutritional status.

3. Iron

Why is iron important?

Iron is essential throughout life, but needs are higher during periods of growth such as early childhood, adolescence and during pregnancy. Women of child-bearing age have higher needs to replace losses during menstruation. Following a restricted diet (e.g. vegetarian or vegan diets) may also increase the risk of iron deficiency.

Iron deficiency from low iron intake, blood loss or increased demand (e.g. athletes) for an extended period can lead to iron deficiency anaemia which can impair immune function, increase tiredness, and affect cognitive function. Iron is absorbed more readily from animal foods (meat, chicken, fish) although absorption from plant-based sources is enhanced by eating meat, fish or chicken with Vitamin C containing foods ⁽²⁾. Absorption of iron is inhibited by tannins in tea and phytates in wholegrain cereals ⁽²⁾.

Who is at risk of low iron?

Low iron intake

- In 2008/09, the prevalence of an inadequate intake of iron in the population overall was 5.6%. The prevalence was higher among women (9.7%) compared to men (1.2%) and higher for Māori and Pacific women (18.4% and 19.9% respectively) compared to New Zealand Europeans and Others (9.3%) ⁽³⁾.
- Of all age groups, females aged 15-18 years had the highest prevalence of inadequate intake (34.2%), with Māori females in this age group reporting an even higher prevalence of inadequate intake at 49% while 40% of Pacific females had an inadequate intake ⁽³⁾.
- Women aged 31-50 years showed the second highest age group prevalence of inadequate intake at 15% ⁽³⁾.

Iron deficiency anaemia

- Biochemical analyses show that there has been no change in the prevalence of iron deficiency anaemia among adults or any population sub-group between 2008/09 and 2014/15 ⁽⁴⁾.
- One in fourteen adults (6.9%) were shown to have iron deficiency anaemia in 2014/15 (5.0% in men and 8.7% in women) ⁽⁴⁾.
- Among women, those aged 75+ years had the highest prevalence of iron deficiency anaemia (16.8%) followed by the 35-44 years age group (15.6%). Among men, the highest prevalence was shown in the 75+ years age group (27%) ⁽⁴⁾.
- Overall, variation by ethnic group was small, Māori (6.5%), Pacific (10.9%), Asian (7.9%) and European (6.4%), although after adjusting for age, Pacific women were reported to have a higher prevalence of iron deficiency anaemia compared to non-Pacific women ⁽⁴⁾.

4. Calcium and Vitamin D

Why are calcium and Vitamin D important?

Low dietary intakes of calcium are associated with bone loss over the life course, resulting in a greater risk of osteoporosis. Bone mass or density tends to reduce with age, particularly after menopause in women. Older people are at risk of developing osteoporosis as calcium absorption decreases with age⁽⁵⁾. Low bone density increases the likelihood of fractures. It has implications for disability, quality of life and mortality⁽⁶⁾. The burden of fractures from osteoporosis in New Zealand is expected to increase by 37% between 2007 and 2020 as is the cost burden on the health system from the ageing population⁽⁷⁾.

Although calcium intake over the life course is a major factor affecting the prevalence of osteoporosis, other factors play a role, including Vitamin D status and physical activity. Protein, sodium and caffeine intake can also adversely affect calcium status by increasing calcium loss from the body. Furthermore, there may be reduced absorption in the gut due to inadequate gut secretions in older adults⁽⁵⁾.

Vitamin D status is predominantly maintained by exposure to sunlight. Dietary sources only provide small amounts of Vitamin D although there is limited recent intake data available⁽⁵⁾.

Adequate intake of calcium and Vitamin D is important throughout life to build and strengthen bones and to reduce bone loss⁽⁵⁾. Preventative strategies include ensuring adequate calcium and Vitamin D intakes and weight-bearing exercise as well as fracture prevention. Dietary supplementation with calcium and Vitamin D is only recommended for people at high risk of a low calcium and Vitamin D status⁽⁸⁾.

It is unknown whether the recommended shift to a more sustainable plant-based eating pattern⁽⁹⁾ is likely to influence calcium intake, bone mineral density and future population osteoporosis risk.

Who is at risk of low calcium?

- The calcium intake of older people (>70 years) is well below the Recommended Dietary Intake of 1300mg/day⁽¹⁰⁾. In 2008/09, for those aged 65-74 years, the usual daily median intake was 684mg calcium per day for women and 844mg per day for men⁽³⁾. Although, it is important to note that the Estimated Average Requirement (EAR) values have been set high to take into consideration reduced absorption of calcium with age⁽¹⁰⁾.
- The estimated prevalence of inadequate intake was about 60% (women 73%, men 45%), and is higher (more than 90%) among Māori and Pacific women aged 15-18 years and 51+ years⁽³⁾.

Who is at risk of low Vitamin D?

- In the 2008/09 survey most adults (68%) had adequate levels of Vitamin D. Only approximately 5% of adults were found to be Vitamin D deficient and around one in four were below the recommended levels but were not deficient⁽¹¹⁾.
- In the 2008/09, the prevalence of Vitamin D deficiency did not vary by sex or age group, however there were variations by ethnicity and deprivation. Pacific adults were 2.3 times as likely to have Vitamin D deficiency as non-Pacific after adjusting for age. Vitamin D deficiency was also more common among people living in socioeconomically deprived areas⁽¹¹⁾.
- Older adults are at risk of Vitamin D deficiency especially those that are house bound, have limited mobility or live in residential care⁽⁵⁾. Additionally, those with dark skin or who cover most of their skin are also at increased risk.
- Using 2008/09 Nutrition Survey data, it was found that adults who were obese had a lower mean level of Vitamin D compared to those in the normal weight range⁽¹¹⁾.

5. Iodine

Why is iodine important?

Iodine is a nutrient of concern in New Zealand as the soil content of iodine is low, therefore foods grown in these soils will be inadequate sources of iodine predisposing New Zealanders to lower intakes. Iodine is an integral part of the thyroid hormone responsible for normal growth and development of the body including the brain, and processes controlling the body's metabolic rate⁽²⁾. Iodine deficiency causes goitre and affects normal brain development⁽²⁾. Salt has been iodised in New Zealand since the 1920s as a public health measure to reduce goitre at that time. Monitoring of iodine deficiency in the 1990s showed that mild iodine deficiency was present in some population groups including children⁽¹²⁾. In response to a declining intake of iodine, mandatory fortification of bread with iodised salt was introduced in 2009.

The iodine requirements are higher for pregnant and breastfeeding women to cater for the growth and development of babies⁽¹⁰⁾. In 2010, the government recommended and subsidised an iodine supplement for pregnant and breastfeeding women⁽¹³⁾.

Who is at risk of low iodine?

- In 2014/15 iodine status was adequate for men in all age and ethnic groups. For women overall, and women of Māori, Pacific and Asian ethnicity iodine status was adequate. However, women of European/Other ethnicity reported mild iodine deficiency⁽⁴⁾.
- The Total Diet Survey (2016) showed that fortification of bread with iodine and other food sources of iodine were providing sufficient intake of iodine in the New Zealand diet (increased intake since the 2009 Total Diet Survey). Mandatory fortification of bread with iodine has notably increased the intake of iodine from cereal-based foods⁽¹⁴⁾.
- Low iodine status was found in a small sample (87 women, 16 years and over) of breast-feeding women in New Zealand⁽¹⁵⁾. Iodine supplement users in this study, although a low proportion of the sample (40%), showed an adequate iodine status compared to non-users and their infants⁽¹⁵⁾. Ongoing monitoring of the iodine status of breastfeeding women and their infants is advisable as are strategies to improve intake.

6. Selenium

Why is selenium important?

Selenium is an essential trace element in the diet; however, New Zealand soils are naturally low in selenium and hence the New Zealand food supply contains low levels. However, our low selenium intakes compared to international intakes, has not been associated with any adverse health condition.

Although concentrations in New Zealand soils are low, there is no indication that this has resulted in any detrimental effects on the health of New Zealanders. This is mainly due to the consumption of imported plant foods including Australian wheat which is high in selenium.

Internationally, there is low-level evidence that low blood levels of selenium may increase the risk of prostate cancer ⁽¹⁶⁾.

Who is at risk of low selenium?

- The New Zealand diet contains adequate amounts of dietary selenium to provide for the nutritional needs of the population although our intakes are lower compared to other countries including Australia ⁽¹⁴⁾.
- In 2008/09, 45% of the adult population were estimated to have an inadequate intake of selenium ⁽³⁾. Older people (71+ years) and females aged 15-18 years were the age groups most likely to have low intakes ⁽³⁾.
- Sub-optimal intakes have been found in a small sample of breastfeeding women and their children ⁽¹⁵⁾ and post-menopausal women ⁽¹⁷⁾ in New Zealand. Furthermore, among post-menopausal women, the combination of low intakes of selenium and iodine may have implications on thyroid function and more research is needed to explore these possible effects ⁽¹⁷⁾.

7. Zinc

Why is zinc important?

As zinc is involved in many body processes, deficiency results in impaired growth, wound healing, and immune system functioning ⁽²⁾. During pregnancy and breastfeeding, there is an increased requirement for zinc ⁽¹⁰⁾. Also, people on vegetarian or vegan diets may need higher intakes to allow for lower absorption of zinc from plant-based sources ⁽²⁾.

Who is at risk of low zinc?

- In 2002/03, it was considered that an inadequate zinc status may be present in some children and young people ⁽¹⁸⁾.
- In 2008/09, one quarter of the adult population had a lower than recommended zinc intake (24.7%) ⁽³⁾. Older males and females (71+ years) had the lowest intake of zinc ⁽³⁾.
- There is no national data on the zinc intake of pregnant and breastfeeding women however regional studies suggest intake is between 9-11 mg per day ^(3, 19) compared to the Recommended Dietary Intake of 11mg/day and 12 mg/day respectively ⁽¹⁰⁾.
- A review of zinc status in Australia and New Zealand showed that groups of concern were toddlers, adolescents (in particular, Pacific), and institutionalised older people ⁽²⁰⁾.

8. Vitamin B12

Why is Vitamin B12 important?

Vitamin B12 is an essential vitamin for a wide range of functions in the body including for metabolism, the nervous system, DNA synthesis and production of red blood cells. Deficiency results in a specific type of anaemia and neurological dysfunction. As Vitamin B12 is predominantly found in animal products, increasing interest in plant-based diets including vegetarian and veganism may increase the risk of Vitamin B12 deficiency.

Who is at risk of low B12?

- In 2008/09 approximately 8% of the population had a low intake, in particular, young women (19-30 years) had a higher prevalence of low intake (about 23%)⁽³⁾.
- About 30% of a sample of young women (15-18-years) had intakes below the Estimated Average Requirement (EAR)⁽²¹⁾.
- A quarter of participants 85+ age group (26% Māori, 22% non-Māori) had an intake less than the EAR for Vitamin B12. Men were more likely to meet the EAR than women⁽²²⁾. The prevalence of vegetarian and vegan diets in New Zealand is unknown.

9. Recommendations

ANA calls all stakeholders, including government, to come together to improve access to healthy food for everyone living in Aotearoa.

Together we must:

Strengthen food and nutrition monitoring including:

- reinstating regular food and nutrition surveys, for both children and adults, to provide evidence for policy, evaluation of interventions and research decision making
- placing greater emphasis on collecting data on Māori and Pacific woman and children's nutritional status, particularly data on iron, calcium, zinc and Vitamin B12, towards eliminating health inequities between population groups
- monitoring nutrients of concern in the New Zealand diet including iron, zinc and selenium and iodine status of the population, including for pregnant and breastfeeding women
- surveying the prevalence of plant-based diets particularly adolescents' iron, calcium and Vitamin B12 intakes.

CALL TO ACTION

ANA urgently demands the regular, robust collection of data to monitor food and nutrition trends and identify emerging nutritional issues and ways to address them.

In addition, a national nutrition strategy is needed to underpin research, interventions, policies, evaluations and future strategies.

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