

Kawe ake te wero

Enabling everyone in
Aotearoa to eat well



OCTOBER 2020

Me mahi tahi tātou, kia ora ai te katoa
We must work together for the wellbeing of all

Nutritional Issues in Aotearoa Executive Summary



OCTOBER 2020

What is the vision of Activity and Nutrition Aotearoa (ANA)?

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.

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.

What is the challenge?

There are many challenges in achieving healthy diets for all. In New Zealand, people have differences in health that are not only avoidable but inequitable.

To achieve equitable health outcomes, different people with different levels of advantage require different approaches and resources. Access to healthy food is a key factor in the inequity of nutrition of the population.

Obesity rates in both children and adults are well documented. New Zealand has the third highest adult obesity rate in the OECD, and our rates continue to increase. However, while there has been emphasis on obesity rates in the past, ANA wishes to draw attention to other aspects of nutrition and public health that massively affect the population's quality of life.

Inadequate nutrition disproportionately affects Māori and Pacific populations and children living in socio-economically deprived neighbourhoods. The consequences are far-reaching. A healthy diet not only addresses nutrient deficiencies, it reduces the risk of illnesses such as diabetes, cancer, obesity and cardiovascular disease. Specific foods and eating patterns are also more likely to support emotional and mental health. Productivity is improved in the workplace and at school students who eat well do better in class.

ANA believes all people living in Aotearoa should have access to affordable, nutritious food that they recognise as being of their culture.

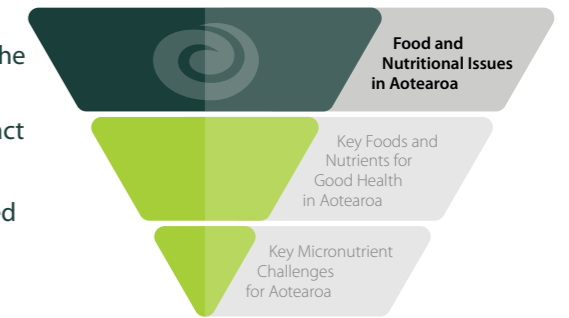
What are the key issues?

The first paper **Food and Nutritional Issues in Aotearoa**, outlines some of the factors contributing to population food choices and the barriers to healthy eating patterns and overall health. It considers the socio-economic determinants of nutrition, especially the impact of food security and culture.

It outlines what is known about food consumption and diet-related risk factors and notes significant gaps in the available data.

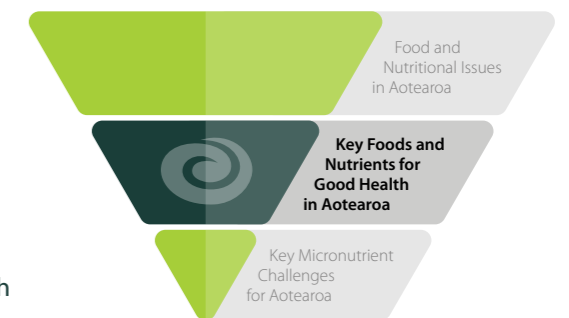
The paper considers nutrition for different life stages. A life course approach to nutrition in Aotearoa prioritises maternal and childhood health for the first 1,000 days as this is known to affect chronic disease risk and health outcomes in later life. Other key groups are children and older people.

One of the main factors contributing to food choices is unhealthy food and drink environments. This paper includes research about sustainable diets, food systems, food labelling and food and beverage marketing (particularly to under 18s). Finally, consideration is given to the role of the public health nutrition workforce and the need for workforce development.



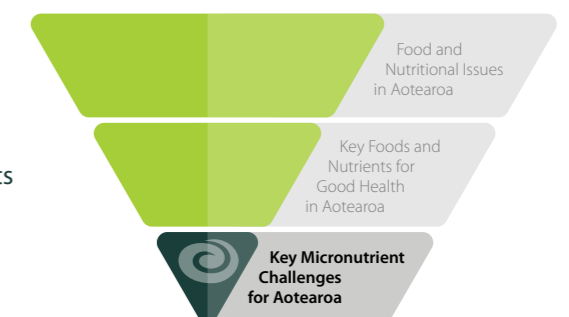
The second paper **Key Foods and Nutrients for Good Health in Aotearoa** discusses the main diet-related risk factors to demonstrate the importance of healthy food and nutrition for population health and wellbeing and prevention of ill health. It includes key facts related to Long-Term Conditions that have nutrition as a common risk factor, such as coronary heart disease, diabetes, cancer, obesity and mental health. It considers some of the common issues that impact on population health, such as high sodium, lack of fruit and vegetables, high saturated fat, alcohol intake and high sugar.

The paper on key foods and nutrients concludes that much of the high health loss due to long-term conditions among those living in Aotearoa is preventable with lifestyle behaviours including healthier dietary patterns. Improving the socioeconomic determinants of health will have the greatest impact on reducing inequities for our most vulnerable populations.



The third paper **Key Micronutrient Challenges for Aotearoa** summarises data on vitamins and minerals of concern in the New Zealand diet. Monitoring specific nutrients at a population level is important to prevent and control dietary deficiencies and associated health implications. This paper describes micronutrients – iron, calcium and Vitamin D, iodine, selenium, zinc, and Vitamin B12 – that are suboptimal in the New Zealand diet.

It concludes with the need to strengthen food and nutrition monitoring including reinstating regular food and nutrition surveys; placing greater emphasis on collecting data on Māori and Pacific women and children's nutritional status; monitoring specific nutrients of concern in the New Zealand diet; and surveying the prevalence of plant-based diets and the potential nutrition risks.



What can be done?

ANA calls for all stakeholders, including government, to come together to improve access to healthy food for everyone living in Aotearoa. Two overarching key issues are the lack of up-to-date data; and the lack of a National Nutrition Strategy to provide a framework and action plan for many of the issues raised in these papers.

Together we must:

1. Strengthen food and nutrition monitoring including:

- food security, food consumption and nutrient status
- priority for Māori and Pacific populations
- key nutrition issues, particularly for pregnant and breastfeeding women, children and older adults
- nutrients of concern in the New Zealand diet
- the prevalence of plant-based diets and the potential nutrition risks
- enabling appropriate policies and interventions

2. Develop a National Nutrition Strategy to include:

- food security and the social determinants of health, prioritising cultural values
- regulations, policies and incentives to create healthier food environments, including government-led regulation about marketing unhealthy food to under 18s
- research about sustainable diets and inclusion of plant-based diets in the Healthy Eating Guidelines
- an analysis of local food systems
- a workforce development strategy for public health nutrition
- co-ordinated action into addressing and improving the the key issues raised in these three papers

KAWEA AKE TE WERO / 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.

Food and Nutritional Issues in Aotearoa



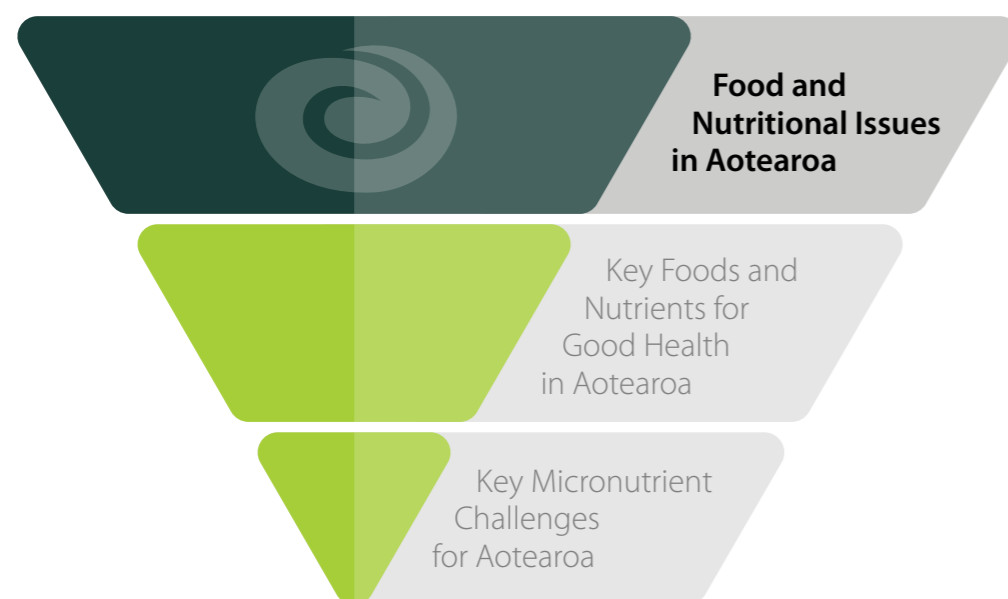
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Activity and Nutrition Aotearoa (ANA) is a national organisation with a vision that everyone in Aotearoa can and does eat well and leads an active life.

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. Food and Nutrition Issues in Aotearoa is the first of the three:



CALL TO ACTION

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1. Preamble

1.1 Why was this paper written?

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.

In 2014, ANA facilitated the development of the Healthy Communities, Healthy Lives: NZ Public Health Nutrition and Physical Activity Sector Vision 2024 ⁽¹⁾, which identified two priorities relating to food: 'Healthy, safe, affordable food' and 'Restrict marketing messages'. We found the priority areas from this vision are still relevant today, six years down the track.

ANA is often asked, what is the current nutritional status of people living in Aotearoa? The authors Dr Leanne Young (NZ Registered Dietitian) and Dr Sally Mackay (Registered Nutritionist) have worked with Alison Pask, (NZ Registered Dietitian and ANA Executive Director) and Dr Geoff Kira (Ngā Puhī) to attempt to answer this question.

1.2 What is this report about?

The information described in this report is drawn from research and key papers and guidelines, but it is not a literature review. Data from national surveys is used where possible. However, some smaller, regional studies have also been included.

In many of the areas identified, there is limited information to describe the current situation and for this reason this paper is not a full comprehensive report on all food and nutrition issues in Aotearoa however aims to document a selection of relevant research on key issues in one place. Its purpose is to generate discussion with the desire to find ways to improve food and nutrition issues for Aotearoa. We found a lack of data collected with much information out of date and in some cases 18 years out of date making it difficult to answer the question on the nutritional status of those living in Aotearoa.

1.3 Impact of COVID-19

During the writing of this report COVID-19 further highlighted food security issues in Aotearoa and impacted on the social economic determinants of health. The impacts of this are significant however have not been included in this report.

2. Introduction

Everyone in Aotearoa has a right to live, grow, learn, and work in an environment that provides access to healthy, affordable, and safe food. But there are many challenges in achieving healthy diets for all. A healthy diet relies on access to adequate safe, nutritious, affordable, accessible food that is both enjoyable and culturally appropriate.

Food security disproportionately affects Māori and Pacific populations and children living in socio-economically deprived neighbourhoods and the consequences are far-reaching.

A healthy diet not only addresses nutrient deficiencies, it reduces the risk of Long-Term Conditions such as such as diabetes, cancer, obesity and cardiovascular disease ⁽²⁾. Specific foods and eating patterns are also more likely to support emotional ⁽³⁾ and mental health ⁽⁴⁾. Productivity is improved in the workplace ⁽⁵⁾ and at school students who eat well do better in class ⁽⁶⁾.

In this paper, we outline some of the factors contributing to suboptimal population nutrition. These include: an unhealthy food environment with ultra-processed foods easily accessible and less availability of healthy foods such as fruit and vegetables; marketing and advertising of high energy food and drink; and lack of food security in households experiencing severe material hardship. These are all barriers to healthy eating patterns, body weight and the health of our most vulnerable populations.

Activity and Nutrition Aotearoa calls all stakeholders including government to come together to develop a comprehensive long-term plan to support the health, the environment and the economy of New Zealand.

3. The socio-economic determinants of nutrition

The social determinants of health are the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status seen throughout the world and within New Zealand.

The current approach to public health strategy in New Zealand recognises that broader factors, such as general socioeconomic, cultural and environmental conditions, gender and culture, living and working conditions, social and community influences, and individual lifestyle factors affect health.

This paper highlights two of these issues: Food security and culture.

3.1 Food Security

Food security means having access to sufficient affordable, safe, nutritious food.

However, research shows that many people experience food insecurity. In New Zealand, food insecurity is largely the result of a lack of enough money for food, although other socio-cultural factors play a role. In households, food insecurity occurs when adults or children do not have reliable access to adequate food, when caregivers feel stressed and anxious about providing food, or are forced to rely on charity or emergency assistance programmes. Food security in New Zealand is regularly measured. The New Zealand Health Survey uses an eight-item questionnaire ⁽⁷⁾, which shows that children in food-insecure households have poorer parent-rated health status, less than optimal nutrition and are more likely to be overweight or obese. They also have a higher prevalence of developmental or behavioural difficulties ⁽⁷⁾. Parents of children in food-insecure households are more likely to report psychological and parenting stress, as well as having poorer self-rated health status. Furthermore, families with food insecurity are likely to struggle to meet competing demands (e.g., food, housing and health care) as a result of limited financial resources.

According to the New Zealand Health Survey ⁽⁷⁾:

- More than 30% of households with children spend more than 40% of income on housing ⁽⁸⁾.
- In 2018, 148,000 children (13%) lived in households experiencing material hardship, and 6% of children lived in households experiencing severe material hardship ⁽⁸⁾.
- Food remained the main reason for needing hardship assistance between 2014 and 2019, and the number of grants is increasing ⁽⁸⁾.
- In 2015/16, almost one in five children (19%) lived in severely to moderately food-insecure households ⁽⁷⁾.
- The most deprived neighbourhoods or households, whose primary caregiver received a benefit, were more likely to experience food insecurity. Of Pacific children, 37% lived in food-insecure households. Of Māori children, 29% lived in food-insecure households ⁽⁷⁾.

ANA calls for all stakeholders to collectively develop a national Nutrition Strategy that includes national food security actions and addresses the social determinants of health.

3.2 Culture

In New Zealand, ethnic identity is an important dimension of health inequalities. Many factors that impact on nutrition are influenced by culture. These include language, religion, social rituals, music, art and food.

Māori and Pacific populations' health status is demonstrably poorer than others living in Aotearoa. Below is a brief introduction that acknowledges the importance of culture for Māori and Pacific households.

Māori and food (kai)

A Māori worldview (te ao Māori) lies at the heart of Māori culture interacting with and strongly influencing every aspect of Māori culture. The Māori perspective of health and well-being is founded upon unique Māori principles, knowledge and skills.

This holistic concept of health includes spiritual, mental and physical wellbeing, not only of individuals but of communities and the environment and the relationships that link these.

The importance of Māori well-being and Te Whare Tapa Whā developed by Mason Durie is well known to those working in public health, with its strong foundations and four equal sides, the symbol of the wharenuī illustrates the four dimensions of Māori well-being. Programmes seeking positive outcomes for Māori need to be grounded in Māori realities, knowledge and aspirations.

Food is central to life for Māori, as it is for many cultures. Māori consider kai crucial for social gatherings, as a way of showing respect for others, and a sign of authority (they can provide for whānau). So essential was kai to early Māori society, deities were assigned to it. According to Māori, all things – and food is no exception – possess a mauri or life force. It follows that foods without life force are highly processed and of low nutrition.

Today, the diet of tangata whenua is very different from what it once was. Historically, kai could be harvested in amounts that provided a balanced nutritious diet, but now food sources are increasingly susceptible to human-generated contamination. Pollution and over-fishing have depleted seafood stocks ⁽¹⁾. Some Māori have been able to follow a more traditional food culture, but this is the exception rather than the rule.

ANA acknowledges that actions to improve Māori health recognise Te Tiriti o Waitangi obligations of the Crown. Addressing the root causes of health inequalities including the social, economic, cultural and historical factors that fundamentally determine health must be part of the solution.

Pacific and food

Food plays an important social and cultural role in all Pacific societies, over and above human biological needs for nourishment and survival. In traditional settings, food is used as a means of maintaining societal norms and practices and affirming one's identity and place.

The Fonofale Model developed in the 1980s is a dynamic model where all aspects have an interactive relationship with each other. This model incorporates values and beliefs of Samoans, Cook Islanders, Tongans, Niueans, Tokelauns and Fijians whereas a similar but unique model called the Fonua model is a Tongan framework of health which comprises of five dimensions of life which are inter-dependent and complementary to each other. To maintain harmony in life, health issues must be addressed at all dimensions including physical, spiritual, mental, community and environmental.

ANA recognises the importance of cultural factors being valued, valid and legitimate. A multisectoral approach to address the socio-economic determinants of nutrition must prioritise cultural values.

4. What do we know about food consumption and diet-related risk factors?

The regular monitoring of food consumption provides quantitative information about the amount and types of foods consumed, and when and where these foods are consumed. This information is essential when it comes to developing, monitoring and informing health and nutrition policies, guidelines and services and designing appropriate interventions.

The data is used for dietary modelling to enable risk assessment and the development of regulations relating to food composition such as mandatory fortification. Survey data enables the identification of opportunities to reduce or increase nutrients of concern in the food supply. It also allows us to model changes required to set realistic targets (e.g. sodium intake) and identify the dietary patterns of sub-groups to enable appropriate interventions and determine areas for future research.

The most recent New Zealand food consumption surveys were conducted 18 years ago in children aged 5 to 14 years (2002)⁽⁹⁾ and 11 years ago in adults aged 15 years + (2008/09)⁽¹⁰⁾ leaving policy makers and researchers having to make decisions on data that is out of date. Considerable food choice changes have occurred over the past decade and the food supply is now being fortified with iodine and folic acid.

The New Zealand Health Survey collects data related to nutrition, obesity and non-communicable disease (NCD) risk. Data are reported for gender, age groups, ethnic group and neighbourhood deprivation. There are a few questions on dietary habits in the core survey. The 2018/19 included a module on dietary habits for adults and children to be published in 2021. The 2014/15 survey included a biomedical module⁽¹¹⁾ which included biomarkers of cardiovascular disease, diabetes, kidney and liver function; and nutrition intake or status (blood folate, urinary iodine, sodium and potassium).

Currently, there are no regular, government-funded surveys of the greater New Zealand food environment and the physical, economic, policy and socio-cultural surroundings that influence people's food choices.

The Ministry for Primary Industries has done some monitoring of the food supply through food composition. The most recent Total Diet Survey (2016)⁽¹²⁾, monitored concentration levels in foods and dietary intake of contaminants and some key elements (including sodium) from a simulated New Zealand diet for key population groups.

The data available on food and nutrition in Aotearoa is out of date and there is an urgent need for the regular robust collection of data to monitor food and nutrition trends. ANA recommends investing in national surveys of food consumption, nutrient status and food security. Data relating to priority population groups (Māori and Pacific) is essential to determine interventions that could improve health outcomes.

5. Life-course nutrition

A life course approach looks at life experiences across generations for clues to current patterns of health and disease, while recognising that both past and present experiences are shaped by the wider social, economic and cultural context.

A life course approach to nutrition in New Zealand prioritises maternal and childhood health for the first 1,000 days as this is known to affect chronic disease risk and health outcomes in later life.

5.1 Maternal nutrition, pregnancy and breastfeeding

Healthy eating patterns are particularly important before conception, during pregnancy and whilst breastfeeding.

Healthy eating patterns and maintaining a healthy weight can lower the risk of hypertensive disorders and gestational diabetes during pregnancy, and improve birth outcomes and the long-term health of the child⁽¹³⁾. Maternal obesity is associated with lower initiation of breastfeeding and shortened duration, and less adequate milk supply⁽¹⁴⁾. The risk of developing type 2 diabetes for women who have had gestational diabetes during pregnancy can be reduced by diet⁽¹⁵⁾.

The Ministry of Health reviewed the New Zealand Eating and Activity Guidelines for pregnant and breastfeeding women in 2019, and the updated guidelines are still to be released. The Ministry of Health offers guidelines on weight gain during pregnancy⁽¹³⁾ and a Quick Reference Guide for health professionals on the screening, diagnosis, and treatment of gestational diabetes⁽¹⁵⁾.

The nutrients folate, iron, calcium, vitamin B12, vitamin D and iodine are particularly important for pregnant and breastfeeding women⁽¹⁶⁾. The Ministry of Health states that folic acid supplements are required from four weeks before conception to 12 weeks after⁽¹⁷⁾, and iodine supplements are required during pregnancy and breastfeeding⁽¹⁸⁾.

The Ministry for Primary Industries is currently considering mandatory folic acid fortification of bread or flour⁽¹⁹⁾.

The link between alcohol and Foetal Alcohol Spectrum Disorder (FASD) is also recognised⁽²⁰⁾, with the Ministry of Health recommending that the safest option during pregnancy is to avoid alcohol altogether.

The areas of concern needing more up-to-date investigation are:

- **Folic acid and iodine supplementation:** A study in 2010 showed that only one-third of mothers take folic acid supplements for the recommended period, and about half of pregnancies are unplanned⁽²¹⁾.
- **Unhealthy dietary patterns:** The same study showed one-quarter of pregnant women do not meet any of the Eating and Activity Guidelines recommendations for daily servings from each food group⁽²¹⁾.
- **FASD:** A 2015 discussion paper estimated that 3% to 5% of children may have FASD⁽²⁰⁾ and that 10% of pregnancies are exposed to excessive amounts of alcohol⁽²⁰⁾.
- **Diabetes:** A 2014 study showed 6.6% of women who are pregnant have diabetes, and the prevalence is increasing, particularly among women of Māori, Pacific and South Asian ethnicity⁽¹⁵⁾.
- **Duration of exclusive breastfeeding:** Breastfeeding is initiated for almost all infants, but only 16% were exclusively breastfed at age six months, and 37% were partially breastfed for ≥ 12 months⁽²²⁾. Plunket data⁽²³⁾ indicates that 'European' and 'Other' mothers had higher rates of breastfeeding than other ethnic groups, with rates for Pacific the lowest. Women living in areas of higher deprivation are also less likely to exclusively breastfeed.

5.2 Infants, children and young people

Childhood is a time of growth, particularly during infancy and adolescence. Many adult eating behaviours, food preferences, and attitudes toward food have their roots in childhood ⁽²⁴⁾. Appropriate feeding of infants and young children is central to early health, well-being, growth, and development ⁽²⁴⁾. Inequities in childhood feeding practices contribute to lifelong health inequities ⁽²⁴⁾.

The New Zealand Food and Nutrition Guidelines for Healthy Children ⁽²⁵⁾ recommend introducing complementary foods at about six months. They also suggest offering iron-rich foods, providing a range of types and textures of complementary foods that match development needs. A delay in introducing foods that may result in a food allergy can increase the likelihood of an allergy when introduced ⁽²⁶⁾.

But, overall, there is limited information about children's nutrition issues, food consumption and behaviours in New Zealand. The only comprehensive Children's Nutrition Survey was conducted in 2002 ⁽⁹⁾. However some more recent surveys, such as the New Zealand Children's Food and Drinks Survey 2007 ⁽²⁷⁾, the Youth Health Survey 2012 (adolescents) ⁽²⁸⁾, the New Zealand Health Survey (2+ years) ⁽²⁹⁾ and Growing Up in New Zealand ⁽³⁰⁾ include questions on dietary habits. Still, much of the current information regarding the nutritional habits of infants, children and young people is from data more than a decade old.

The areas of concern needing more up-to-date research and action include:

- **Early introduction to solid foods:** 34% before five months (early), 57% of infants are introduced to solid foods at five or six months, and 4% from seven months (late) ⁽³⁰⁾.
- **Lack of variety in infant diets:** Half (53%) of infants at nine months of age are eating food from each of the four food groups at least once a day ⁽³⁰⁾.
- **Need for iron-rich foods:** Four-fifths of infants at nine months eat iron-rich foods daily (meat, fish, shellfish, fortified infant rice or cereal) ⁽³⁰⁾. However, there is no national data on the iron status of 2- to 4-year-old children.
- **Lack of vegetable intake for all ages:** One-third of infants ⁽³⁰⁾ and 46% of children aged two to 14 years ⁽²⁹⁾ meet recommendations of vegetable intake for their age.
- **Overweight and obesity:** 31% of children aged two to 14 years were overweight or obese in 2018/19 ⁽²⁹⁾, with ethnicity and neighbourhood deprivation influencing rates.
- **High fizzy-drink consumption:** 10% of children aged two to 14 years have fizzy drinks three or more times a week ⁽²⁹⁾. Fizzy drinks were consumed four or more times a week by 23% of adolescents, especially males and those living in areas of higher deprivation ⁽²⁸⁾.
- **Irregular breakfast frequency (adolescents):** 16.7% of adolescents hardly ever eat breakfast ⁽²⁸⁾, with older adolescents, females and those living in areas of higher deprivation less likely to eat breakfast.
- **Iron deficiency:** The Children's Nutrition Survey conducted in 2002 found 5.5% of girls aged 11 to 14 years had iron deficiency (1.2% with anaemia) ⁽⁹⁾.
- **Increasing incidence of type 2 diabetes:** This is a significant issue for New Zealand's future health status. Type 2 diabetes has traditionally been diagnosed in adults with the overall incidence of children under 15 years of age now recorded at 1.5/1,000,000. Research shows the risk disproportionately associated with girls and children from high-risk ethnic groups ⁽³¹⁾.
- **Food allergies:** Anecdotally, food allergies in children have increased, but Allergy New Zealand states the prevalence is difficult to identify as there are limited studies in New Zealand.
- **Eating disorders:** Ministry of Health data shows the number of people using eating disorder services in 2015 was 1,354 compared with 897 in 2011 ⁽³²⁾. The increase in numbers partly reflects an increase in access.
- **Cooking skills:** In 2016, 80% of secondary school students reported that they could cook a meal from basic ingredients ⁽³³⁾. However, those who lived in homes experiencing poverty were more likely to report not having any cooking ability.

5.3 Older adults

The number of people aged 65+ years is projected to grow to just over one-quarter (26.7%) of the population by 2063, particularly people aged 85 years and older ⁽³⁴⁾. Life expectancy has also increased to 79.5 years in men and 83.2 years in women. Māori, Pacific and Asian populations are younger than the total population ⁽³⁴⁾.

A person's nutrition risk increases as they get older. About one-half of older adults living in the community are at risk of poor nutrition ^(35,36). The most common risk factors include unintentional weight change, eating alone, weight dissatisfaction and low milk-product intake ⁽³⁵⁾.

As a person ages, their energy needs decrease, but their nutrient needs remain similar. Reduced muscle and bone mass have been associated with increased frailty, reduced cognitive function and older people are more likely to become care dependent. Those identified at higher nutrition risk are also more likely to be hospitalised ⁽³⁷⁾.

The key behaviours influencing healthy ageing include nutrition and physical activity ⁽³⁸⁾. Physiological changes may result in reduced appetite and/or the ability to chew, a reduction in nutrient absorption (including iron and Vitamin B12), and the loss of vision and/or mobility, both of which may affect a person's ability to shop and cook adequately. In addition, psychosocial and environmental changes, including isolation, loneliness, depression and reduced income, can all impact significantly on food intake, potentially increasing the risk of malnutrition. The effects may be worse for disadvantaged older people. Older Māori also have a higher nutritional risk compared with non-Māori ⁽³⁶⁾.

ANA calls for regular food and nutrition monitoring. This must identify key nutrition issues for pregnant and breastfeeding women, children and older adults with priority for Māori and Pacific.

6. Food environments

Food environments are best described as the collective physical, economic, policy and socio-cultural surroundings, opportunities and conditions that influence people's food and drink choices and nutritional status ⁽³⁹⁾.

One of the main factors contributing to food choices is unhealthy food environments. Ultra-processed foods are easily accessible and there are substantial inequalities in access to healthy food.

Currently there are limited regulations, policies and incentives to encourage change towards creating healthier food environments.

The local environment influences the ability to grow and harvest food, the availability and accessibility to healthy food at a retail level and in places where people work, learn, gather (e.g. events, recreation centres) and live.

New Zealand studies have found there are more fast food and convenience stores within easy travelling distance for people living in deprived areas ⁽⁴⁰⁾. Recent research found that the density of unhealthy food outlets and location of these near home or school was not associated with obesity in children. However, area deprivation and unhealthy dietary behaviour were ⁽⁴¹⁾.

Barriers to children's fruit and vegetable intakes identified by a West Auckland community were the saturation of fast-food outlets, the marketing of unhealthy foods, the high cost of fresh produce compared with fast food, parents having little time for food preparation, and declining cooking skills and knowledge. The community's recommendations to improve fruit and vegetable intake (not already identified in other topic areas) were better access to affordable fruit and vegetables (e.g. vegetable delivery truck), identifying retailers selling healthy food and opportunities to improve cooking and gardening skills ⁽⁴²⁾.

ANA calls for more robust regulations, policies, interventions and incentives to encourage change towards creating healthier food environments in Aotearoa.

6.1 Sustainable diets

In addition to healthy diets there has been a significant interest in sustainable food systems and diets as part of a solution to the global environmental crisis facing all countries of the globe.

The global food system is driving a mega-problem of malnutrition and climate change ⁽⁴³⁾, responsible for up to 29% of all anthropogenic greenhouse gas emissions ⁽⁴⁴⁾ as well as significant soil degradation, biodiversity loss, and nitrogen and phosphorus cycle disruption. International research has highlighted the benefits to the health of the planet and humans of widespread uptake of plant-based diets. The EAT Lancet Report ⁽⁴⁵⁾ outlines a planet-friendly diet. Compared with the traditional Western diet, this would require eating less dairy, red meat and poultry and eating more fruit, vegetables, whole-grains, legumes and nuts. Foods that are health-promoting tend to be more climate-friendly, such as vegetables, fruits, legumes, and whole-grains ⁽⁴⁶⁾.

Shifting the population to healthier, sustainable diets requires international and national commitments. A strong and coordinated governance of land and oceans is required with long term, multisectoral commitment and investment.

A recent New Zealand study ⁽⁴⁷⁾ developed a food emissions database to estimate climate, health and health system cost impacts associated with shifting current consumption (based on the 2008/09 Adult Nutrition Survey) ⁽¹⁰⁾ to a range of dietary scenarios that conform to the New Zealand Eating and Activity Guidelines, with differing ratios of foods from plant and animal sources. At a population level, this would result in diet-related emissions savings of 4% to 42% depending on the degree of dietary change and food waste minimisation. As the modelled scenarios became increasingly climate-friendly, the population-level health gains and health system cost savings also tended

to increase. The lacto-vegetarian and vegan scenarios had the lowest emissions and highest health gains.

Food waste is a massive issue that not only comes with a large price-tag but also puts an unnecessary strain on the environment by wasting natural resources. New Zealand lacks data on food waste. However, based on UK data, it is estimated that avoidable food waste contributes 12% of daily diet-related emissions, particularly from wasted vegetables, meat, seafood and eggs ⁽⁴⁷⁾.

The evidence for the introduction of more sustainable diets is compelling. However, if a person adopts a dietary pattern with no or little animal products, there is a risk the diet may be low in iron and zinc and will be low in Vitamin B12. Currently, there is no data collection in New Zealand to monitor this. Guidelines on following a vegan eating pattern are absent from the suite of resources provided by the Ministry of Health.

ANA calls for further research on the issues and implications of more sustainable diets. As an immediate starting point ANA would like to see the Ministry of Health adding plant-based vegan eating guidelines to the suite of resources currently available.

6.2 Food systems

The Food and Agriculture Organization ⁽⁴⁸⁾ describes a food system as encompassing all the stages of keeping a population fed: growing, harvesting, packing, processing, transforming, marketing, consuming, and disposing of food. The current global agro-industrial food system is controlled by a few multinational corporations, has a long supply chain, and is dominated by ultra-processed foods. Local food systems contain a shorter supply chain, with minimally processed food supplied by local farmers and domestic consumption. Food policy councils in some areas of New Zealand work across sectors to engage with governments, communities, local businesses, and individuals to support the shift to sustainable local food systems enabling equitable access to nutritious food and growing healthy, connected, thriving communities.

In 2015, a Master's of Dietetics thesis ⁽⁴⁹⁾ explored the barriers and enablers to New Zealand city councils in developing and implementing food and nutrition policy. Research shows councils have limited resources to prevent unhealthy food outlets opening, and not many have initiatives that support retailers to promote healthy food choices, although weekend markets and farmers markets are common ⁽⁵⁰⁾.

Local initiatives include community gardens, vegetable boxes, maps of fruit trees and harvesting guides and social enterprises that enable sustainable food provision. However, there is no formal structure for the people behind these initiatives to communicate with government.

Several studies describe aspects of the food system and initiatives, such as food policy councils, that work to improve the situation. For example, the Aotearoa Food Policy Network ⁽⁵¹⁾ is an inclusive national voice for the diverse participants in food systems.

ANA recommends further exploration of local food systems, such as council food policies and social enterprises that enable sustainable food provision.

6.3 Food labelling

The 2019 New Zealand State of the Food Supply report ⁽⁵²⁾ described the packaged food supply in supermarkets as generally unhealthy, with 60% of products having a low Health Star Rating (HSR) (<3.5), more than 50% of foods were discretionary, and 69% of products were ultra-processed.

The Health Star Rating (HSR) is a voluntary front-of-pack labelling system. The nutrient profiling system allocates stars to foods based on their nutrition content (energy, risk nutrients: saturated fat, sodium, total sugars, and beneficial components: dietary fibre, protein, fruits, vegetables, nuts, legumes). By 2018, only 21% of products in the Nutritrack packaged food database carried an HSR ⁽⁵³⁾.

A 2018 survey found 28% of shoppers used the HSR to help choose a product ⁽⁵⁴⁾. A five-year review, undertaken in 2019, suggested changes, including to the algorithm concerning sugar and sodium, and recommended its continuation as a voluntary system, advocating that mandatory compliance should be considered if the HSR is not displayed on 70% of target products within five years ⁽⁵⁵⁾. But many public health experts believe that the HSR system should be mandated now, due to the low number of foods with an HSR on the label ⁽⁵⁰⁾.

New Zealand has a robust system of regulating the use of nutrition content and health claims on food labels ⁽⁵⁶⁾. Health claims must be based on pre-approved food/health relationships or self-substantiated according to government requirements, and they are only permitted on foods that meet nutritional criteria, as defined by a nutrient profiling model (Nutrient Profiling Scoring Criterion). But although nutrition content claims also need to meet certain criteria, there are no generalised nutritional criteria that restrict their use on 'unhealthy' foods per se ⁽⁵⁰⁾.

Food Standards Australia New Zealand is considering a range of policy options concerning the labelling of sugars on foods and drinks after public consultation in 2018 ⁽⁵⁷⁾. It was considered that quantifying added sugars in the nutrient information panel (NIP) best met the desired outcome and that a pictorial approach applied to sugary beverages warrants further consideration.

ANA believes everyone in Aotearoa would benefit from eating food as close to its natural state, for example vegetables, fruits, and whole grains and eat less ultra-processed foods. Advice should focus on a whole-of-diet approach, encouraging variety and balance of foods and using consistent messages ⁽⁵⁸⁾.

6.4 Food and beverage marketing

The marketing and advertising of high energy food and drink influences children's food choices and consumption ⁽⁵⁹⁾. A Lancet Commission WHO UNICEF report ⁽⁶⁰⁾ on the future of children led by the Rt Hon Helen Clark found ample evidence that voluntary self-regulation by industry does not work. It recommended a legally binding instrument to effectively regulate commercial appeals to children as a crucial step in stopping the rise of childhood obesity.

In 2017, the New Zealand Advertising Standards Authority (ASA) published a new code – the 'Children and Young Peoples Advertising Code' – which includes specific food and beverage advertisements rules for children (up to 14 years) and young people (up to 18 years) ⁽⁶¹⁾. The advertising of occasional food, as defined by the Ministry of Health Food and Beverage Classification system (now retired), is unable to be 'targeted at children'.

Public health academics have criticised the definition used by the ASA as too narrow in scope and not accurately capturing the advertising to which children are actually exposed ⁽⁶²⁾. Given the disparities in obesity for Māori, Pacific and children from low-income families ⁽²⁹⁾, it is these children who stand to benefit most from effective action. The experience of Healthy Auckland Together when making complaints on inappropriate, unhealthy food and beverage advertisements under the ASA code highlighted flaws in the self-regulatory system ⁽⁶³⁾. These included the way the audience is currently defined, lack of coverage of social media, sponsorship arrangements of companies and brands, and lack of enforcement of the code.

The monitoring of different settings in New Zealand found extensive exposure to unhealthy food, including on television during child peak-viewing times, on food company websites, outdoor advertising around schools, and food packaging ⁽⁴⁰⁾. Promotional strategies and premium offers are common marketing techniques to children. Most exposure occurs at home, in public spaces and at school ⁽⁶⁴⁾.

ANA supports introducing government-led regulation about marketing unhealthy food to under 18s. This must go beyond traditional sources of advertising to be future proofed to include of social media, sponsorship, influencers and role models and other forms of marketing.

7. The nutrition workforce

The public health nutrition workforce is important for the improvement of the diet-related health of a population ⁽⁶⁵⁾. Core functions for public health nutrition practice have been identified under three main categories: research and analysis, building capacity and intervention management ⁽⁶⁶⁾.

Public health nutrition workforce is made up of a variety of skillsets ranging from academics, registered dietitians, registered nutritionists, nurses, communicators and community health workers. Services are provided by a wide range of agencies including government, non-government, community agencies, universities, and the private sector ⁽⁶⁵⁾. New Zealand lacks research on nutrition workforce development, especially for priority Māori and Pacific populations.

Qualified dietitians and nutritionists play an important role in advancing a healthy lifestyle, promoting evidence-based, practical nutrition information that is culturally appropriate, and responding to and correcting misinformation ⁽⁶⁷⁾.

ANA has a strong reputation for delivering evidence-based nutrition professional development to those working in the public health workforce.

ANA says a stocktake of training needs of the public health workforce is needed to identify gaps for future public health nutrition workforce development in Aotearoa. This should be an important part of the proposed National Nutrition Strategy.

8. Recommendations

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

Together we must:

1. Strengthen food and nutrition monitoring including:

- food security, food consumption and nutrient status
- priority for Māori and Pacific populations
- key nutrition issues, particularly for pregnant and breastfeeding women, children and older adults
- enabling appropriate policies and interventions.

2. Develop a National Nutrition Strategy to include:

- food security and the social determinants of health, prioritising cultural values
- regulations, policies and incentives to create healthier food environments, including government-led regulation about marketing unhealthy food to under 18s
- research about sustainable diets and inclusion of plant-based diets in the Healthy Eating Guidelines
- an analysis of local food systems
- a workforce development strategy for public health nutrition.

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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Key Foods and Nutrients for Good Health in Aotearoa



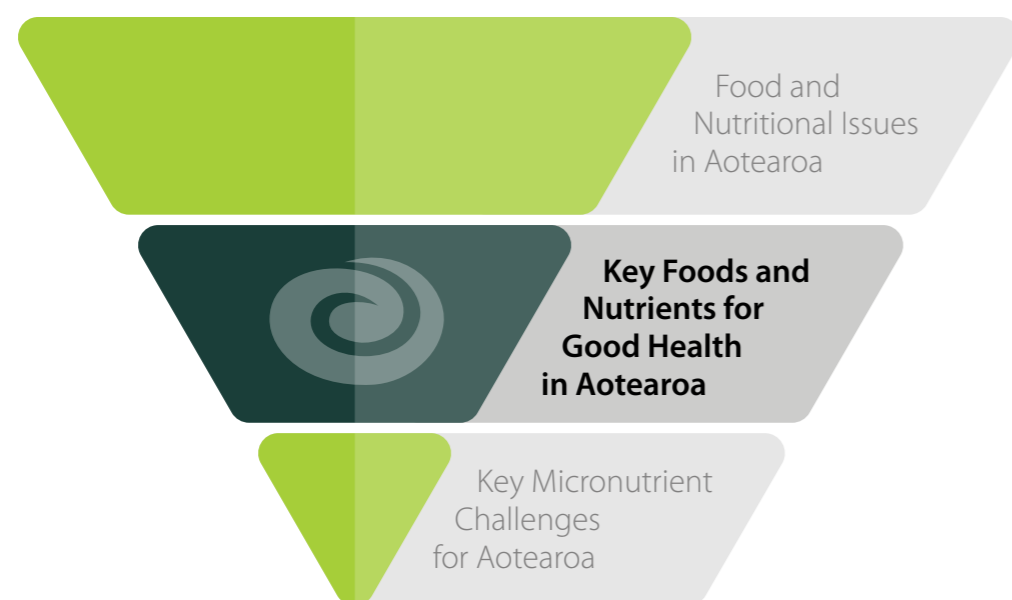
OCTOBER 2020

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 Foods and Nutrients for Good Health in Aotearoa is the second 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 identified some of the key diet-related risk factors for long-term conditions (LTCs) in New Zealand and provides information on some of the relevant foods and macronutrients to prevent ill-health. The purpose of this paper is to generate discussion and raise awareness of the lack of data collection related to food and nutrition issues for Aotearoa.

The authors are Dr Leanne Young (NZ Registered Dietitian) and Dr Sally Mackay (Registered Nutritionist), who have worked with Alison Pask, (NZ Registered Dietitian and ANA Executive Director).

2. Monitoring food consumption and health

The regular monitoring of food consumption provides quantitative information about the amount and types of foods consumed, and when and where these foods are consumed. This information is essential when it comes to developing, monitoring and informing health and nutrition policies, guidelines and services and designing appropriate interventions.

The New Zealand Health Survey⁽¹⁾ provides regular information on LTCs, also known as non-communicable diseases (NCDs). It is a continuous annual survey that collects information on some diet-related risk factors and limited dietary habits. The following information is collected:

- Overweight and obesity: measured height and weight (2+ years), waist circumference (5+ years).
- LTCs and risk factors (15+ years): measured blood pressure; self-reported high cholesterol, high blood pressure, heart disease, stroke, diabetes, arthritis, asthma, mental health conditions, chronic pain, physical activity, smoking, alcohol consumption, sleep (from 2017/18).
- Biomedical module (15+ years): biomarkers of cardiovascular disease (total and HDL cholesterol), diabetes (glycated haemoglobin), kidney and liver function; and nutrition intake/status (blood folate, urinary iodine, sodium and potassium). The data were collected in 2014/15 but not released until five years later in early 2020.
- The 2018/19 and 2019/20 survey included a module on dietary habits for adults and children to be published in 2021.
- A Child Nutrition Survey took place in 2002 and an Adult Nutrition Survey in 2008/09.

Limited nutrition data is collected in the survey (e.g. frequency of fruit and vegetable intake) but this is inadequate considering the high health burden of diet related LTCs in New Zealand.

ANA calls for food and nutrition surveys to be prioritised and reinstated, for both children and adults, to provide necessary evidence for policy and research decision making.

3. Long-term conditions (LTCs)

In New Zealand, LTCs and the related non-communicable diseases (NCDs) are the foremost cause of health loss⁽²⁾, collectively representing over four-fifths (80%) of health loss⁽³⁾. It is estimated that over one-third of the health loss is preventable⁽³⁾. After tobacco, the leading risk factor (9.7% of total health loss), the next five ranked risk factors are related to diet and physical activity: dietary risks 8.6%, high body mass index (BMI) 8.2%, high systolic blood pressure 7.3%, high fasting blood glucose 6.4%, and alcohol use 5.3%⁽³⁾.

This paper includes key facts related to LTCs that have nutrition as a common risk factor, such as cardiovascular disease, diabetes, cancer, obesity and mental health.

Māori and Pacific and those living in more deprived areas experience higher rates of LTCs and obesity⁽¹⁾, are likely to develop LTCs earlier in life and spend more time living in poor health⁽³⁾. Populations including Māori and Pacific, experience socioeconomic inequities and unhealthier food environments which make it difficult to make healthy choices and achieve good health⁽⁴⁾. Therefore, to improve health, socioeconomic determinants of health and food and alcohol environments must be to be addressed.

3.1 Coronary heart disease

The prevalence of heart disease was 4.3% among adults (≥15 years) (168,000 adults) in 2018/2019 and has declined significantly since 2011/2012⁽¹⁾. Fatal and non-fatal heart disease rates are declining in all population groups although rates are higher for Māori and Pacific⁽⁵⁾.

3.2 High blood pressure

High blood pressure increases the risk of heart attack and stroke. Annual New Zealand Health Survey data shows approximately 22% of the population, 842,000 adults, have a raised blood pressure and 16%, 632,000 adults, take medication for hypertension⁽¹⁾.

3.3 Diabetes

New Zealand Health Survey data from 2018/19 show that the prevalence of Type 2 diabetes is 6.4% (210,000 adults)⁽¹⁾. The risk factors for diabetes include family history, excess body weight, unhealthy eating, and a lack of physical activity. Ethnicity can also increase risk: Māori, Pacific and South Asian populations are more commonly affected by diabetes. Among children who have diabetes most have Type 1 diabetes. However, of concern, Type 2 diabetes is now being diagnosed in children⁽⁶⁾. Research shows the incidence of Type 2 diabetes in children younger than 15 years of age in New Zealand has increased progressively at five percent per year, particularly in children from high-risk ethnic groups.

Pre-diabetes is a condition where blood sugars are above normal but below the range for a diabetes diagnosis and signals that the risk of developing diabetes is high⁽⁷⁾. Increasing rates of prediabetes is thought to be due to the rising prevalence of overweight and obesity in the population.

The rising prevalence of diabetes is predicted to have a major influence on the health system in terms of need for ongoing health treatment. It is also costly to provide services to manage the complications that develop as a result of diabetes such as increased risk of stroke, heart attack, nerve, kidney and eye damage.

Data collected in the New Zealand Health survey in 2013/14⁽⁸⁾ indicates the prevalence of diabetes using self-reported data is about twice that of non-Māori and higher disparities between Māori and non-Māori for diabetes complications including rates of renal failure more than five times greater than non-Māori.

3.4 Cancers

Dietary factors contribute to at least 12 cancers. Cancer is a leading contributor to health loss in New Zealand and is the single biggest cause of death⁽³⁾. Lung, bowel and breast are the cancers most commonly causing early death in New Zealand. The incidence of cancer is 30% higher for Māori and cancer-related mortality almost twice that of non-Māori^(9,10).

The latest report from the World Cancer Research Fund⁽¹¹⁾ indicates that healthy dietary patterns, a healthy bodyweight together with physical activity are protective and of more benefit against cancer than specific foods or food components⁽¹¹⁾.

3.5 Obesity

Obesity is a modifiable risk factor influenced by excess food intake and reduced energy expenditure over time. Reaching and maintaining a healthy body weight has been a focus of public health in the past two decades yet, despite the raised public awareness of the population being overweight and obese, Aotearoa continues to see growing rates of obesity. Children growing up here are the second most obese children in the OECD. Much of this is attributed to unhealthy environments which increases accessibility to poor food and drink intakes and a lack of physical activity.

Much has already been documented on obesity therefore ANA doesn't aim to reproduce the facts here. It is however important to note that obesity is an important common factor for multiple LTCs. Obesity is a wicked/ complex issue and multiple solutions are needed. In the companion paper *Food and Nutritional Issues in Aotearoa* we explore some of the social determinants of health and barriers to the population achieving a healthy weight.

Obesity is strongly linked to lower life expectancy and to several health conditions including coronary heart disease, high blood pressure, some cancers (e.g. breast and bowel), stroke, Type 2 diabetes, and arthritis/musculoskeletal conditions⁽²⁾. Around one third of New Zealand adults are in the obese category (30.9%) (48% Māori, 66.5% Pacific) and one third are overweight (34.3%)⁽¹⁾. There has been little change since the 2014/15 New Zealand Health Survey⁽¹⁾. Among children, obesity rates are unchanged since 2011/12, however, approximately 20% of children (2-14 years) are overweight and 11.3% are obese⁽¹⁾ (15.5% of Māori children, 28.4% of Pacific children).

When the body's energy intake is balanced with energy expenditure body weight remains stable. But when intake exceeds or is less than expenditure, a person will gain or lose weight, respectively. Research shows changes in body weight are likely to be related to food intake rather than energy expenditure⁽¹²⁾. The Eating and Activity Guidelines advise populations to make healthy food and drink choices while being physically active to achieve and maintain a healthy body weight⁽¹³⁾. This energy balance equation appears straightforward however there are multiple factors that impact on the population's ability to follow the guidelines. Energy is needed for the body to function. At times of growth energy needs are higher, such as in childhood, pregnancy and breastfeeding. Carbohydrates, proteins, fats and, if consumed, alcohol, provide varying amounts of energy.

Contribution To Energy Of Macronutrients	
Macronutrient	kJ/g
Fat	37
Protein	17
Carbohydrate	17
Alcohol	29

3.6 Mental health

Emotional, spiritual, family and whānau health are significant facets of wellbeing. Evidence supports the notion that diet has a significant impact on mental health, especially in depression where evidence suggests a causal relationship. Experimental trials have shown dietary interventions are effective in improving mental health outcomes. Within the last decade, there has been a growing interest and body of research on the role of diet and nutrition in mental health. The New Zealand Health Survey found 19.9% of adults have been diagnosed with a common mental health disorder, with reported mental health issues rising steadily since 2006 ⁽¹⁴⁾.

[Click here](#) to read more about the role of nutrition in brain health.

<https://ana.org.nz/wp-content/uploads/2020/08/ANA-Healthy-Brains-2020-Article-final.pdf>

Much of the high health loss due to long-term conditions among those living in Aotearoa is preventable with lifestyle behaviours such as healthier dietary patterns. Improving the socioeconomic determinants of health will have the greatest impact on reducing inequities for our most vulnerable populations.

4. Common food issues that impact on population health and LTCs

There are several factors related to food and nutrient intakes that impact on population health. This is a complex area and ANA has chosen to highlight five areas of concern in this paper:

4.1 High sodium (salt)

4.2 Lack of fruit, vegetables, whole-grains and legumes

4.3 High levels of saturated fat

4.4 Alcohol intake

4.5 High Sugar

4.1 High Sodium (salt)

Diets high in sodium raise blood pressure which is a major risk factor for heart disease and stroke ⁽¹⁵⁾. Sodium is an essential nutrient in the body to regulate water balance and body temperature, maintain blood volume and help muscles and nerves to function ⁽¹²⁾. The recommended upper level of intake is not more than 6 grams of salt (2,000mg sodium) per day ⁽¹⁶⁾.

The World Health Organization (WHO) set a target for countries to lower population salt intake by 30% towards 5g per day by 2025 ⁽¹⁷⁾. Despite New Zealand signing up to achieve this, inaction to date suggests we will not meet this commitment ⁽¹⁸⁾. Moreover, New Zealand lacks a government-led national salt reduction strategy including reformulation targets for packaged foods – unlike 75 other countries who have this in place ⁽¹⁸⁾.

New Zealand situation

- Most people consume more sodium than the body needs, approximately 9 grams of salt per day. Sodium intake has not reduced between the 2008/2009 National Nutrition Survey and the 2014/15 New Zealand Health Survey, overall or by any population sub-groups ⁽¹⁹⁾.
- The main source of sodium is processed foods (75%) with only 15% from salt added to foods (at the table or in cooking) and 10% occurs naturally in food ⁽²⁰⁾.
- Adults living in the most deprived areas had a salt intake twice as high as those living in the least deprived areas ⁽¹⁹⁾.

4.2 Lack of fruit, vegetables, whole-grains and legumes

Diets high in fruit and vegetables, whole-grains and legumes provide dietary fibre and important vitamins and minerals. Dietary fibre is found in all plants and the main sources of fibre in the diet are cereals, legumes, vegetable and fruit. Fibre is important for healthy bowel function and prevention of LTCs. High fibre diets have a beneficial effect on blood lipids, blood glucose control, body weight and reduce inflammation, therefore they have a role in reducing risk from cardiovascular disease and diabetes ⁽²¹⁾. A high intake of fibre, particularly fibre from cereals and whole grains, reduces the risk of colorectal cancer ⁽¹¹⁾. Higher fibre foods may help reduce energy intake and consequently contribute to maintaining a healthy body weight and preventing obesity ⁽¹³⁾. High potassium diets, of which vegetables and fruit are major sources in the New Zealand diet ⁽²²⁾, can help with blood pressure control ⁽²³⁾.

Diets that have shown a positive benefit on prevention of heart disease include the Mediterranean diet, vegetarian diets and diets that are mainly plant-based ⁽²⁴⁾. Vegetarian diets and plant-based diets appear to also reduce risk of ischaemic heart disease compared to diets that include meat. Similar benefits have also been shown for cardiovascular risk factors, blood pressure, obesity, LDL cholesterol and diabetes ⁽²³⁾.

Diet is an essential part of the treatment of prediabetes and Type 2 diabetes to keep blood glucose levels within the normal range. Lifestyle recommendations include losing weight if overweight, healthy eating – plenty of fruit and vegetables, lean meats, low-fat milk and milk products and healthy oils and nuts.

The evidence that fruit and vegetables reduce cancer risk is not clear ⁽²⁵⁾ however, the World Cancer Research Fund ⁽¹¹⁾ recommends consumption of vegetables and fruit as well as legumes and wholegrains as protective factors.

New Zealand situation

- Fibre intakes (median intake for adults is 19.6g) ⁽²²⁾ were below the Recommended Adequate Intake (RDI) for men (30g) and women (25g) however, higher amounts are recommended (38g for men and 28g for women) to prevent non-communicable diseases ⁽¹⁶⁾.
- Bread, vegetables, potatoes, kumara and taro, and fruit were the main sources of fibre in the diet of New Zealanders. Grains and pasta, breakfast cereals and bread-based dishes were less prominent sources ⁽²²⁾.
- Around one-third of New Zealanders ate white bread, with Māori, Pacific and adults living in socio-economically deprived areas more likely to eat white bread ⁽²²⁾.

4.3 High levels of saturated fat

The type of fat in the diet is important for cardiovascular disease (CVD) risk. Research indicates that populations consuming diets low in saturated fats have lower rates of CVD. Conversely, diets high in saturated fat are associated with increased risk through raised blood cholesterol levels ⁽²⁶⁾. Replacement of saturated fat with unsaturated fat in the diet also lowers CVD risk. Furthermore, replacement of saturated fat with wholegrain carbohydrates in preference to refined carbohydrates has also been shown to be beneficial to CVD risk. New Zealand adults consume over the recommended intake ($\leq 10\%$) of saturated fats (13% of total energy from fat) ⁽²²⁾. Between the 1997 and 2008/09 nutrition surveys, the percentage energy obtained from saturated fat decreased by 1-2 % ⁽²²⁾.

4.4 Alcohol intake

While alcohol is not an essential item it does however contribute to the total energy intake of the population therefore that is why it has been included in this paper.

Alcoholic beverages can provide significant amounts of energy in the diet, yet few nutrients. Alcohol intake may also affect food intake ⁽²³⁾. Alcohol and obesity are the nutritional factors that contribute to the highest burden of cancer globally ⁽¹¹⁾. There is convincing evidence that alcohol is associated with at least seven types of cancer including cancers of the upper gastro-intestinal tract, liver and breast ⁽¹¹⁾. Drinking even low levels of alcohol regularly can increase cancer risk ⁽²⁷⁾.

As well as cancer, alcohol is a risk factor for many health issues including poor mental health, heart disease and stroke ⁽²⁸⁾.

In addition, reducing alcohol consumption reduces blood pressure ⁽²⁹⁾. The risk of harm from alcohol can be lowered by limiting intake to no more than two standard drinks per day for women and three for men (and no more than ten per week, with at least two alcohol-free days) ⁽³⁰⁾.

New Zealand situation

- Four in five (80%) of adults drank alcohol in the past 12 months with men more likely than women ⁽¹⁾.
- One in five adults have a hazardous drinking pattern (defined as an 'established drinking pattern that carries a risk of causing harm to physical or mental health or having social effects on the drinker or others') ⁽¹⁾.
- Alcohol is one of the six major risk factors for health loss accounting for 5% of total health loss in New Zealand between 1990 and 2017 ⁽³⁾.

4.5 High Sugar

Sugar is a carbohydrate intrinsic in a few foods (e.g. fruit, honey, milk) but added to many foods as a sweetener (e.g. biscuits, beverages). Other functions in food include preservation (e.g. jams), and to add texture and palatability. The Eating and Activity Guidelines recommend New Zealanders limit drink and food with added sugar and highly processed food that contains sugar (and refined grains, saturated fat and salt) ⁽¹³⁾. Large amounts of added sugar

in foods greatly increases the energy content but contains little other nutritional value. Eating and drinking foods high in sugar (e.g. soft drinks) may limit intake of foods containing nutrients, especially for children and adolescents when nutrients needs are high.

The WHO recommends that free sugar intake should be reduced to 10% of total energy intake, with additional benefits for oral health if reduced further to 5% of total energy intake ⁽³¹⁾. Sugars have been classified by the World Health Organization as intrinsic sugars, free sugars and added sugars ⁽³¹⁾. Free sugars refer to all sugars added to foods by the manufacturer, cook or consumer, plus the sugars that are naturally present in honey, syrups and fruit juices. Added sugars are the sugars linked to poor health, including dental health, cardiovascular disease, and obesity ⁽³²⁾. In contrast, foods with intrinsic sugars, those naturally occurring in foods such as milk and fruit, contain other nutrients such as protein and minerals in the case of milk, and fibre, vitamins, and minerals in fruit.

In addition, ANA is concerned about the dental health of New Zealanders. Poor dental health impacts on people's food choices and the ability to chew foods such as fruits, vegetables and wholegrains. Dental health has not been explored in this paper.

The dietary patterns of people living in Aotearoa are generally too high in energy, salt, saturated fat, added sugar, and for some, alcohol; and too low in wholegrains and fruit and vegetables, and therefore low in fibre.

5. Dietary patterns

While the situation summarising LTCs in New Zealand is of concern, the good news is there is evidence showing a range of dietary patterns have been found to be beneficial to health, wellbeing and prevention of chronic disease.

The Mediterranean-style diet, Dietary Approach to Stop Hypertension (DASH) and Dietary Guidelines-related patterns have been shown to be associated with better health outcomes⁽³³⁾. While there are differences in fat, carbohydrate and protein content between dietary patterns, there are commonalities that are transferable to the New Zealand diet and are incorporated in the Eating and Activity Guidelines.

These shared qualities include increased consumptions of fruit and vegetables, wholegrains, nuts, legumes, healthy plant oils and fish; and reduced consumption of red meat, processed meat and added sugars. In contrast, highly processed foods contain large amounts of undesirable nutrients, saturated fat, sugar and salt; and low amounts of positive nutrients and food components, vitamins, minerals and dietary fibre and other phytonutrients important for good health.

The dietary patterns of New Zealanders are generally too high in energy, salt, saturated fat and added sugar; and too low in wholegrains and fruit and vegetables, and therefore low in fibre⁽²²⁾. The number of people meeting the fruit and vegetable guidelines has significantly declined by almost 10% since 2006/07⁽¹⁾.

ANA calls for co-ordinated action into addressing and improving the common nutrition risk factors associated with key long-term conditions. Improving the socioeconomic determinants of health and food and alcohol environments will have the greatest impact on reducing inequities for our most vulnerable populations. ANA advocates for actions to be equity-based and multi-sectorial⁽³⁴⁾.

6. Recommendations

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

Together we must:

Develop a National Nutrition Strategy to include:

- addressing the food and alcohol environments and socioeconomic conditions to address nutrition risk factors associated with long-term conditions
- action on improving dietary patterns to significantly reduce the burden of disease from long-term conditions.

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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Key Micronutrient Challenges for Aotearoa



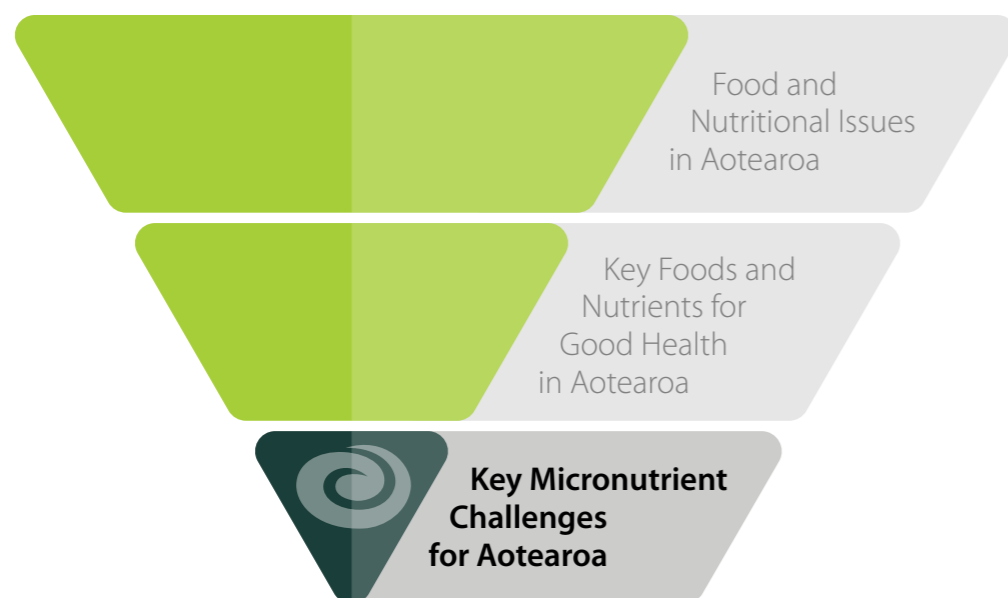
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Everyone in Aotearoa New Zealand has a right to live, grow, learn, and work in an environment that provides access to healthy, affordable, and safe food.

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.

The authors are Dr Leanne Young (NZ Registered Dietitian) and Dr Sally Mackay (Registered Nutritionist), who have worked with Alison Pask (NZ Registered Dietitian and ANA Executive Director).

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 9-11mg 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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