



HEALTHY BRAINS

The role of nutrition in helping New Zealanders maintain positive mental health.

Daily stress and uncertainty can play havoc with our mental well-being. But so can other factors, such as our eating habits and general state of health. **“We’ve long been aware that what we eat and drink can be linked to positive mental health,”** says Activity and Nutrition Aotearoa (ANA) executive director Alison Pask. **“Conversely, not being able to get enough nutrients from our diets can have a negative effect. Deficiencies in vitamins and minerals are associated with mental health issues such as depression and anxiety.”**

ANA intends for this brief review to be a discussion paper to create awareness about how food and nutrition can support positive mental health.

How we eat, what we eat and how our body uses food can all have an impact on our physical and mental health.

Well-being means different things to different people.

While a dictionary may tell us that well-being is the ‘state of being happy, healthy or prosperous’¹, well-being is a careful balance of many different things, including good mental health.

“In 2018, nearly 1 in 4 adults reported experiencing ‘poor’ mental well-being²,” Alison says. “Those most at risk were Māori and Pacific adults, young adults aged 15 to 25, women, and people living in socio-economically deprived areas. And the 2017 Mental Health and Addiction Services Annual Report shows that record numbers of New Zealanders are now using mental health and addiction services³. What’s more, the stress, anxiety and depression felt daily by many often goes without a formal diagnosis by a doctor.”

Mental distress is experienced differently.

Mental distress may be felt as isolation, lack of connection, depression, anxiety, stress and feeling overwhelmed or unable to cope.⁴

“Many things can affect our positive mental health, including pre-existing medical conditions and disabilities, discrimination, cultural fulfilment, financial security, working conditions, family life, resilience and personal contact²,” says Alison.

“A lack of positive mental well-being can affect the relationships we have with ourselves and our whānau and friends, and our productivity and experiences at school, university or in the workplace.”

The influence of nutrition during pregnancy and breastfeeding.

The relationship between nutrition and stress and positive mental well-being begins before we are even born. Having the right balance of nutrients, protein, fats, energy, vitamins and minerals during pregnancy provides the right building blocks for brain development.^{5,6} “Nutrient deficiencies during pregnancy can increase the risk of neural tube defects such as spina bifida and changes to cognitive abilities, and delay language and mental development,” Alison says. “And we know that brain development in pre-schoolers is linked to later life achievements, such as higher socio-economic status and income. Our ability to do well at school is also associated with an increased feeling of personal control and self-esteem.”⁵

The nutrients available from the food choices we make.

The ability to produce all the things we need to keep our body systems (including our brain and mood regulation) working is influenced by the foods we eat, what we drink and the range of nutrients we consume. Too much or too little of the right nutrients can also impact our ability to concentrate, focus and produce the chemicals needed to feel happy or sleep.

“Long-term food choices and the ability of our body to use nutrients may also affect positive mental health,” says Alison.

Several deficiency symptoms of micronutrients, vitamins and minerals include those that are associated with our mood and well-being,⁷ such as:

MICRONUTRIENT	DEFICIENCY SIGN	FOODS SOURCES
Vitamin B1 (Thiamin)	Short-term memory loss, confusion	Wholegrains, meat, fish
Vitamin B3 (Niacin)	Depression, apathy, fatigue, memory loss	Beef liver, chicken, salmon, fortified breakfast cereals
Vitamin B12	Depression, confusion, poor memory	Meat, fish, eggs, milk, dairy products
Vitamin C	Fatigue, depression	Citrus fruit, kiwifruit, broccoli, tomatoes
Iron	Fatigue, impaired cognitive function, poor performance	Red meat, fish, beans, fortified breakfast cereals
Magnesium	Sleep disruption, personality changes	Almonds, spinach, cashew nuts, black beans, edamame beans
Zinc	Impaired cognitive function	Seafood, beans, nuts, wholegrains

Tap water is the drink of choice.

Together with oxygen and nutrients from our food, we need water to live. We get water from drinks and food; we lose it through sweat, breathing and digestion. Thirst is the sensation set off by several different systems in the body and brain to let us know we need fluids.⁸ However, thirst isn't a reliable indicator of whether we need fluid or not. Age, exercise and illness all change our perception of thirst and our triggers to drink enough.

Not drinking during the day, working in air-conditioned workplaces, hotter climates and physical activity without drinking enough can all cause mild dehydration. Severe dehydration can be responsible for confusion and hallucinations, but even mild dehydration can influence our mood, increasing feelings of tension and anxiety.^{9,10}



How our physical health affects our mental health.

Links have been found between health conditions and our ability to experience positive mental well-being.

Obesity is linked to depression. This is a complex relationship and there are multiple links including the underlying reasons behind changes in eating behaviour, reduced physical activity or impacts on the stress pathways in the body. Experiencing stress increases the release of hormones, which can increase food intake and insulin resistance, upping the risk of weight gain.¹¹

“Fat-shaming also causes a heightened risk of depression in children and adults and reluctance to seek help^{12,13},” says Alison.

Rates of depression are two to three times higher in people with all forms of diabetes than the general population.¹⁴ “It’s estimated that about 30% of people with type 1 or type 2 diabetes have depression,” Alison says. “Research has also linked the combination of high blood sugar and diabetes and depression with further health complications such as eyesight issues and kidney problems¹⁵.”

People with depression are at higher risk of developing cardiovascular disease. People with coronary artery disease and depression have two to three times increased risk of experiencing cardiac events.¹⁶ Some 10% of New Zealanders take medication to control high cholesterol, and 4% have had a heart attack or have angina.

Activity.

Many of the conditions affecting mental well-being are managed in part by lifestyle changes, including regular physical activity. “As well as helping to manage the underlying health conditions, physical activity has also been found to reduce subclinical depression and anxiety in adults and children^{17,18},” Alison says.

Regular physical activity can reduce the odds of depression by 45% and anxiety by 28% to 48%¹⁷.

“Being aware of how physical health is intertwined with our mental health allows us to provide help and assistance to individuals more tailored to their needs. It’s like this: an improvement in mental well-being can improve our physical health and improved physical health can impact on our mental well-being.”

Accessing safe, nutritious and affordable food.

Food insecurity is defined as having limited or uncertain access to nutritionally adequate or safe food, and that those foods can’t be obtained in a socially acceptable way.¹⁹ It is not only a cause of stress and anxiety but can affect the quality and quantity of food available.^{20,21,22}

Food insecurity may be affected by:^{19,23,24}

- household income
- cooking skills
- cost of food, particularly healthy food
- the ability to travel to supermarkets/food shops

“Being able to access safe, nutritious, affordable and familiar food is something that’s not guaranteed, even in New Zealand. The last *New Zealand Nutrition Survey* (2008/09) reported that 7% of respondents had low food security, and an additional 30% were only moderately food secure.²⁵ In 2015/16, one in five New Zealand children lived in a household that experienced severe to moderate food insecurity.²⁴ More than 40% of secondary school students are concerned about food security, which is negatively affecting their feelings of well-being.”²²



*A Focus on Māori Nutrition: Findings from the 2008/09 New Zealand Adult Nutrition Survey*²⁶ also found that Māori men and women were more than twice as likely to experience low food security than non-Māori.

The *Household Food Insecurity Among Children: The NZ Food Survey*²⁴ reported that families said that they:

- cannot afford to eat
- run out of food
- eat less
- eat a limited variety of foods
- must rely on others for food
- use food grants or banks
- are stressed about not having enough money
- feel stressed at social events because they can't supply food

Addressing the underlying issues that stop people from accessing safe, nutritious and affordable food can not only improve physical well-being but also improve our ability to achieve positive mental well-being.

Food, culture and mental health.

Culture also plays a vital role in how we choose food, and what food we want to eat.²⁷ "Being able to participate in cultural activities has been found to increase positive emotions and improve our social interactions²⁸," says Alison. "Positive mental health is also linked to the role that food and meal-sharing play in well-being²⁹."

Sharing food with others, or hospitality, is a strong Māori social value.³⁰ Gifts of food are common.³¹ The *Household Food Insecurity Among Children: NZ Food Survey*²⁴ reported stress caused by the inability to provide food at social events – and generally not being able to provide enough food – can create a sense of shame.

Encouraging access to culturally relevant foods and food-related activities may help build positive mental well-being.

How we eat during times of stress, anxiety or depression.

"When we go through times of stress, anxiety or depression, our appetite may be affected.

In children, the appetite may not be affected, but stress can affect the choice of food, with a greater emphasis on unhealthy choices."^{32,33}

Stress, anger, shame and boredom are all associated with eating more.³⁴

The food choices we make during periods of stress, anxiety, and depression can also affect our feelings of well-being. Food can be used to trick our brain into behaving differently by changing the levels of natural chemicals found within it.



Foods and eating patterns that don't support positive mental well-being.

Studies have found that 'healthy' versus 'unhealthy' food choices can influence our emotional health.^{37,32}

'Healthy' behaviours included eating:

- breakfast, a mid-morning snack and lunch
- fruits and vegetables
- dinner as a family

'Unhealthy' behaviours included eating:

- soft drinks
- takeaways
- unhealthy snacks (for example, biscuits, potato chips and instant noodles)
- fried or high fat foods (for example, french fries and pies)
- sweet foods (for example, chocolates, lollies and ice cream)
- purchasing snacks from takeaways or convenience shops



Processed foods.

While traditional dietary patterns are protective against developing depression and anxiety, Western-style diets high in red and/or processed meats, refined grains, sweets, and high-fat dairy products are associated with an increased risk.³⁹

High sugar, caffeine and energy drinks.

Sugar-sweetened and caffeinated drinks may not be the best choice if we're trying to achieve positive mental well-being.

ANA's review of the research found that two cups of a cola equivalent can increase the risk of depression by 5% and three cans a day increases the risk of depression by approximately 25%.

If we drink more than five to six cups of coffee a day, we may increase the chance of depression.^{45, 46, 47}

A study of 8,500 New Zealand high school students found that 35% had consumed energy drinks in the past week, and 1% more than four times over seven days. Energy drink consumption was significantly associated with greater depressive symptoms, more emotional difficulties and lower subjective well-being overall.⁴⁸

Replacing sugar sweetened drinks, coffee or energy drinks with water is a great way to start reducing the amount of sugar and caffeine we drink and to help prevent dehydration.

Alcohol.

People with poor mental health are more likely to increase their alcohol intake as their mood declines.⁴⁹ "Alcohol intake is linked to a variety of mental health issues and as this is a large topic in its own right we have chosen not to include the research in this report," says Alison.

Eating and activity guidelines that best help us maintain positive mental well-being.

“When we scanned the research, we found there are food choices we can make that can support positive mental well-being,” Alison says.

New Zealanders are encouraged to eat a range of nutritious foods every day, choosing those that are high in fruit and vegetables, legumes, wholegrain cereals and fish, and lower in red meat, added sugar and processed foods.^{40,41,42}

A healthy lifestyle consists of:

- eating plenty of vegetables and fruit
- eating grains, especially wholegrain and high-fibre foods
- consuming some milk and milk products (mostly low and reduced fat)
- eating some legumes, nuts, seeds, fish, seafood, eggs, poultry and/or red meat with the fat removed
- choosing fewer processed foods
- choosing plain water over other drinks
- keeping physically active

Eat more fruit and vegetables.

Fruit and vegetables can lessen the risk of depression and anxiety.³⁵

The indications are that every 100g increase of fruit and vegetable intake could reduce the risk of depression by 3%.³⁶

Eating fruits and vegetables less than five times a day is associated with an increased risk of depression and anxiety.³⁵

100g of fruits and vegetables look like one of the following:

- 1 small apple
- 1 small banana
- ¾ cup blueberries
- 2 small carrots
- 1 cup peas
- 1 cup chopped broccoli



Our intake of fruits and vegetables is dropping, with only one-third of adults and about half of children meeting their recommended fruit and vegetable needs.

Eating more fruits and vegetables may be an easy way to help improve our mental well-being and, for many, it's probably the most manageable option.

Eat fish as part of a healthy diet.

We're encouraged to eat oily fish as part of a healthy diet because the omega-3 fatty acids from oily fish can help our heart health. Studies have found that people who eat 50g of fish per day or get 1.8g omega-3 fatty acids daily from fish and other omega-3 fatty acids experience a lower risk of depression.³⁸

Cook and eat together.

“It’s not just the food we eat but also how we eat that can help us maintain positive mental well-being,” says Alison.

Being able to prepare a meal and cooking and eating together is positively associated with better nutrition, better mental health and stronger family connections in New Zealand adolescents.⁴³

The NZ Mental Health Foundation reports that 31% of New Zealanders have felt lonely a little, some, most, or all of the time in the past month. People more likely to be lonely include younger people, women, people living in rented accommodation, one-parent families, and unemployed people.⁴⁴

ANA’s eight recommendations for positive mental health.

- Drink (tap) water daily
- Eat vegetables and/or fruit at every meal
- Ensure optimum nutrition at all life stages starting from pregnancy
- Support breastfeeding
- Do regular physical activity
- Choose affordable, nutritious food
- Celebrate culture and share meals together
- Seek help if you are concerned.
Talk to your doctor or one of the many **helplines available** www.mentalhealth.org.nz



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