Nutrition

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Specialist Dietitian

Norwich

Bipolar Edinburgh 6/11/25

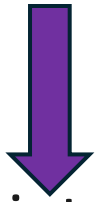
Nutrition

- Late Middle English: from late Latin *nutritio(n-*), from *nutrire* ‘feed, nourish’
- Origin of nurse (wet nurse)

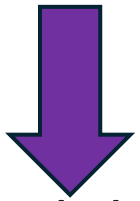
Nutrition

Taking in and use of nourishing material by the body

- Food or drink is consumed



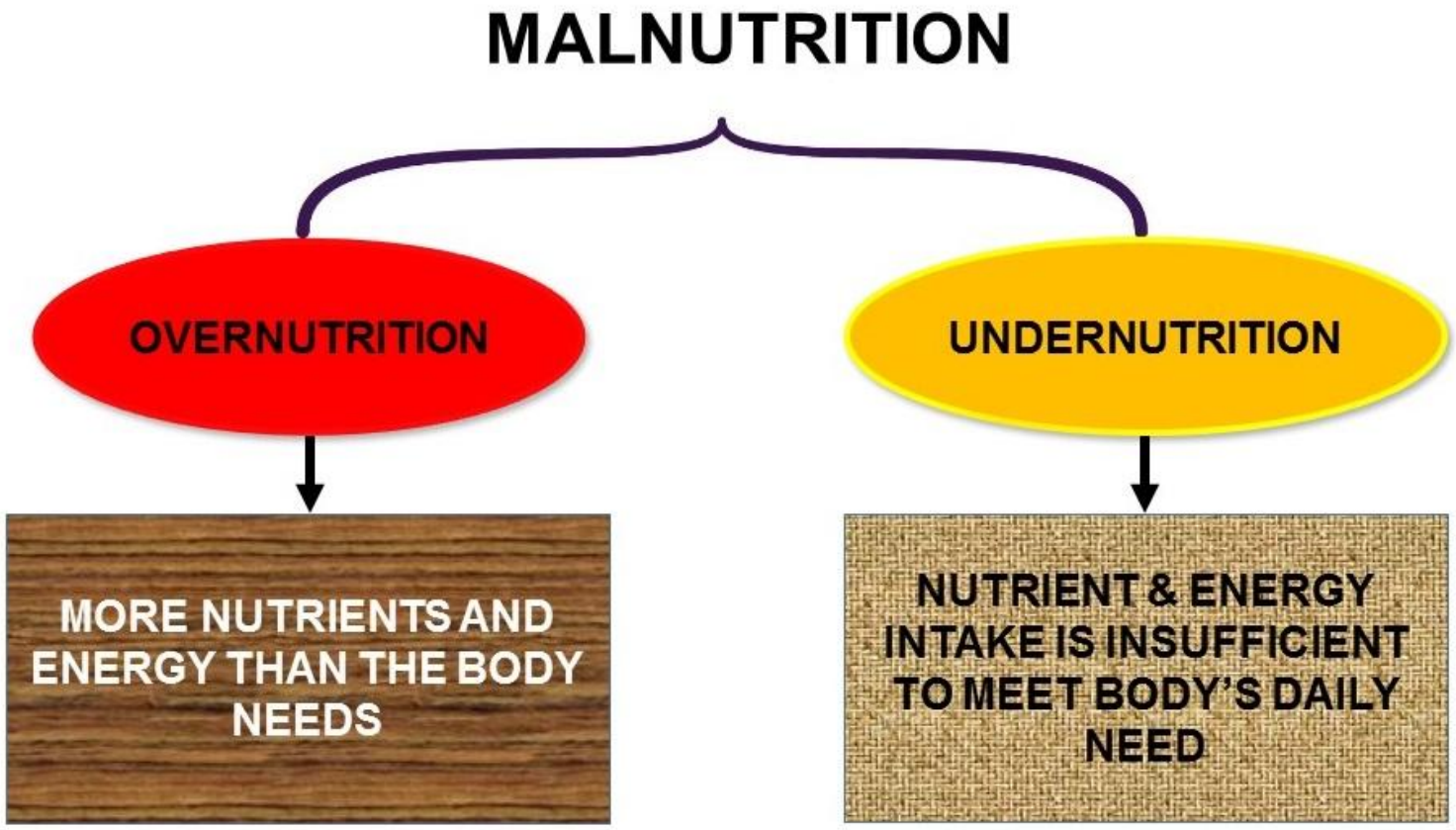
- Broken down into nutrients



- Nutrients travel through the bloodstream to different parts of the body where they are used as "fuel" and for many other purposes

- Properly nourished -> requires eating and drinking enough of the foods that contain key nutrients

Nutrition



Datelinehealth Africa Inc. 2025 used with permission.

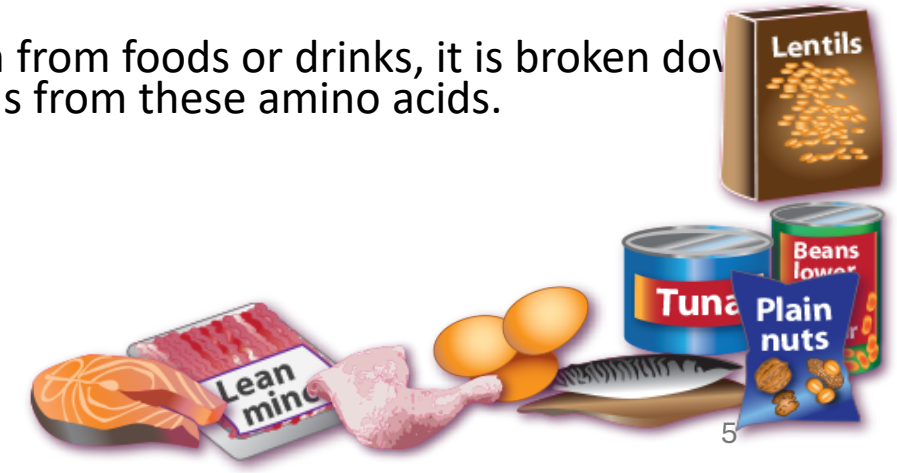
Macronutrients: Protein

- Macronutrients provide us with energy.
- It's essential we have protein in our diets. We need protein for energy growth, repair and maintenance of our bodies, especially our bones and muscles.

- Protein supports the function and healthy development of our organs like our brain, heart and liver, the antibodies in our immune system and the haemoglobin that carries oxygen in our blood.

- Many protein-rich foods are also important sources of micronutrients, such as iron in meat and calcium in dairy foods so a diet rich in protein is hugely beneficial to our overall health.

- Proteins are made up of chains of amino acids. When we digest protein from foods or drinks, it is broken dow into amino acids. The body then builds all the different proteins it needs from these amino acids.



Reference

https://www.nutrition.org.uk/nutritional-information/protein/

Macronutrients: Fats

- An important part of a healthy, balanced diet.
- Helps us absorb the vitamins A, D, E and K.
- Source of essential fatty acids, which the body cannot make itself.
- All types of fat are high in calories and so eating a lot of fatty foods can make it easy to consume more calories than we need
- Too much saturated fat may increase blood cholesterol, risk factor for heart disease and stroke

Reference: www.nutrition.org.uk/nutritional-information/fat/

Macronutrients: Carbohydrate

Starchy foods are an important source of fibre as well as vitamins and minerals, including:

- **B vitamins** – e.g. vitamin B1, which helps the body use the energy from the carbohydrates we eat and well as supporting the heart and nervous system
- **Iron** – important for normal brain function, the immune system and for the red blood cells that transport oxygen around the body
- **Calcium** – to help keep bones and teeth healthy
- **Folate** – needed to make healthy red blood cells and for the nervous system

Wholegrains are a key source of fibre.

Important for health, linked with reduced risk of heart disease, type 2 diabetes, bowel cancer and inflammation.

Micronutrients: Vitamins

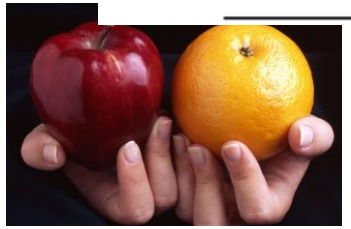
Vitamin	Role	Food sources
Vitamin A	Helps the immune system to function normally, helps with vision, and helps the maintenance of normal skin.	Liver, cheese, eggs, dark green leafy vegetables and orange-coloured fruits and vegetables (such as carrot, sweet potato, butternut squash, cantaloupe melon and papaya).
Vitamin B1	Helps to release energy from food. It also helps our nervous system and heart function normally.	Bread, fortified breakfast cereals, nuts and seeds, meat, beans, and peas.
Vitamin B2	Helps to release energy from food, reduce tiredness, and helps to maintain normal skin and a normal nervous system.	Milk, eggs, fortified breakfast cereals, some oily fish (such as mackerel and sardines), mushrooms and almonds.
Vitamin B3	Helps to release energy from food, reduce tiredness, and helps to maintain normal skin and a normal nervous system.	Meat, poultry, fish and shellfish, wholegrains (such as brown rice, wholewheat pasta and quinoa), bread and some nuts and seeds (such as peanuts and sesame seeds).
Vitamin B6	Helps to make red blood cells, which carry oxygen around the body. It helps our immune system work properly, regulates hormones, and helps to reduce tiredness.	Meat, poultry, fish, fortified breakfast cereals, egg yolk, yeast extract, soya beans, sesame seeds, some fruit, and vegetables (such as banana, avocado and green pepper).
Folic acid	Helps to make red blood cells, reduce tiredness, and helps the immune system work as it should. It is also needed for the normal development of the nervous system in unborn babies.	Green leafy vegetables, some breads (such as malted wheat and brown bread), offal, peas and beans, oranges, berries, and fortified breakfast cereals.
Vitamin B12	Helps to make red blood cells, helps the nervous system function normally, and helps to reduce tiredness.	Meat, fish, shellfish, milk, cheese, fromage frais, eggs, fortified yeast extract and fortified breakfast cereals.
Vitamin C	Helps to protect cells from damage. It helps form collagen, which is important for normal bones, gums, teeth, and skin. It also helps the immune system and the nervous system to function normally.	Fruit (especially citrus fruits, blackcurrants, strawberries, papaya, and kiwi), green vegetables, peppers, and tomatoes.
Vitamin D	Helps the body to absorb calcium and to build and maintain healthy bones and muscles. It also helps the immune system to work as it should.	Oily fish, eggs, fortified breakfast cereals and fat spreads. In spring/summer, most people will get most of their vitamin D through the action of sunlight on the skin.
Vitamin E	Helps to protect the cells in our bodies against damage.	Vegetable and seed oils (such as olive, rapeseed, sunflower, peanut oils) nuts and seeds (such as sunflower seeds and almonds), avocados and olives
Vitamin K	Helps with normal clotting of blood and is required for normal bone structure.	Green vegetables (including leafy greens, broccoli, green beans, and peas) and some oils (such as rapeseed, olive, and soya oil).

https://www.nutrition.org.uk/nutritional-information/vitamins-and-minerals/

Minerals

Mineral	Role	Food sources
Calcium	Helps to build and maintain strong bones and teeth. It helps nerves and muscles to function normally and helps blood to clot normally.	Milk, cheese, yogurt, fromage frais, some green leafy vegetables, calcium-fortified dairy-alternatives, canned fish, and breads.
Fluoride	Helps to form strong teeth and helps to reduce the risk of tooth decay.	Tap water, tea, and toothpaste.
Iodine	Helps to make thyroid hormones, and it helps the brain to function normally.	Milk, yogurt, cheese, some fish (such as cod, mackerel, haddock), some shellfish (such as crab and mussels) and eggs (and some fortified dairy alternatives).
Iron	Helps to make red blood cells, which carry oxygen around the body. It also helps the immune system to work and helps the brain to function normally.	Offal, red meat, beans, pulses, nuts and seeds, fish (such as canned sardines and mussels), quinoa, wholemeal bread, and dried fruit
Magnesium	Helps to release energy from food, maintain strong bones and it helps normal muscle and nerve function.	Nuts and seeds, wholegrain breakfast cereals, wholegrain and seeded breads, brown rice, and quinoa.
Phosphorus	Helps to build strong bones and teeth and helps to release energy from food.	Red meat, poultry, fish, milk, cheese, yogurt, eggs, bread, and wholegrains (such as brown rice and wholewheat pasta).

Mineral	Role	Food sources
Potassium	Helps to regulate the water content in the body and maintain a normal blood pressure. It also helps the nerves and muscles to function normally.	Some fruit and vegetables (such as banana, blackcurrants, avocado, spinach, parsnip, and beetroot), dried fruit (such as apricots, sultanas, and figs), poultry, red meat, fish, milk, and wholegrain breakfast cereals.
Selenium	Helps to protect the cells in our bodies against damage, helps the immune system to work as it should, and helps maintain normal skin and nails, and normal fertility in males.	Some nuts and seeds (such as Brazil nuts, cashews, and sunflower seeds), eggs, offal, poultry, fish, and shellfish.
Sodium	Helps to regulate the water content in the body.	Very small amounts found naturally in foods. Often added as salt during processing, preparation, preservation and serving.
Zinc	Helps to contribute to normal mental skills and abilities and helps to maintain normal hair, skin, and nails. It also helps with the normal healing of wounds and contributes to normal fertility and reproduction.	Meat, poultry, cheese, some shellfish (such as crab, cockles, and mussels), nuts and seeds (such as pumpkin seeds and pine nuts), wholegrain breakfast cereals and wholegrain and seeded breads.

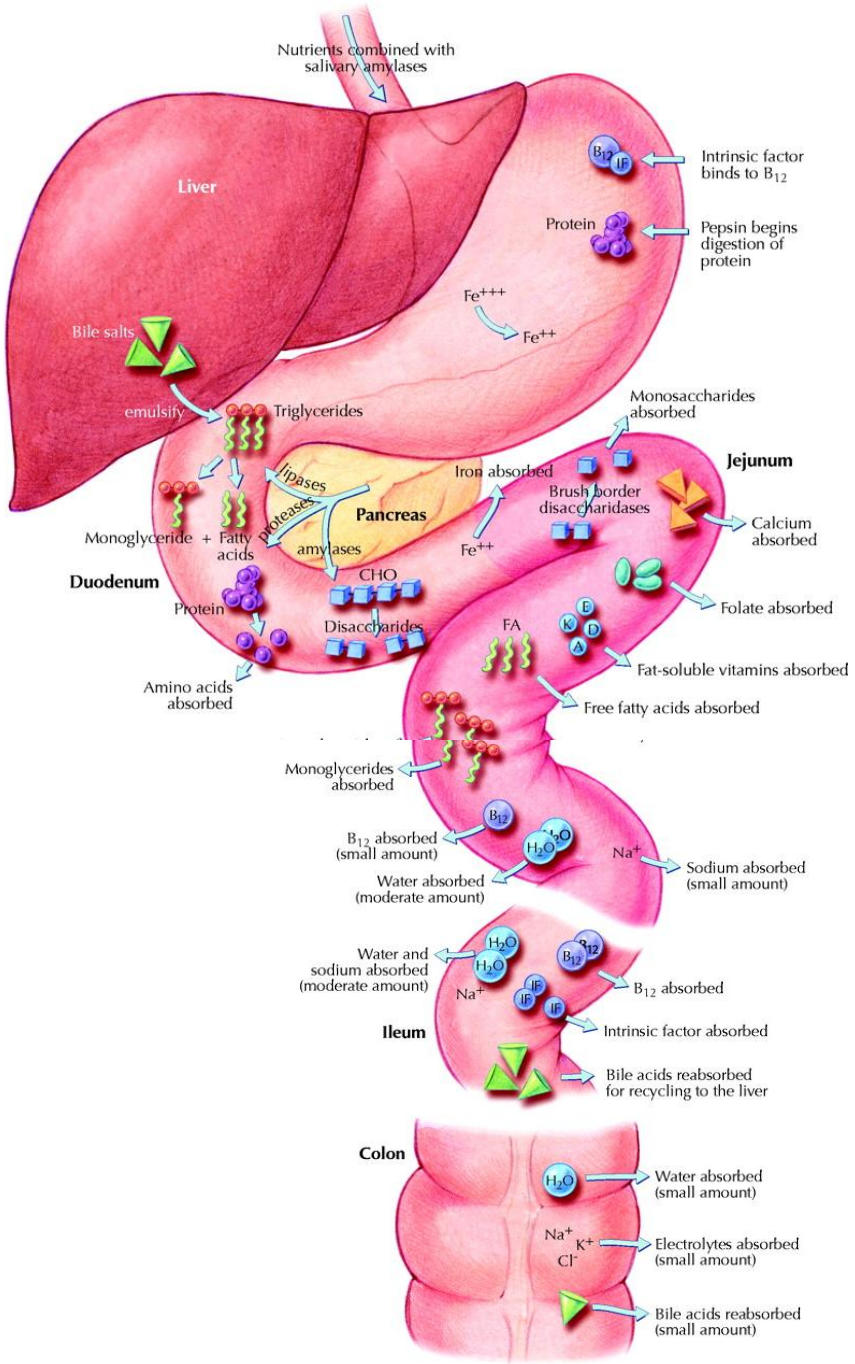


https://www.nutrition.org.uk/nutritional-information/vitamins-and-minerals/

updated 10/11/25 KP

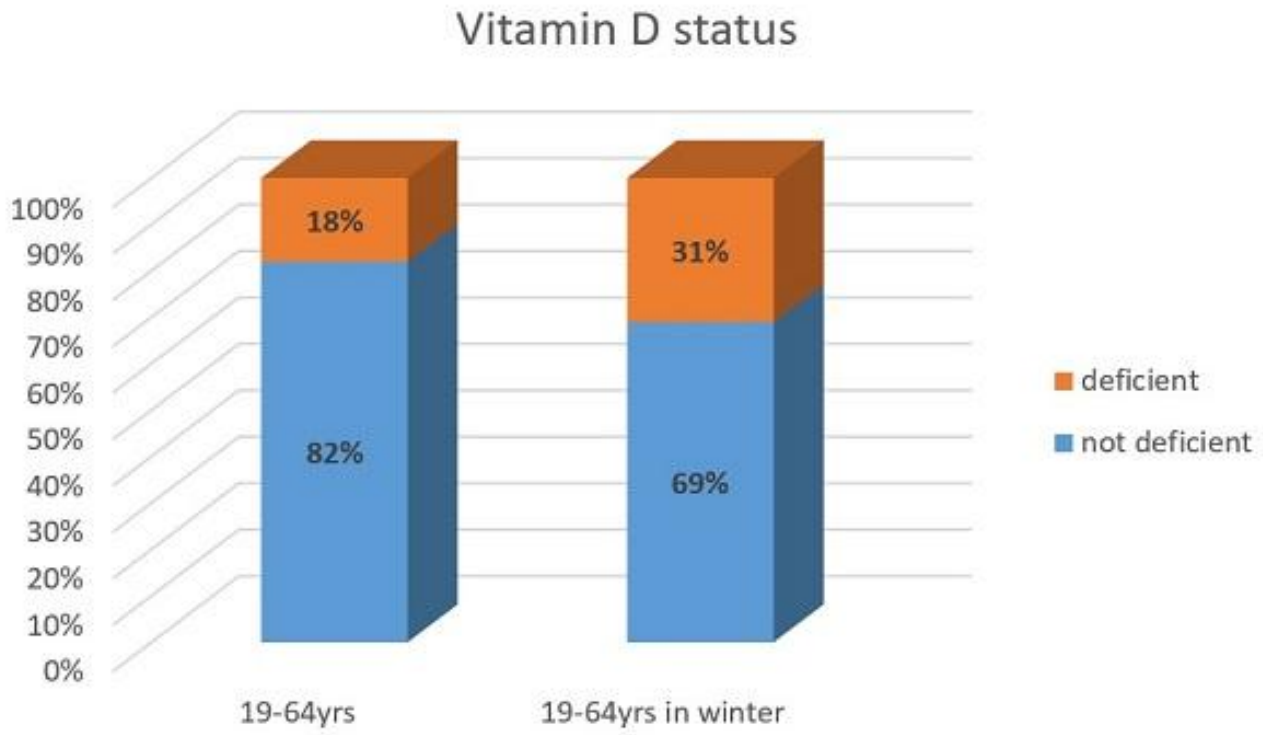
Fig: The relative locations of digestion and absorption of nutrients in the healthy gastrointestinal tract.

Fe = iron

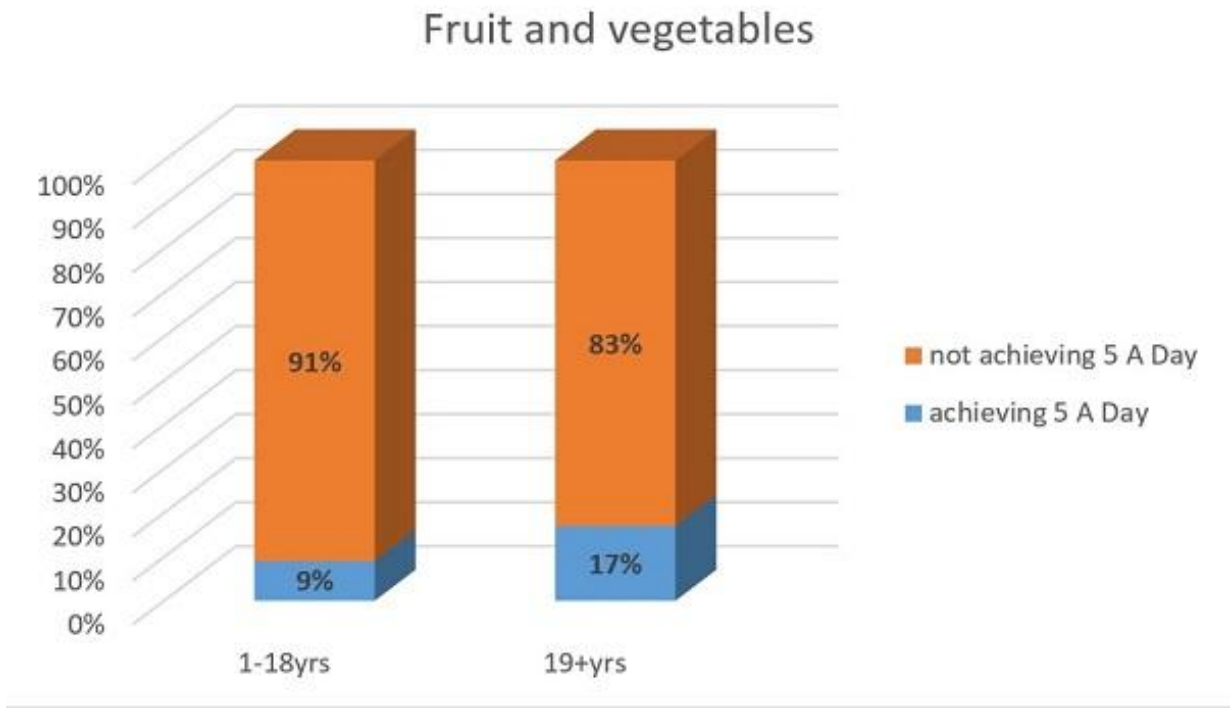


Khursheed N. Jeejeebhoy CMAJ 2002;166:1297-1302

National Diet and Nutrition Survey 2019 to 2023 highlights dietary deficiencies



National Diet and Nutrition Survey 2019 to 2023 highlights dietary deficiencies and inequalities - MRC Epidemiology Unit

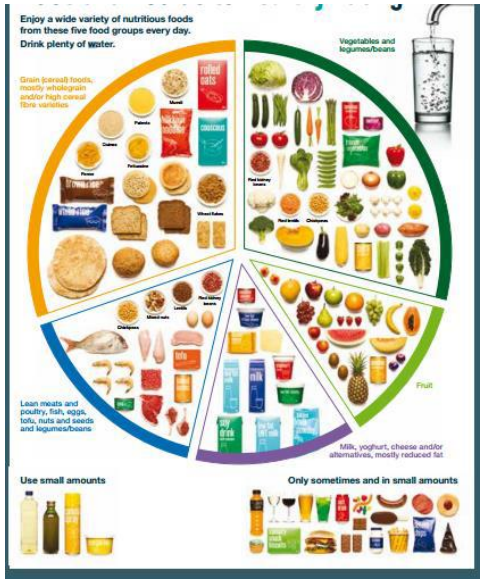


National Diet and Nutrition Survey 2019 to 2023 highlights dietary deficiencies and inequalities - MRC Epidemiology Unit

Eatwell models throughout the world

Spain

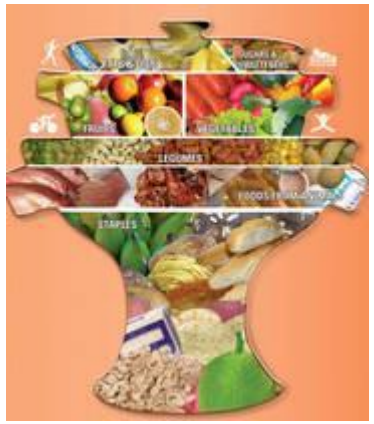
Thailand



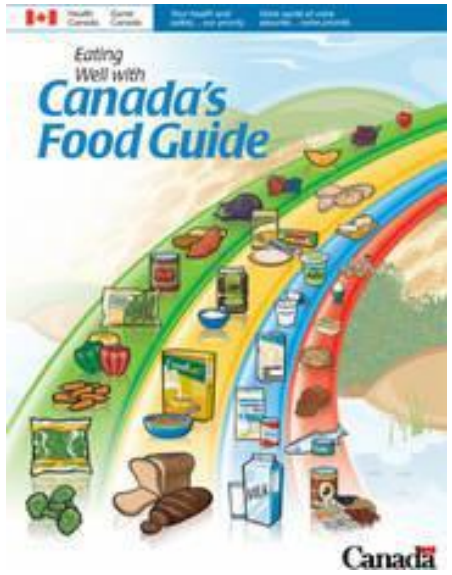
Australia

India

Argentina



St Lucia



Canada

The progression of UK food based models

1994

2007

2016

The Eatwell Guide

In the UK, the healthy eating model is known as the Eatwell Guide. The **Eatwell Guide** applies to most people regardless of weight, dietary restrictions/preferences or ethnic origin.

It doesn't apply to children under two years because they have different nutritional needs. Children aged two to five years should gradually move to eating the same foods as the rest of their family, in the proportions shown on the **Eatwell Guide**.

Key messaging

The **Eatwell Guide** shows the proportions in which different groups of foods are needed in order to have a well-balanced and healthy diet.

The proportions shown are representative of food eaten over a day or more, not necessarily at each mealtime.

Choose a variety of different foods from each food group to help get the wide range of nutrients the body needs to stay healthy.

Key messaging

Anyone with special dietary requirements or medical needs might want to check with a registered dietitian on how to adapt the Eatwell Guide to meet their individual needs.

The Eatwell Guide divides foods into groups, depending on their nutritional role and shows the proportions of each of the groups needed for a healthy, varied diet.

The food groups

Let’s take a closer look at each food group.

The food groups

Fruit and vegetables

Potatoes, bread, rice, pasta and other starchy carbohydrates

Beans, pulses, fish, eggs, meat and other proteins

Dairy and alternatives

Oils and spreads

Key messages

Eat at least 5 portions of a variety of fruit and vegetables every day.

Base meals on potatoes, bread, rice, pasta or other starchy carbohydrates; choosing wholegrain versions where possible.

Eat some beans, pulses, fish, eggs, meat and other proteins (including 2 portions of fish every week, one of which should be oily).

Have some dairy or dairy alternatives (such as soya drinks); choosing lower fat and lower sugar options.

Choose unsaturated oils and spreads and eat in small amounts.

Drink 6-8 cups/glasses of fluid a day.

If consuming foods and drinks high in fat, salt or sugar have these less often and in small amounts.

Fruit and vegetables

Fruit and vegetables should make up just over a third of the food we eat each day.

Aim to eat at least five portions of a variety of fruit and vegetables each day.

Choose from fresh, frozen, canned, dried or juiced.

A portion is 80g or any of these:

- 1 apple, banana, pear, orange or other similar-size fruit;
- 3 heaped tablespoons of vegetables;
- a dessert bowl of salad;
- 30g of dried fruit
  (counts as a maximum of one portion a day);
- 150ml glass of fruit juice or smoothie
  (counts as a maximum of one portion a day).

Potatoes, bread, rice, pasta and other starchy carbohydrates

Starchy food should make up just over a third of the
food we eat.

Choose higher-fibre, wholegrain varieties when you can by purchasing wholewheat pasta, brown rice, or simply leaving the skins on potatoes.

Base your meals around starchy carbohydrate foods:

- start the day with a wholegrain breakfast cereal - choose one lower in salt and sugars;
- have a sandwich for lunch;
- round off the day with potatoes, pasta or rice as a base for your evening meal.

Potatoes, bread, rice, pasta and other starchy carbohydrates

Why choose wholegrain?

Wholegrain food contains more fibre than white or refined starchy food, and often more of other nutrients. We also digest wholegrain food more slowly so it can help us feel full for longer.

Remember, you can also purchase high fibre white versions of bread and pasta which will help to increase your fibre intake.

Wholegrain food includes:

- wholemeal and wholegrain bread, pitta and chapatti;
- wholewheat pasta;
- brown rice;
- wholegrain breakfast cereals and whole oats.

Beans, pulses, fish, eggs, meat and other proteins

These foods are sources of protein, vitamins and minerals, so it is important to eat some foods from this group.

Beans, peas and lentils (which are all types of pulses, sometimes called ‘legumes’) are good alternatives to meat because they’re naturally very low in fat, and they’re high in fibre, protein and vitamins and minerals. Other vegetable-based sources of protein include tofu, bean curd and mycoprotein.

Aim for at least two portions (2 x 140g) of fish a week, including a portion of oily fish. Most people should be eating more fish, but there are recommended limits for oily fish, crab and some types of white fish.*

***Please see www.nhs.uk/Livewell/Goodfood/Pages/fish-shellfish.aspx**
Also www.msc.org/ for more guidance on sustainably sourced fish

Fish

Aim for at least two portions (2 x 140g) of fish a week, including a portion of oily fish.

- **Oily fish include:**
- herring (bloater, kipper and hilsa are types of herring), pilchards, salmon, sardines, sprats, trout, mackerel

- **Oily fish:**
- are high in long-chain omega-3 fatty acids which play a role in brain and heart health
- are a good source of vitamin D

Fresh and canned tuna do not count as oily fish.

- https://www.nhs.uk/live-well/eat-well/food-types/fish-and-shellfish-nutrition/

Beans, pulses, fish, eggs, meat and other proteins

Some types of meat are high in fat, particularly **saturated fat**. So when you're buying meat, remember that the type of cut or meat product you choose, and how you cook it, can make a big difference.

If you eat more than 90g of red or processed meat per day, try to cut down to no more than 70g per day. The term processed meat includes sausages, bacon, cured meats and reformed meat products.

To cut down on fat:

- choose lean cuts of meat and go for leaner mince;
- cut the fat off of meat and the skin off of chicken;
- try to grill meat and fish instead of frying;
- have a boiled or poached egg instead of fried.

Dairy and alternatives

- Try to have some milk and dairy food (or dairy alternatives) such as cheese, yoghurt and fromage frais.
- These are good sources of protein and vitamins, and they're also an important source of calcium, which helps to keep our bones strong.
- Some dairy food can be high in fat and **saturated fat**, but there are plenty of lower-fat options to choose from.

Go for lower fat and lower sugar products where possible. For example, try:

- 1% fat milk which contains about half the fat of semi-skimmed milk without a noticeable change in taste or texture;
- reduced fat cheese which is also widely available;
- have a smaller amount of the full-fat varieties less often;
- going for unsweetened, calcium-fortified versions when buying dairy alternatives.

Oils and spreads

Although some fat in the diet is essential, generally we are eating too much saturated fat and need to reduce our consumption.

Unsaturated fats are healthier fats that are usually from plant sources and in liquid form as oil, for example vegetable oil, rapeseed oil and olive oil.

Swapping to unsaturated fats will help to reduce cholesterol in the blood, therefore it is important to get most of our fat from unsaturated oils.

Choosing lower fat spreads, as opposed to butter, is a good way to reduce your saturated fat intake.

Remember that all types of fat are high in energy and should be limited in the diet.

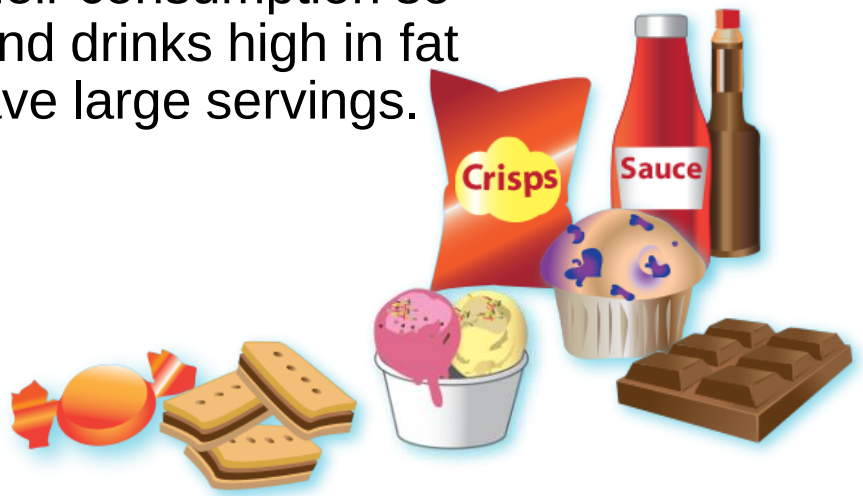
Foods high in fat, salt and sugars

This includes products such as chocolate, cakes, biscuits, full-sugar soft drinks, butter and ice-cream.

These foods are not needed in the diet. If they are included, have infrequently and in small amounts.

If you consume these foods and drinks often, try to limit their consumption so you have them less often and in smaller amounts. Food and drinks high in fat and sugar contain lots of energy, particularly when you have large servings.

Check the label and avoid foods which are high in fat, salt and sugar!



Hydration

Aim to drink 6-8 glasses of fluid every day.

Water, lower fat milk and sugar-free drinks including tea and coffee all count.

Fruit juice and smoothies also count towards your fluid consumption, although they are a source of free sugars and so you **should limit consumption to no more than a combined total of 150ml per day.**

Sugary drinks are one of the main contributors to excess sugar consumption amongst children and adults in the UK.

Swap sugary soft drinks for diet, sugar-free or no added sugar varieties to reduce your sugar intake in a simple step.

Limit fizzy drinks of all types! Consider using a straw

Sweeteners/Sugar

- Fizzy drinks even if sugar free cause dental erosion
- The best advice may be to choose water instead
- **Latest advice from UK Scientific Advisory Committee on Nutrition, 2025** for adults and older children:
- **"swapping sugars for non-sugar sweeteners may help reduce sugar intake from foods and drinks (and so reduce energy intake), at least in the short term - the long-term goal is to limit both sugar and non sugar sweeteners intake"**
- Adding fruit to e.g. natural yoghurt instead of having a sweetened yoghurt may help reduce free sugar and sweetener intake

Reference: www.gov.uk/government/publications/sacn-statement-on-the-who-guideline-on-non-sugar-sweeteners

Are sweeteners safe?

- The link below is the UK Departments of Health's view when evaluating all the studies as to are sweeteners safe:

- www.nhs.uk/live-well/eat-well/food-types/are-sweeteners-safe/

Key messages summary

Eat at least 5 portions of a variety of fruit and vegetables every day.

Base meals on potatoes, bread, rice, pasta or other starchy carbohydrates; choosing wholegrain versions where possible.

Eat some beans, pulses, fish, eggs, meat and other proteins (including 2 portions of fish every week, one of which should be oily).

Have some dairy or dairy alternatives (such as soya drinks); choosing lower fat and lower sugar options.

Choose unsaturated oils and spreads and eat in small amounts.

Drink 6-8 cups/glasses of fluid a day.

If consuming foods and drinks high in fat, salt or sugar have these less often and in small amounts.

Some tips for managing dietary intake if depressed or hypomanic

1. Try to stick to a routine with planned regular times for eating and drinking
2. Consider using an alarm as a prompt to eat/drink
3. Consider batch cooking and freezing meals for reheating on days you feel unable to cook
4. Keep store cupboard and fridge full of essentials which are easy to prepare
5. If appetite is reduced, consider eating smaller nutritious easy meals more often
6. If comfort eating or overeating seek advice on a healthier meal plan to suit you
7. Eat with family or friends or neighbours can help boost intake
8. Ask for help with shopping and food preparation
9. Drink plenty of water to maintain hydration
10. Limit how much alcohol and caffeine you consume
11. Consider sleep routine

This list is not exhaustive and some people may need individualised support from medical team/ dietitian or healthcare team to meet their nutritional needs

Next slide – recipes for healthy simple & quick meals

Recipes for healthy simple meals and budgeting

https://www.bhf.org.uk/informationsupport/heart-matters-magazine/nutrition/simple-meals

www.bhf.org.uk/informationsupport/heart-matters-magazine/nutrition/healthy-meals-in-a-hurry

Eating well on a budget

https://www.bhf.org.uk/informationsupport/heart-matters-magazine/nutrition/eat-well-on-a-budget

General healthy eating

- https://www.nhs.uk/live-well/eat-well/

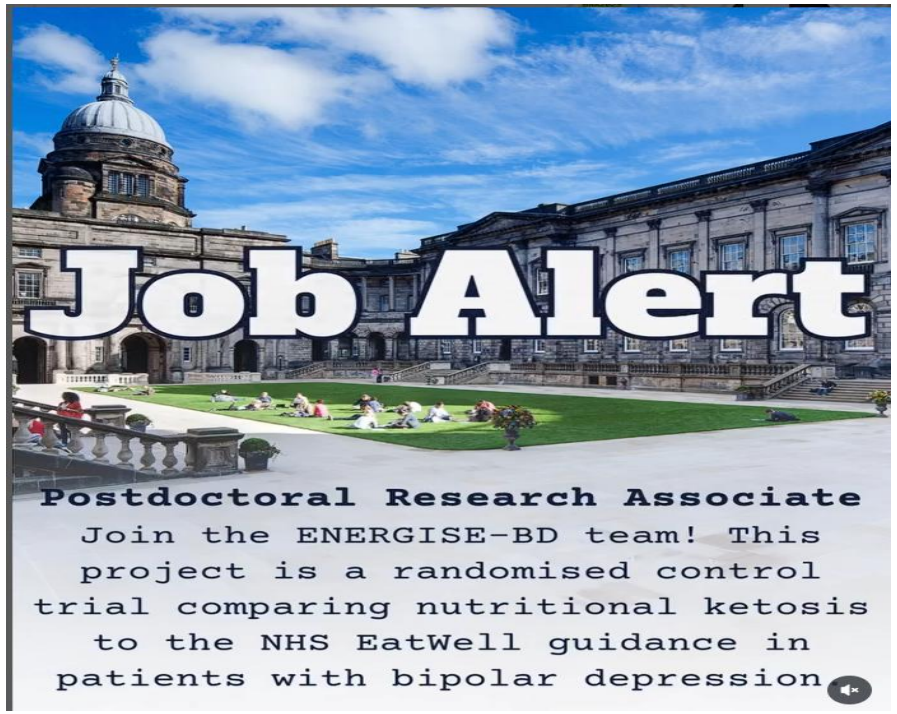
Research

- Other healthy dietary patterns exist including Mediterranean diet, with similarities to *Eat Well guide*

Current international study:

- "This study will compare the benefits of two approaches to eating: **Mediterranean** and **Time-Restricted Eating**
- It's important to note that neither food plan is meant to be a diet or a treatment. Instead, in this study we will ask you to consume the same amount of food you normally would, and to continue your regular medical care for bipolar disorder
- For more details & to check they are still recruiting: https://calm.berkeley.edu/participate-in-psychology-research/healthy-lifestyles-bipolar-disorder/ accessed 10/11/25

📢 Signal of research to come….



University of Edinburgh post announced October 2025

- " ENERGISE-BD is a randomised controlled trial comparing **nutritional ketosis to the NHS EatWell guidance in patients with bipolar depression**.
- You will play a key role in the recruitment, assessment and follow-up of research participants. You will also contribute to the overall direction and management of this project, as well as helping with publications, dissemination and knowledge exchange activities….. "

More info: https://edin.ac/4nEN5BD accessed 10/11/2025

https://www.instagram.com/edinburghneuroscience

Preliminary research by Edinburgh team…

Pilot study of a ketogenic diet in bipolar disorder

Nicole Needham, Iain H. Campbell, Helen Grossi, Ivana Kamenska, Benjamin P. Rigby, Sharon A. Simpson, Emma McIntosh, Pankaj Bahuguna, Ben Meadowcroft, Frances Creasy, Maja Mitchell-Grigorjeva, John Norrie, Gerard Thompson, Melissa C. Gibbs, Ailsa McLellan, Cheryl Fisher, Tessa Moses, Karl Burgess, Rachel Brown, Michael J. Thrippleton, Harry Campbell and Daniel J. Smith

BJPsych Open. 2023;9(6):e176. doi:10.1192/bjo.2023.568

📢 **Maintaining a ketogenic diet over six weeks or more was linked with improvements in mood, energy and anxiety in this small study, though findings need to be replicated in larger studies with more participants**

📢 **Participants were advised & monitored closely by study dietitian and team during the 6-8 week intervention**

📢 **There is an urgent need for larger replication studies and carefully designed randomised clinical trials to build on these findings...**

https://www.ed.ac.uk/news/bipolar-disorder-symptoms-could-be-improved-by-diet

Participants in the preliminary study were under close supervision of study dietitian and team

Nutritional ketosis is a metabolic state where the body uses fat for energy instead of carbohydrates by producing ketone bodies, typically achieved through a very low-carb, moderate-protein, high-fat diet.

"The 6-8 week intervention was a modified ketogenic diet, with a macronutrient distribution of 60–75% calories from fats and 5–7% from carbohydrates, with the remainder sourced from protein. In consideration of blood cholesterol and triglycerides, a preference for unsaturated fats was advised"

https://www.ed.ac.uk/news/bipolar-disorder-symptoms-could-be-improved-b

Ketogenic diets

- Ketogenic diet is still being researched for potential benefits in bipolar disorder and as such not an endorsed treatment
- The diet requires careful consideration and monitoring at an individual level for safety
- **Therefore, I cannot endorse specific ketogenic diet publications for individuals**
- If thinking about following such a programme, I recommend asking your GP or Psychiatrist if they can put you in touch with an appropriate team to advise and monitor you to ensure following such a diet is safe for you as an individual
- Maybe there will be opportunity to volunteer for another study in Edinburgh where advice, monitoring and safety would be part of the intervention
- Below is interesting history of different types of ketogenic diets and evidence pre-bipolar studies:
- https://www.bda.uk.com/resource/medical-ketogenic-diets.html