

Our Overabundant Diet: Overfed but Undernourished

In Australia, most supermarkets are overstocked with an abundance of ultra-processed foods and out-of-season produce that often lacks essential nutrients. Despite the convenience of having these items available 24/7, this abundance creates a paradox: we have a plentiful food supply yet inadequate nutrition, leaving us **overfed but undernourished**.

We have become disconnected from natural, wholesome, and seasonally appropriate eating.



How Did We Get Here?

The abundance of modern food options should be a triumph of human ingenuity. Yet, convenience has come at a cost. Over the last century, we have shifted from local, seasonal, and minimally processed foods to a diet dominated by ultra processed and packaged foods, manufactured to maximise shelf life and profit over nutritional value.

Mass agriculture practices now rely heavily on nitrogen-based fertilisers, pesticides, and herbicides, and soil degradation has resulted in crops that are lower in essential

vitamins and minerals compromising the nutritional value of the fruits, vegetables, grains, and other crops that we regularly eat.

Manufacturers have exploited cheap addictive ingredients in ultra processed foods including;

- Processed carbohydrates – refined carbs like white flour, starch, and sugars can cause rapid spikes and drops in blood sugar levels, leading to increased hunger and overeating.
- High-fructose corn syrup – interferes with appetite control mechanisms, potentially leading to overconsumption, obesity, and fat accumulation in the liver.
- Highly processed seed oils – often high in omega-6 fatty acids leading to an imbalance with omega-3's which is linked to inflammation and chronic diseases,
- Preservatives, additives, and fillers – used to extend shelf life, add texture, and enhance flavour with unknow long term health consequences and some suspected as being endocrine disruptors.

While highly profitable and efficient for feeding our mass market, this approach has contributed to poor health outcomes, resulting in obesity, heart disease, metabolic disorders, musculoskeletal disorders like osteoporosis and sarcopenia and many other chronic diseases, by prioritising convenience and cost over nutritional value.

Another big issue is that appetite dysregulation, shaped by diet, lifestyle, and hormones, which leads to overeating and unhealthy food choices. This dysregulation starts early in life with habits such as being encouraged to "clean the plate" regardless of hunger, three meals a day with snacks in-between, and ultra processed foods with high levels of sugar including fructose, chocolate, and sweet treats, all leading to a distorted sense of satiety. The trend to super-size portions in takeaway and restaurant meals, coupled with a higher reliance on carbohydrate-rich foods that provide less satiety than proteins, contributes further to appetite dysregulation.

Science tells us that protein is the most satiating macronutrient, helping to regulate appetite by promoting a sense of fullness, followed by fats and complex carbohydrates. However, traditional dietary guidelines, often represented by the food pyramid, emphasised plant-based proteins, and grains (carbohydrates) at the expense of animal protein and healthy fats. These outdated nutritional guidelines do not align with the satiating qualities of these nutritionally dense macronutrients, potentially influencing hunger, and fullness cues.

The human brain also shows a preference for sugar due to its immediate impact on dopamine levels, which can create a rewarding feeling. This response is why sugar is described as potentially more addictive than certain drugs like cocaine, according to some studies. This addictive quality also contributes to appetite dysregulation. Historically, sugar served a critical biological function as a source of instant energy, which was crucial for survival when food was scarce. However, in today's environment where calories are plentiful and easily accessible, this ancient drive for sugary foods often leads to excessive calorie consumption. This mismatch between our evolutionary programming and modern food availability is detrimental, promoting unhealthy eating habits and contributing to chronic health issues, including osteoporosis.

Plant-based proteins, at the low intake levels common for many women, provide lower satiety (feeling of fullness) compared to animal proteins, due to their incomplete amino acid profiles and digestive properties, also contributing to overeating. Increasingly sedentary lifestyles, lower muscle mass, higher BMI (body mass index), and lower resting metabolic rates in older people all contribute to weight management challenges and multiple health issues.

As a result, many people find it challenging to recognise true hunger and satiety, leading to overconsumption and reliance on less nutritious foods, which further perpetuates weight gain and associated health risks. Addressing these dysregulations through better dietary practices, mindful eating, and understanding the body's hunger cues is crucial for tackling obesity and improving public health.

These fundamental changes have altered our relationship with food and health outcomes

Out-of-Season Eating: Nature's cycles once dictated what we ate and when. Seasonal eating ensured variety, balanced nutrition, appropriate eating to the season (fat accumulated before winter and hydration in the summer), healthy gut and oral biomes and a connection to the land. Today's technology enables the year-round consumption of fruits such as strawberries, mangos, and tomatoes, regardless of their traditional growing seasons. These fruits can be shipped globally and are often treated to eliminate both harmful and beneficial bacteria to ensure they are safe for consumption. This capability to enjoy off-season produce anytime is facilitated by advances in agricultural practices and global logistics, but it also means we often consume food that is less fresh and potentially less nutrient-dense than locally sourced, in-season produce. Out-of-season foods are often picked early, shipped long distances, stored for long periods, and artificially ripened, losing much of their freshness and nutrient value.

Ultra-Processed Foods: More than 50% of calories in many modern diets come from ultra-processed foods, which are calorie-dense but nutrient-poor. These foods are engineered for addiction, taste, and shelf life, not for nourishment. They are loaded with added sugars, unhealthy fats, and artificial ingredients, while stripped of the vitamins, minerals, and the fibre our bodies need.

Quantity Over Quality: We now eat **more calories than ever before**, but those calories come from foods that barely support our health. Empty calories lead to deficiencies in essential nutrients like magnesium, zinc, selenium, copper, zinc, boron, manganese, vitamins K2 and omega-3s, even when we are consuming enough food - or even too much.

The Old Food Pyramid: A Flawed Foundation for Nutrition

The traditional food pyramid is now widely acknowledged as outdated, prompting a shift in dietary guidelines that emphasise the importance of healthy fats and high-quality proteins for balanced nutrition and overall health. This evolution is especially vital for maintaining bone and muscle health as we age.

Rooted in outdated science, the old pyramid placed excessive emphasis on carbohydrates while undervaluing the role of healthy fats and nutrient-dense fresh foods. The modern approach reflects a deeper understanding of nutrition, moving away from one-size-fits-all guidelines toward recommendations that better align with long-term health and well-being.

Anaemia, Folate & Bone and Muscle Health

Diets based on highly processed foods, fast-food and plant-only sources like vegan and vegetarian diets, require careful management to prevent anaemia. These diets may not inherently cause anaemia but can influence iron intake and absorption and can be lower in essential complete nutrients.

Anaemia is more prevalent among women due to nutrition, lifestyle, and biology, and this can lead to chronic fatigue, exhaustion, weakness, pale skin, and dizziness. Iron deficiency is a common cause, but other nutritional shortages like vitamin B12 or folate can also result in anaemia.

But contrary to common belief, treating anaemia is not always as straightforward as eating more red meat or taking iron supplements, especially for those with the MTHFR gene mutation. The MTHFR gene helps the body process folate, an essential vitamin for DNA production. A mutation in this gene can impair the body's ability to convert B vitamins and folic acid from food or supplements into a usable form. This affects about one-third of the population globally and leads to higher levels of homocysteine, which is linked to a number of health risks.

The body typically converts homocysteine into other substances that it needs, using vitamins B6, B12, and folic acid (vitamin B9). When there is a deficiency in these vitamins, homocysteine levels can rise. High homocysteine levels can damage the lining of the arteries, promote blood clots, cause neurodegenerative disorders and inflammation, and contribute to lower bone density and fractures, poor muscle mass and decreased physical activity.

This is also referred to as methylation. Folate (vitamin B9) methylation is a biochemical process where the body uses folate to help convert the amino acid homocysteine into methionine, which is crucial for DNA synthesis and repair.

Low folate has also been linked to serious neural tube birth defects of the brain and spine in newborns such as spina bifida and anencephaly, which occur early in pregnancy, often before a woman even knows she is pregnant. Folate intake before and during early pregnancy significantly reduces the risk of these defects. Since folate is water-soluble and not stored in the body in large amounts, maintaining adequate levels through diet alone can be challenging.

The MTHFR gene mutation which impacts folate methylation, also increase the risk of neural tube defects (NTDs) in newborns.

Grains have been fortified with folic acid in the United States since 1998, and in Australia flour since 2009 for the purpose of reducing the risk of neural tube defects.

To detect anaemia, healthcare providers typically use a variety of blood tests, including a Complete Blood Count (CBC) which measures haemoglobin, haematocrit, and the red blood cell count. Other important tests include iron tests to evaluate iron stores and function, vitamin B12 and folate tests to check levels necessary for red blood cell production, a reticulocyte count to assess bone marrow activity, and a peripheral blood smear to examine the shape and size of red blood cells. These tests help diagnose the type and severity of anaemia, guiding further treatment. However, these tests do not detect the MTHFR gene mutation, which requires a separate DNA test.

Doctors will typically recommend the following to treat anaemia for most people;

- Iron – as Ferrous Sulphate, Fumarate or Gluconate.
- B12 – usually a synthetic form called cyanocobalamin.
- Folic Acid.

However, if you have the MTHFR gene mutation these supplements will not treat the root cause of the problem and can result in other conditions that may include hypertension, diabetes, obesity, and low blood oxygen (Source; Gary Brecka).

If you have the MTHFR gene mutation taking these pre-methylated supplements is necessary;

- Iron – as Iron Bisglycinate.
- B12 – as Methylcobalamin.
- Folate – as Methylfolate.

Women experiencing fatigue should seek medical advice for diagnosis including blood tests, DNA gene testing and tailored treatment plans, which may include methylated supplements and dietary adjustments to boost iron levels and overall health, considering their specific metabolic needs.

The Health Consequences

Our overabundant, nutritionally shallow diet is taking a toll on our health:

Obesity and Chronic Illness: The prevalence of obesity, type 2 diabetes, and cardiovascular disease has skyrocketed. These conditions are often linked to the excess consumption of processed foods, added sugars, and high calorie foods.

Micronutrient Deficiencies: Despite eating more food, many people suffer from hidden hunger—deficiencies in key nutrients like iron, vitamin D, selenium, boron, magnesium, manganese, zinc, copper, potassium, and iodine. These deficiencies can affect metabolic health and the health of our muscles and bones.

Digestive and Metabolic Dysfunction: Poor diets disrupt gut health, leading to imbalances in the microbiome that affect everything from digestion to immune function and mental health. In addition, reduced connection to the soil biome has led to a decline in the diversity and health of our oral and gut microbiomes, impairing our ability to absorb nutrients effectively and process food optimally.

Reconnecting with Real Food

To address this crisis, we need to rethink the way we eat and shop. The solution lies in **quality over quantity** and a return to eating food as nature intended.

1. Seasonal Eating for Better Nutrition:

Eating with the seasons is about more than just flavour—it ensures we get the nutrients we need at the right time. For example:

- **Winter:** Root vegetables and hearty greens support immunity and warmth and provide essential nutrients to help keep you energised and healthy during the colder months.
- **Summer:** Fruits like berries and melons provide hydration and quick energy. These also provide some protection from the harmful effects of the sun by boosting the skin's natural defences against UV damage. This protection primarily comes from antioxidants, vitamins, and other compounds in these foods.
- **Proteins:** We are what our food eats! The quality of protein we consume is influenced by the diet of the animals or plants that provide it. Locally and freshly sourced protein from animals raised on seasonal, natural diets not only supports sustainable practices but also aligns with the nutrients our bodies need throughout different seasons. Eating seasonally appropriate protein can enhance health by providing optimal nutrients that suit the body's changing requirements during the year.

2. The Hidden Costs of Grain-Fed Proteins: Omega-3, Glyphosate, Hormonal Balance, and Bone Health

Pasture-raised and finished beef and pork, organic free-range poultry, and wild-caught deep-sea fish are nutritionally superior, offering anti-inflammatory benefits, a better nutrient profile, higher omega-3 levels and are generally antibiotic free.

Grain-fed and finished animals, including beef, pigs and chicken are often fed genetically modified corn and soy, and are higher in inflammatory omega-6 fats. Antibiotic use in animal husbandry is common to promote growth and treat disease. The grains fed to these animals are usually treated with glyphosate, an herbicide associated with endocrine-disrupting effects, potentially impacting hormonal balance and bone health. Glyphosate may interfere with hormonal pathways like estrogen and androgen receptors and disrupt aromatase activity, an enzyme vital for estrogen synthesis. Glyphosates are now banned in some EU countries including Germany and France.

Endocrine-disrupting chemicals are linked to changes in bone metabolism, which may contribute to osteoporosis. While direct evidence of glyphosate affecting bone density is limited, its potential endocrine-disrupting effects highlight the importance of avoiding food sources contaminated with glyphosate, especially for individuals with osteoporosis.

(A review in *Endocrinology and Metabolism* discusses how EDCs can alter bone density and quality <https://e-enm.org/upload/pdf/enm-2024-1963.pdf>)

3. Freshness Over Storage – Source Local:

Freshly harvested produce is more nutrient-dense than food that has been sitting in storage or shipped across the globe. Locally sourced foods, whether from farmers' markets or your own garden, are a win for both nutrition and sustainability.

4. Whole, Minimally Processed Foods:

Focus on whole foods that look as close as possible to how they came from nature. Reduce simple carbohydrates wherever possible:

- Swap out white carbohydrates wherever possible.
- Replace sugary snacks with fresh fruit in moderation and in season.
- Add healthy fats from nuts, seeds, and avocados.

5. Cook More, Order Less:

Cooking at home allows you to control ingredients and avoid hidden sugars, preservatives, emulsifiers, additives, and unhealthy highly processed seed oils (vegetable oil, canola/rapeseed, corn, cotton seed, safflower, sunflower, grapeseed, and soybean oils).

Simple meals made from fresh ingredients are often more nourishing and satisfying than anything that comes from a package. More nutrient dense food also satisfies hunger for longer, resulting in less overconsumption.

6. Less Take-Away and Processed Meals

Here are examples of different meals that each contain 50 grams of protein - a common target for a healthy lunch or dinner. This protein is essential for muscle repair, bone health, hormone production, and overall bodily functions.

- **200g Grilled Steak or Chicken & Mixed Vegetables:** 320 Calories
- **250g Grilled Fish & Mixed Vegetables:** 280 Calories
- **3.4 Peanut Butter Sandwiches:** 1200 Calories
- **Two Double Cheeseburgers:** 1500 Calories
- **16 Chicken Nuggets:** 750 Calories
- **7 Hot Dogs:** 1070 Calories
- **Fried Chicken Wings:** 1330 Calories
- **2 Serves of Fish and Chips:** 1600 Calories
- **6 Slices of Cheese and Pepperoni Pizza:** 1190 Calories
- **5 cups of Mac-n-Cheese:** 1550 Calories
- **3-4 Servings of commercial Lasagne:** 1670 Calories
- **Vegan Lentil & Quinoa Salad:** 850 Calories
- **Vegetarian Paneer & Spinach Curry with Brown Rice:** 823 Calories

While all these foods provide 50 grams of protein, some contain up to five times the calories of a steak or chicken meal, and double a vegan or vegetarian meal, contributing to excessive calorie intake and promoting obesity when consumed regularly.

Counting calories is not the focus of this comparison, nor is it a health-conscious approach on its own. The intent is to highlight the nutritional density of different foods, emphasising that highly processed and most takeaway convenience foods are often calorie dense. The critical issue is that these foods usually lack essential nutrients, do not support optimal health, and can contribute to long-term issues such as obesity and metabolic disorders, unlike whole, nutrient-rich options that provide balanced nourishment.

7. Protein, sleep, mood and

Recent studies in the USA have shown that increased consumption of animal protein is associated with better sleep quality and mood among women. One such study conducted by Zhou et al., found significant improvements in global sleep scores among subjects who consumed higher amounts of protein. This effect is thought to be due to proteins' role in synthesising neurotransmitters that regulate sleep and mood, such as serotonin and melatonin, which are derived from the amino acid tryptophan found in protein-rich foods. Moreover, the better sleep quality facilitated by higher protein intake can also contribute positively to bone health, as adequate sleep supports the body's natural processes for repairing and maintaining bone tissue. Thus, incorporating sufficient quality protein in our diet is an important aspect of maintaining overall health and well-being.

8. Beyond the Plate

This is more than just a diet shift; it is about transforming our relationship with food. When we eat seasonally and focus on whole, fresh foods, we reconnect with the earth's natural cycles. Food becomes not just fuel, but a source of joy, vitality, and connection.

We all have the opportunity to embrace a new kind of abundance - where food nourishes our body and mind, supporting long-term health and wellbeing.

Mindful Eating: Choosing Nourishment for Your Health

Let's start small. Next time you shop, ask:

- Is this food fresh, seasonal, and local?
- Where does it come from and what is the carbon footprint required to transport this food to my plate?
- Does it support my health rather than simply fill me up?
- Am I prioritising convenience over health and how will this serve me and my family as we age?
- Is my diet providing the nutrition needed to support muscle and bone health including essential proteins, fats, macro, and micronutrients.

If we all shift just a little - from out of season to seasonal, from overprocessed to whole, from take away to home prepared - we can reclaim our health and restore balance to our diets. Because abundance is not about how much we eat, but how well we nourish ourselves.

Let's prioritise nourishment over abundance. It's time to eat with intention and thrive.

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