

# Food and wellbeing: How your diet can impact how you feel

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This research paper is looking to move away from the serious discussions of policies and economics for one month and looking instead at some recent evidence of something we do every day that impacts our wellbeing: eating. Everyone knows that eating a healthy diet is good for our physical health. However, the relationship between food and our mental health and wellbeing is a less well-known concept. There is currently plenty of research being produced to show the benefits of eating the right foods on how we feel. This is relevant to all of us because a happy person is often a more productive person.

This paper has been split into three sections. In section one, we focus on how what we eat affects our brain functioning and some of the knock-on effects from this. In section two, we look at some new evidence on how social media may be changing our relationship with food. Lastly, in the final section we pick out three of the main mental health disorders and discuss some diets that may help people deal with their conditions.

## Section 1: How what we eat affects our brain functioning

The building blocks of our brains are water and lipids (fats), which comprise 60% of the brain, as well as proteins, amino acids, micronutrients and glucose.<sup>1</sup> Lipids are broken down into fatty acids, which are necessary for cell maintenance and can help to prevent neurodegenerative diseases. Micronutrients further promote brain health. Protein is broken down into amino acids, which are the precursors to neurotransmitters. These carry signals between neurons in the brain and an imbalance can lead to neurological and mental disorders. There are 8 main neurotransmitters which affect our happiness, producing hormones such as dopamine, serotonin, melatonin, and oxytocin. **As much as 90% of serotonin is actually produced in the gut, as is 50% of dopamine.** Part of the nervous system is embedded in our gut, the enteric nervous system, and contains as many neurotransmitters as the brain.

Our brains use 20% of the body's energy resource, burning around 600 calories every 24 hours. Carbohydrates provide the main energy source for our bodies and the frontal lobe is particularly sensitive to low energy levels, leading to cognitive decline. As is widely known, foods with a low glycaemic index (GI; the ratio between fibre and glucose) sustain attentiveness, and those with a high GI lead to a spike in glucose levels and a subsequent 'sugar crash'.<sup>2</sup> **Glucose itself triggers the brain's reward system, releasing dopamine to promote repetition – in the same way as alcohol or nicotine.** However, dopamine has been shown to spike less and less with repetition. Many compounds in food can stimulate brain cells to release norepinephrine, dopamine, and serotonin.

Caffeine reduces tiredness by blocking adenosine receptors in the brain. Adenosine triggers the production of melatonin but as caffeine has a similar molecular structure, it can block receptors (caffeine is an adenosine receptor antagonist). Furthermore, some adenosine receptors are linked to dopamine receptors: when caffeine blocks the adenosine receptor, dopamine is better able to dock. As a result, caffeine can aid dopamine production and therefore makes you feel happy. There is one mitigating factor: as receptors become clogged, the brain creates more and thus more caffeine is required for the same positive and energy effects.

## Section 2: Culture, social pressures and dieting

It has been widely confirmed that body image plays an important role in psychological wellbeing: particularly in, but not restricted to, adolescents. Wider societal pressures to look a certain way and attain body ideals increase the popularity of 'crash' or 'quick fix' diets. Examples of these include juice or tea 'cleanses' or overly restrictive diets, such as the Atkins or Keto. While not all diets are necessarily misleading or a 'fad', they often promise short term results, rather than long term adherence and health benefits (Obert et al, 2017). As a result, these diets lead to

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<sup>1</sup> <http://faculty.washington.edu/chudler/nutr.html>

<sup>2</sup> <https://www.psychologytoday.com/gb/blog/food-junkie/201311/sugar-cravings>

weight fluctuation which in turn leads to a variety of physical disorders and diseases: weight cycling is becoming an “increasingly serious public health issue” (Montani et al, 2015).

While weight cycling is associated with greater depressive symptoms (Madigan et al, 2018), mere weight concern and negativity towards food have also been shown to lead to increased levels of anxiety and depression (Rodriguez-Arauz et al, 2016). Appleton and McGowan (2006) and Remick et al (2009) emphasise that restrained eating led to lower life satisfaction and higher neuroticism. Rodriguez- Arauz et al (2016) focussed on the cultural attitudes towards food and found that societies where a thin figure (such as in the US) was more highly valued, levels of depression and anxiety were higher overall, although the relationship with weight-consciousness was present regardless.

There has been some calling for an increased focus on weight inclusion, as opposed to weight stigma, and to focus on wellbeing. Reduction of weight stigma has been shown to improve both wellbeing and physical health (Tylka et al, 2014).

### Section 3: Go-to diets for mental health disorders

In this section we focus on three of the most common mental health disorders: depression, anxiety and insomnia. Our aim is to display some of the evidence on the types of foods that can be beneficial to improve how we feel (see Table 1 for a broader guide of the best and worst foods for your mood):

1. **Depression:** often when we feel low, our appetite may also be quite low as a result of this, therefore foods like lemon, ginger or cayenne pepper are great to stimulate our appetite. Herbal teas also ease your digestive fluids and boost your appetite. In addition, a low protein diet can be a recipe for feeling down. As mentioned above, the building blocks of protein, the amino acids, are important for our brains, helping to make our neurotransmitters. Zinc imbalances has been shown to be correlated with a whole range of mental health disorders and healthy fats such as Omega-3's are crucial for helping to boost our mood. **Foods such fish (especially salmon), nuts (e.g. cashew nuts or sesame and pumpkin seeds), and eggs are recommended for those feeling low as these are all very high in protein, zinc and healthy fats.**

Lastly, many people with depression have low vitamin D levels, however studies remain inconclusive as to whether taking vitamin D supplements can beat depression specifically. Nevertheless, levels of vitamin D deficiency in Britain are the highest in 50 years, with one in five of us suffering a severe deficiency. The Department for Health in the UK now recommends that from October to March we take a vitamin D supplement.<sup>3</sup> However, the evidence is even weaker of the impact of supplements on individual's mental health. It is better to get enough vitamin D (10mg a day) through their diet and only take a supplement as a last resort.

2. **Anxiety:** increasingly studies are starting to find strong links between gut health and anxiety. **The healthier your gut is, the less anxious you feel (Schmidt et al, 2014).** Changing the types of carbohydrates that we eat to be wholemeal can help reduce the amount of 'resistant starch' travelling through our digestive systems. Boosting the supply of fruit and vegetables that are high in fibre is also very helpful, as they are high in magnesium, which has been proven to ease tension and relieve muscular pain and headaches, which are common side effects of anxiety.<sup>4</sup>

The most commonly known way to boost your gut health however is through pre and probiotics. Prebiotics are non-digestible foods that feed the growth of bacteria in the colon, found particularly in fermented vegetables. Probiotics are live bacteria and yeasts in yogurt, dairy products and other foods such as miso and kombucha (fermented tea).

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<sup>3</sup> And this recommendation increases to all year round for pregnant women, people that cover up their skin or don't go outdoors very often.

<sup>4</sup> Other foods that are high in magnesium: sunflower seeds, wholegrain oats, quinoa, almonds and cocoa products like dark chocolate. It can even be absorbed through the skin by bathing with Epsom salts.

Lastly, there are many 'high-anxiety' foods that you should try to limit, such as: sugar, antibiotics, alcohol, fatty cuts of meats, burnt food and processed food since all are likely to contribute to poor gut health. In particular, it's important to avoid low blood sugar levels by not eating sugary processed foods and aim to find nutritious, slow-burning snacks that you enjoy, so you'll keep coming back to them.

3. **Insomnia:** As to be expected there is somewhat of a correlation between those that have anxiety and those that have insomnia, often high anxiety can trigger insomnia. But also getting a restful night's sleep is correlated with feeling calm and happy so the causation runs both ways. Given the correlation, there are overlaps in terms of foods for this mental health disorder (e.g. avoiding processed sugars and aiming to generate good gut health) but **the timing is more important for those with insomnia**. For example, magnesium is important, but rather than having this through eating lots of nuts and seeds, have an Epsom salts bath before bed instead. Epsom salts are high in magnesium and you'll absorb this through your skin, coming out feeling relaxed and ready to get good night sleep.

Regular, well-balanced meals throughout the day are also beneficial – aim to avoid eating too much food in one sitting, as this can set your body out of kilter and break-up your routine for the day. Building a routine helps your body to understand when it is time to go to sleep. It should reduce stress too, as less time is spent pondering events in the future when they are already set in stone. Protein takes longer to digest than carbohydrates, so it keeps us feeling full. Consequently, it's good to ensure a balanced meal of protein and carbohydrates in the evening as this will avoid you snacking just before bed or in the night.

Table 1: Good Mood Food Index<sup>5</sup>

Fab Mood Foods	Very Good Mood Foods	Good Mood Foods	Treats	Low Mood Foods
Avocados Blueberries Camomile Tea Cavolo Nero Crab Meat Eggs Flaxseed Goji Berries Green Tea Hempseed Kale Kefir Kimchee Mackerel Marmite Mushrooms Natural organic yoghurt Oatcakes Quinoa Raw cocoa powder Rocket Saffron Salmon Sauerkraut Spinach Sweet Potato Tuna Turmeric Walnuts	Almonds Bananas Beetroot Brazil Nuts Broccoli Brown rice Butternut Squash Cherries Chia seeds Chicken (with skin) Chickpeas Chillies Cinnamon Dark chocolate (min 70%) Edamame Beans Olive oil Pecans Pepper Puy lentils Raspberries Red cabbage Rye bread Seaweed Strawberries	Aubergines Beef Broad Beans Buckwheat flour Cashews Cayenne pepper Chicken livers Coconut Courgettes Ginger Fresh herbs Goat's cheese Granola Lemons Mange tout Miso Peas Spelt pasta Tahini Tinned fish Wholegrain flour Wholegrain pasta	Alcohol Biscuits Black tea Butter Cheesy pasta dishes Coffee (2 cups a day is adequate) Cream Crisps and similar snacks Deserts Dried fruit Fruit juices Maple syrup Mayonnaise Milk and white chocolate Peanuts Pork Pre-packed sandwiches Sauces in jars Sausages/ bacon Sunflower oil White bread White refined grains	Canned soups Cereal bars Diet drinks Energy drinks Food colouring Low-fat diet snacks Margarine MSG (& other additives) Pastries/ sausage rolls Pastries/ sweet baked goods Ready meals Refined white sugar Sweetened, processed breakfast cereals Sweet, fizzy drinks Takeaways Wafer-thin ham/ similar processed meats

<sup>5</sup> Taken from Kelly and Mackintosh (2017)

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