PHYSICIAN FACTSHEET: Obesity & Diet
How to prevent and treat obesity with nutrition

Globally, there are currently 2.6 billion people who are overweight and almost a billion of them are obese. By 2035, those figures are expected to double. This represents 51% of the world’s population of people over 5 years old. Even more startling, is that 20% of children over 5 are expected to be obese by 2035 (1).

As a species, with each passing year, we are getting fatter. Excess body fat contributes to the development of several co-morbidities such as type 2 diabetes, cardiovascular disease, and certain cancers (2).

The energy equation of "calories in versus calories out" does not explain why many people find it hard to lose weight. As healthcare professionals, we need to help our patients find a way of eating that works for them and improves their health. By reducing the calorie density of all meals, patients can eat until they are satisfied, without overconsuming calories.

Pathomechanisms of Obesity

**Overnutrition**
Diets high in fat, simple sugars, and processed foods are calorically dense and facilitate energy surplus and adipose tissue dysfunction.

Fat cells accommodate excess fatty acids via dual mechanisms: increasing the adipocyte number through adipogenesis from precursor cells, known as hyperplasia. Or through increasing the size of existing fat cells, known as hypertrophy (4).

**Hypoxic stress** upon adipocytes induces necrosis and macrophage infiltration. Macrophages release interleukin 6 and TNF-alpha, two pro-inflammatory cytokines, creating low-grade chronic inflammation of adipose tissue (5).

Unresolved adipose tissue inflammation can also lead to fibrosis. Collagen accumulation around adipocytes impairs fat storage, leading to elevated blood triglyceride levels (6).

These circulating triglycerides can then infiltrate the liver, pancreas, and muscle tissue. This ectopic fat deposition triggers significant oxidative stress, leading to mitochondrial dysfunction and cell breakdown (4).

**Genesis of Obesity**
Genetics can account for over 40% of familiar obesity (8). An active FTO gene, in particular, can make a patient 1.7 times more susceptible to increased BMI (9). However, epigenetics dictate that lifestyle can either activate or suppress genes that facilitate the propensity towards obesity.

**Antibiotics and the Microbiome**
Antibiotic use and a carbohydrate poor diet can lead to diminished microbiome diversity (10). A low fibre diet, as often seen in obese patients, results in diminished production of short chain fatty acids which play a role in the production of leptin – the hormone responsible for decreasing appetite and increasing energy expenditure (11).
Eat predominantly or entirely from a wide variety of whole plant foods:
Maximize the intake of high-quality plant foods such as vegetables, whole grains, legumes, fruits, nuts, seeds, herbs, and spices; your health will benefit from every step towards more whole plant foods.

Eliminate or limit all processed foods, refined carbohydrates, and sugar-sweetened foods and beverages.

Eliminate red and processed meat products such as burgers, sausages, bacon, ham, salami, dried meat, canned meat, and pastrami (18).

Eliminate or limit other animal products such as poultry, fish, eggs, cheese, and dairy.

Make sure to cover potentially critical nutrients with a wide variety of plant foods, enriched foods/drinks, or supplements (especially vitamin B12 and vitamin D).

Psycho-Social Mechanisms

Socio-Economic Factors
Low socio-economic status is positively correlated with obesity. Financially insecure women, minorities, and the unemployed are at greater risk (12).

Lifestyle
Traditional weight loss diets typically restrict food volume to minimise calories. This leads to feelings of deprivation, cravings, and often overeating.
The adage of ‘eat less and move more’ is not sustainable for most people. Lifestyle modification is the best way to tackle obesity and avoid debilitating diseases.

Stress and Depression
The body’s stress response creates a positive feedback loop between fat accumulation and inflammation (5). Stress causes inflammation and inflammation causes more stress.

In addition, stress and depression are often linked to ‘emotional eating’, eating without hunger.

The Scientific Evidence

Epidemiological evidence
- More frequent home cooking is associated with a healthier eating index score - NHANES, 2015 (13).
- A low calorie density diet increases eating time, leading to greater satiety with half the calories of a high calorie density diet (14).
- Low-fat Vegan diet (LFV) versus American Diabetes Association diet (ADA). Participants on LFV lost twice as much weight as ADA (15).

Evidence from RCTs and meta-analyses
- Plant-based diets are associated with a reduction in obesity related inflammation biomarkers (16).
- Ad libitum whole food plant-based diet reduces BMI by 4.4 compared to 0.4 on normal obesity care diet (17).

General Recommendations

Eat predominantly or entirely from a wide variety of whole plant foods: Maximize the intake of high-quality plant foods such as vegetables, whole grains, legumes, fruits, nuts, seeds, herbs, and spices; your health will benefit from every step towards more whole plant foods.

Eliminate or limit all processed foods, refined carbohydrates, and sugar-sweetened foods and beverages.

Eliminate red and processed meat products such as burgers, sausages, bacon, ham, salami, dried meat, canned meat, and pastrami (18).

Eliminate or limit other animal products such as poultry, fish, eggs, cheese, and dairy.

Make sure to cover potentially critical nutrients with a wide variety of plant foods, enriched foods/drinks, or supplements (especially vitamin B12 and vitamin D).

Disease Specific Recommendations

Eliminate chronic excessive calorie intake. This is best achieved by choosing plant foods with low calorie density, such as green vegetables, starchy root vegetables, legumes, and fruit.

Aim for optimal body weight, which is best achieved by consuming predominately whole plant foods.

Limit saturated fats from both animal and plant sources as much as possible. Replace them with monounsaturated and omega-3 polyunsaturated fats from nuts and seeds or high-quality carbohydrates such as whole grains (19).
Disease Specific Recommendations

Increase the fibre content of meals by adding non-starchy vegetables such as leafy greens, broccoli, and Brussels sprouts.

Pulses such as chickpeas, beans, and lentils are good sources of fibre, protein, and carbohydrates.

When eating carbohydrates, pick whole food options such as fruits, vegetables, legumes, and minimally processed whole grains. These will promote weight loss.

Eliminate seed oils and instead use water or vegetable stock for sautéing.

Reduce the calorie density of meals by swapping out half of the animal products or processed foods for vegetables.

Use fat-free cooking methods such as steaming, boiling, baking and air frying.

Season food with abundant herbs and spices to increase flavour. Spices such as turmeric and cinnamon are anti-inflammatory and high in antioxidants.

Drink abundant water.

References

15. Barnard et al., 2006. Available from: https://doi.org/10.2337/dc06-0606
17. Wright et al., 2017. Available from: https://www.nature.com/articles/nutd20173