



Obesity and nutrition

Table of contents

1. [What is Body Mass Index \(BMI\)?](#)
2. [What is over weight and obesity?](#)
 - i. [Central obesity](#)
 - ii. [Over weight](#)
 - iii. [Obesity](#)
 - iv. [What causes abdominal/overall obesity?](#)
3. [What causes obesity?](#)
4. [Why should we prevent abdominal/overall obesity?](#)
5. [How to maintain appropriate body weight and waist circumference \(abdominal adiposity/obesity\)?](#)
6. [How to choose healthy options?](#)

Adopt a healthy lifestyle to prevent abdominal obesity, overweight and overall obesity

Rationale : Besides overweight and general or overall obesity, abdominal obesity (increased waist circumference) that is indicative of excess fat in the peritoneum (abdominal cavity) with accumulation of fat in and around the internal organs is associated with risk of lifestyle diseases.

- Marked increase in the prevalence of abdominal obesity (increased waist circumference), overweight, and obesity among all the age groups in rural and urban areas has occurred in the last few decades.
- About 25% of Indians are either overweight or obese.
- Excess energy intake and reduced physical activity leads to excess accumulation of fat in the body.
- Individuals with abdominal obesity (adiposity) and overall obesity are at an enhanced risk of lifestyle diseases (chronic non-communicable diseases-NCDs) including type 2 diabetes, fatty liver disease, gallstones, joint disorders (osteoarthritis), hypertension, other cardiovascular diseases, certain cancers, and psycho-social problems.
- As age advances, one needs fewer calories each year as the metabolism slows down and lean (muscle) mass decreases. However, inactivity slows down metabolism more rapidly and muscle mass atrophy is faster. Thus, one can maintain muscle mass and increase metabolism by being active.
- Eat healthy and maintain appropriate body mass index or weight for height. Avoid or restrict foods containing high sugar, fat, salt and ultra-processed foods. These foods hasten the process of adiposity/obesity. Avoid soft drinks and alcohol.
- Being physically active and following a healthy diet will help reduce abdominal obesity.

Regular yoga and physical activity are essential.

- There is a tendency to gain weight mostly around 20 years of age; and among women after childbirth because of less physical activity and excess calorie intake. Obesity is also rapidly increasing among children and adolescence and therefore, one should be watchful during these periods.
- Slow and steady reduction in body weight is advisable. Extreme approaches for weight loss may lead to health hazards.
- Increase consumption of fruits, vegetables and pulses. Prefer whole grains and millets to refined grains / ultra-processed foods.
- Minimize non-essential screen time.
- Healthy sleeping patterns (7–8 hrs/day) is necessary to avoid unhealthy eating behaviors and resultant weight gain.

What is Body Mass Index (BMI)?

BMI is the ratio of weight and height, which estimates total body mass and correlates highly with the percentage of body fat. It is computed by dividing the weight in kilograms by the square of the height in meters [BMI=Weight (Kg)÷Height (M)²]. The ideal ranges of weights for a given height are provided by WHO which is useful for categorizing persons as normal (ideal), undernourished and overweight or obese. The cut-off levels for categorizing overweight and obesity in children and adolescents are different since growth spurt in boys and girls occurs in different ages. Age and gender specific BMI Z-scores of reference population are used to assess their nutritional status.

What is over weight and obesity?

The definition of overweight and obesity is based on BMI. In general, BMI for adults, as per WHO, ranging from 18.5 to 25 Kg/M² is considered to be normal. However, for Asians it is recommended that the BMI should be between 18.5 to 23Kg/M², since, they tend to have higher percentage body fat even at a given BMI compared to Caucasians and Europeans, which leaves them at a higher risk of NCDs.

Central obesity

Fat accumulation especially the distribution of fat around the abdomen (central obesity) and internal organs is now considered to be more harmful. Central obesity, as indicated by higher waist circumference, is considered as a risk factor for lifestyle diseases such as NCDs.

Over weight

BMI ranging over 23 to 27.5 Kg/M² is defined as overweight as per Asian cut-offs. Over 31% of urban and 16% of rural adults are overweight (NNMB).

Obesity

BMI above 27.5 Kg/M² is defined as obesity as per the Asian cut-offs. Over 12% urban and 5% rural adults are obese (NNMB).

The waist circumference is useful for assessment of central obesity. Several studies have shown direct correlation of central obesity with chronic lifestyle diseases or NCDs. Waist circumference of >90cm for men and >80cm for women is associated with increased risk of several chronic lifestyle diseases. Abdominal obesity is prevalent in 53% of urban and 19% of rural adults.

What causes abdominal/overall obesity?

It is well known that overeating along with decreased physical activity predisposes an individual to overweight/ obesity, but solely depending on highly refined grains, processed foods and high sugar intake deranges our metabolism and predisposes to obesity. Unhealthy dietary practices during infancy and childhood (such as overfeeding) play an important role in predisposing individuals to overweight/obesity in adulthood. Low and high birth weight (<2500g and >4000g), obesity during childhood and adolescence are also likely to cause overweight/obesity in adulthood. In addition, women are at higher risk of becoming overweight/ obese around pregnancy and after menopause. Genetic (familial) factors as well as complex behavioral and psychological factors that may influence eating patterns, may also contribute to overweight/obesity, but the effect of dietary and physical activity behavior is more profound than genetics.

What causes obesity ?

Over-feeding during infancy, childhood and adolescence predisposes to overweight/ obesity during adulthood. The tendency of familial obesity seems to be inherited. Eating junk or unhealthy foods coupled with low physical activity is considered as a main contributor. Complex behavioral and psychological factors influence the eating patterns. In addition, metabolic errors in energy utilization may favor fat accumulation. Insulin is an important modifier of energy and fat metabolism favoring fat deposition. Low and high birth weight (<2500 g and >3500g), obesity during childhood and adolescence are likely to lead to obesity in adults. It is therefore, necessary to maintain a desirable body weight by consuming just enough calories or adjust physical activity to maintain energy balance (intake = output). Body weight must, therefore, be checked and monitored periodically.

Several studies have suggested that inadequate and improper sleeping habits, along with more hours of screen time (spent in watching television / mobile phone) is strongly associated with weight gain in childhood, adolescence and adulthood. This is mostly due to the sedentary behavior, tendency to consume unhealthy foods during unhealthy dietary practices leading to overweight/obesity. It is necessary to maintain appropriate abdominal circumference and a desirable body weight by consuming just enough calories and being physically active. Body weight must be monitored periodically.

Why should we prevent abdominal/overall obesity?

There are several negative health consequences of obesity. Excessive body weight causes low-grade chronic inflammation and increases the risk of heart disease, hypertension, diabetes, gallstones, fatty liver disease, certain types of cancers, osteoarthritis, psycho-social problems and also impairs immunity. Obesity is often associated with increased levels of low-density lipoproteins ('bad' cholesterol), and triglycerides, apart from abnormal increase in glucose and

lipoproteins (bad cholesterol), and triglycerides, apart from abnormal increase in glucose and insulin resistance. Considering the increasing trend in the prevalence of non-alcoholic fatty liver disease (NAFLD), coronary artery disease, hypertension and diabetes in India, it is important to maintain desirable body weight for height and prevent overweight and obesity.

How to maintain appropriate body weight and waist circumference (abdominal adiposity/obesity)?

To maintain appropriate weight and waist circumference, one must include fresh vegetables in every meal, consume whole grains, pulses and beans; and must avoid sugar, processed products, fruit juices and HFSS foods. Regular physical activity and yoga are crucial to maintain good health and weight. Weight reduction should be gradual. Weight reduction diets should not be less than 1000 Kcal/day and should provide all nutrients. A reduction of half a kilogram body weight per week is considered to be safe. Approaches of rapid weight loss and use of anti-obesity drugs should be avoided.

However, consuming higher amounts of protein (15% energy from protein) may be important during typical energy-deficient weight loss diets (i.e., 500–750 Kcal/day deficit) to preserves muscle mass. Nevertheless, the protective effect of higher-protein diets on muscle mass is compromised if the energy deficit is more than 40% of daily energy needs, and the dietary proteins are oxidized for energy production. Hence, it is advisable not to go beyond 40% energy deficit of daily energy needs to support muscle mass maintenance and protein balance.

Weight-reducing diets should be nutrient rich and nutritionally balanced. Foods containing high sugar/salt/fat/ refined cereals such as sweets, biscuits, cakes, candies, fruit juices or cool drinks (carbonated beverages) provide high calories and nil or low nutrients and hence should be avoided. Foods containing sugar or refined carbohydrates have high glycemic index (GI) and therefore promote rapid absorption of glucose, and increase glycemic load (GL). There is a sharp rise in insulin when high sugar / refined cereal foods are consumed. Regular intake of foods high in sugar at frequent intervals increases and maintains insulin at a higher than normal level. High insulin impairs metabolism, increases adipogenesis and promotes deposition of fat in and around organs, especially when physical activity is low.

Adequate intake of micronutrients and fibre-rich foods such as pulses, nuts, chia seeds, flax seeds, whole grains including millets, vegetables and fruits improves satiety and helps to maintain levels of blood glucose, insulin, cholesterol as well as triglycerides. Pulses, nuts and moderate quantity of lean meat will also help maintain weight and health. Consumption of plenty of fruits and vegetables would not only result in satiety but also help maintain adequate fibre and micronutrient intake.

How to choose healthy options?

- Choose healthy food options over unhealthy foods made of refined grains or containing high levels of added sugar and added cooking oils.
- **Plan balanced meals with sufficient vegetables :** Include whole grains like minimally processed rice, whole wheat roti, millets (nutricereals), barely, bamboo rice and include legumes like beans and lentils in the recommended cereal pulse ratio (3:1 or 5:1). There are

rich in fibre and nutrients. They provide sustained energy and help you feel full, reducing the need for extra calories.

- **Take more helpings of vegetables** : In addition to salads, incorporate a variety of colorful vegetables into your meals. They are low in calories but high in vitamins, minerals, and fibre. Roasting, steaming, or stir-frying vegetables can enhance their flavor without adding much cooking oil.
- **Practice portion control** : Be mindful of portion sizes and prevent overeating.
- **Snack smart** : When snacking, reach for nutrient-dense options like a handful of nuts, plain yogurt, or cut vegetables with some spice added.
- **Opt for lean meat**, such as skinless poultry, lean cuts of meat and fish. These meat sources are lower in calories and saturated fats compared to fatty cuts of meat.
- **Use healthy cooking methods** : Opt for cooking methods like grilling, baking, steaming, or sautéing with minimal oil instead of frying. This reduces the energy density of your meals.
- **Limit sugary beverages** : Cut down on sugary drinks like soda, fruit juices, and energy drinks. Choose water, herbal tea, or unsweetened beverages instead.
- **Read food labels**: Check food labels for information on calories, saturated fats, added sugars, and sodium. Opt for products with lower amounts of these components.
- **Adopt to healthy balanced diet and regular physical activity** - For reducing weight, cut down on calorie from refined carbs and cooking oils and undertake physical activity on a regular basis.
- **Swap high calorie foods with healthier foods as follows**
 - Foods with high calories and containing highly refined ingredients with ***Low calorie salads and sprouts (from whole grains & vegetables rich in nutrients)***
 - Deep fried snacks (contains high levels of cooking oil/fat) with ***Nuts & seeds (healthy fats integrated in food)***
 - Foods containing highly refined ingredients, high fat & high sugar with ***Traditional sweets & snacks made with whole grains, nuts, millets & oil seeds (having relatively lower fat & sugar)***
 - Sugar sweetened carbonated & non-carbonated beverages, health drinks & energy drinks with ***Natural foods like tender coconut water, buttermilk, fresh lemon juice, chia seeds soaked in lemon juice, etc.***
 - Fresh fruits juices with ***Whole fruits***
 - Jams, sauces and dips wtih ***Fresh home made chutneys and dips***

Source: ICMR National Institute of Nutrition, Hyderabad - Dietary guidelines for Indians 

Source https://data.vikaspedia.in/short/lc?k=IF_ghzY-gem51qol927v5w

