



Processed foods and nutrition

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Rationale: Ultra-processed foods (UPFs) are often high in fat, sugar and salt (HFSS). Regular consumption of UPFs or HFSS are known to increase the risk of non-communicable diseases like diabetes, hypertension, cardiovascular diseases, etc

- Ultra-processed foods are usually high in fats/sugar/salt and or low in micronutrients and fibre and mostly calorie dense.
- Restrict consumption of HFSS and UPF foods: sauces, cheese, mayonnaise, jams, fruit pulps, juices, carbonated beverages, biscuits, cookies, cakes, pastries, breakfast cereals, cool drinks, health drinks, packaged fruit juices, etc.
- Always prefer fresh and minimally processed foods: whole grains such as cereals, millets, pulses and fresh vegetables, fruits, nuts and seeds.
- Even home-made foods may become unhealthy if prepared with high fat, high sugar or salt.
- Choose carefully when consuming foods prepared outside the home.
- Avoid deep fried, fatty, sugary and salty foods and bakery products.
- Food with high salt increases the risk of hypertension and burden the kidneys. Hence, it is unhealthy.
- Enriching and fortifying UPFs with nutrients does not make them wholesome or healthy.

What do you define HFSS?

HFSS foods are those foods that are prepared with excessive cooking oils/fats or more added sugar and salt. HFSS foods are classified into three categories. Food category 1 indicates energy, fat, sugar and salt within normal level from 100 grams

food eaten. While categories 2 and 3 indicate higher levels of energy and fats or sugar or both along with excessive salt. Categories 2 and 3 fall under HFSS foods.

High fat diet : The total fat intake should not exceed 30% of total energy (WHO). Taking into consideration the inherent fats (fats naturally present in foods) which have several health benefits, an allowance of at least 15% energy should be given for inherent fats and the rest of 15% energy may come from visible fat or cooking oils/fats. Hence, HFSS foods is defined as a food or diet that contains more than 15 percent of energy from any cooking vegetable oils or ghee, butter (visible or added oil/fat), etc. In other words, diets that contribute more than 30g visible or added oils/fats per day for a 2000 Kcal diet. High fat foods include all deep-fried foods and foods prepared with high quantity of oil/fat such as french- fries, samosa, kackoii, puui, savorys, desserts, biscuits, cookies, cakes, paia4kas or even some curries.

High saturated fats : Apart from ghee or butter, which are SFs, coconut oil, palm oil and vanaspati also contain SFs. Hidden sources of saturated fats include food items that have high level of SF such as red meat (beef, mutton, pork, etc.) and high fat dairy products (full cream milk, cheese, etc.).

Use of SF is considered high when more than 10g/day of visible saturated fats (for a 2000 Kcal diet/ day) is consumed in the form of ghee, butter or due to excessive use of palm oil, coconut oil in the preparation of snacks or sweets. Alternatively, use of SF is considered excessive when it contributes to more than 5% total calories (energy) consumed per day.

High salt : The intake of salt above 5g/day (sodium >2g/day) is considered 'high'.

Foods high in salt: Processed/pre-packaged foods like chips, sauces, biscuits, bakery products, etc., home prepared foods like savory snacks, «amkcc», papads and pickles as well as beverages where salt is added by the manufacturer/cook/ consumer.

High sugar: Consumption of sugar in quantities that contribute over 5% of total energy intake per day or 25 g/day (based on average intake of 2000 Kcal/day) is defined as 'high' sugar. WHO is considering revising its recommendation and reducing calories from sugar to <5% Kcal/day. Limiting sugar to 25g/day is better for health. If possible, added sugar may be completely eliminated from one's diet as it adds no nutritive value other than calories. Calories are healthy only when accompanied by vitamins, minerals and fibre.

What are 'added' sugars?

Added sugars refer to sugars and sugar syrups added to foods and drinks during processing and preparation and they include sucrose (table sugar), jaggery, honey, glucose, fructose, dextrose etc. Adding sugar over and above what is naturally/ inherently present in foods increases the total calorie intake, but adds no nutritive value. Refined extracted sugars have no vitamins or minerals.

What are 'naturally' occurring simple sugars?

Naturally occurring simple sugars refers to those that are inherently present in the food. For example, monosaccharides are simple sugars with single sugar molecules such as glucose or fructose in fruits. Disaccharides are two simple sugar molecules like sucrose (sugar) or lactose in milk.

What are 'sugar substitutes'?

Sugar substitutes are sweetening agents used to sweeten foods/beverages like aspartame, saccharin, sugar alcohols, sativoside, etc. They are low in calories (energy) compared to regular table sugar. Studies have indicated that long term consumption of non-calorie sugar substitutes could lead to overweight /obesity, diabetes, hypertension and other NCDs. Studies also indicate disruption in beneficial intestinal bacterial flora. Hence, pregnant and lactating women and children should avoid sugar substitutes.

Why HFSS foods are unhealthy?

High fat foods and high sugar foods are energy dense (high calorie foods and poor in vitamins, minerals & fibre). Regular consumption of these foods not only causes overweight and obesity but also deprives one from taking healthy foods that provide essential macronutrients (amino acids and fats), fibre and micronutrients such as vitamins, minerals, phytonutrients, bio-active substances. Lack of essential amino acids, fatty acids and micronutrients in the diet can cause anemia, affect cognition, learning ability, memory and increase the risk of NCDs. High fat or high sugar foods cause inflammation and affect gut microbiota, which changes quickly with diet. This increases the risk of NCDs. Foods with high salt increase the risk of hypertension and tax the kidneys; hence, high salt intake is unhealthy.

What are processed foods?

Most of the foods that we consume are processed some way or the other to make them suitable for consumption. Minimum food processing is necessary to preserve highly perishable products like milk, meat, fish, vegetables and fresh fruits. Food processing increases the seasonal availability of foods and enables easy transportation and distribution over long distances. Depending upon the extent of processing, they have been classified into various categories- primary, secondary, tertiary, minimally processed and ultra-processed foods. While 'primary processing' includes basic cleaning, grading and packaging as in the case of fruits and vegetables; 'secondary processing' involves alteration of the basic product to a stage just before the final preparation (as in the case of milling of paddy to rice), whereas, 'tertiary processing' leads to almost ready-to-eat foods like bakery products, instant foods, health drinks and so on.

'Minimally processed' foods are the ones that are slightly altered for the main purpose of preservation but which do not substantially change the nutritional content of the food. This allows the food to be stored for a longer time and remain safe. In addition to primary processing, this may involve grinding, refrigeration, pasteurization, fermentation, freezing, and vacuum-packaging. Many fresh fruits, vegetables, whole grains, nuts, meats and milk may undergo these processes.

What are Ultra-processed foods (UPFs)?

UPFs refer to food and beverage products that have undergone extensive industrial processing and contain a high number of additives such as preservatives, sweeteners, colorings, flavorings, emulsifiers, and other substances that are not commonly used in culinary preparations (refer Table 15.2). These additives play a role in enhancing the food's taste, appearance, and shelf life. The extensive processing involved often results in depletion of fibre and micronutrients, rendering them unhealthy for regular consumption. These are added to promote shelf stability, preserve/ alter texture, and increase palatability. These foods are typically ready-to-eat with minimal additional preparation, and a large number of these foods tend to be low in fibre and nutrients. Research suggests that a diet high in ultra-processed foods may be associated with negative health outcomes.

Why are UPFs unhealthy?

Lack of fibre and poor micronutrients makes them unhealthy. Also, UPFs contribute to high calorie (energy) intake as they are often high in fat. UPFs are consumed in larger quantities by a large population since these have unique taste, high palatability and low cost as well as are easily available even in remote areas. Some of

them are extruded products, sugary drinks, ice-creams, cookies, cakes, some frozen processed foods, cold cut meats and instant foods (described below). UPF consumption is associated with overweight/obesity and higher risks of coronary heart disease (heart attack), cerebrovascular diseases (stroke) and diabetes. UPFs also hasten the process of ageing.

For more clarity, Category A indicates minimal processing, Category B indicates moderate level of processing, but Category C falls under UPF. Within the level of processing, foods are also classified based on the level of added fats, sugar and salt (HFSS).

What are instant foods, fast foods and street foods?

Depending on the process and extent of convenience of preparation, foods are often divided into instant foods, fast foods, street foods etc.

Instant foods such as instant noodles, breakfast cereals, soup mixes, cake mixes and others fall under UPF category as they have multi-ingredients which are processed and are high in salt/sweeteners/fat along with artificial colors and flavors and preservatives.

Fast foods are those which are cooked within minutes of order for consumption. Most of these are fresh and do not fall under UPF. However, some fast-food items such as milk shakes, chips, pizzas, burgers and fries are considered unhealthy because of HFSS or ultra-processing.

Street foods comprise of a wide range of foods and beverages prepared and/or sold by vendors and hawkers, especially on streets and other public places. These are generally wholesome and fresh. Apart from looking out for HFSS and ultra-processed ingredients, it is also important to pay attention to the possible contamination that can arise due to food handling and poor hygiene practices.

Does fortification and enriching UPFs with nutrients make them healthy?

If the foods are ultra-processed or high in fat /sugar/salt, then enriching them with nutrients or fortifying cannot make them wholesome or healthy.

Fortification of staples, cooking oils, salt is a measure to combat specific nutrient deficiencies at community level. As per the regulations in India, guidelines have been issued for fortification of specific food items with specific nutrients. Consumption of

issued for fortification of specific food items with specific nutrients. Consumption of wholesome and minimally processed foods are encouraged in order to ensure the consumption of safe, right balance of the required nutrients. Such a food-based approach is a long-term and sustainable strategy for good health.

Categorisation of foods based on level of processing & HFSS

Based on the extent of food processing, availability of nutrients, additives used and nutrients of concern (fat, sugar and salt) as well as the concept of 'My Plate for the Day', there is a need to make informed food choices. Threshold values for energy, added sugar, total fat and salt for 100g cooked or packaged food are given below.

Category A indicates minimal processing, category B indicates moderate level of processing, but category C falls under excessive processing with many additives added (UPF). Within the level of processing, foods are also classified based on the level of added fats, sugar and salt (HFSS). HFSS foods are classified into three categories. Food category 1 indicates energy, fat, sugar and salt within normal level from 100 grams food eaten. While category 2 and 3 indicate moderate and higher levels of energy and fats or sugar or both along with excessive salt. Category 2 and 3 fall under HFSS foods.

Nutrients of concern threshold criteria for foods and beverages

| Nutrients per 100g or ml | Liquids | Solids |
|--------------------------|---------|--------|
| Calorie (kcal) | 70 | 250 |
| Salt (g) | - | 0.625 |
| Added sugar (g) | - | 3 |
| Total fat (g) | - | 4.2 |

Some examples of extensively processed foods

Category C level of processing: To enhance shelf life, palatability and flavours processing may include many additives. Moreover, there may be extensive loss of native fibre and nutrients of the foods due to excessive processing techniques involved. Few examples are given below:

- Extensive processing of grains to make refined flours.
- Fruit Juices with additives: Extracting juice from fruits and vegetables often involves removing the fibrous pulp, resulting in a liquid product with reduced fibre content

compared to consuming the whole fruit or vegetable.

- Extrusion and processing technique : High pressure and temperature involved in these products contribute to the breakdown of nutrients, including some vitamins, minerals and fibre. Additionally, the mechanical forces exerted during extrusion can alter the structure of fibre, potentially reducing its functionality. Additionally, these formulations rely on refined or processed ingredients that inherently have lower levels of minerals and fibre, and hence the overall nutrient content of the extruded product may be very low.
- Canning and Preservation : While canning, the heat treatment involved can lead to the degradation of some vitamins and minerals.

Source: [ICMR - National Institute of Nutrition, Hyderabad - Dietary guidelines for Indians](#)

Source: <https://data.vikaspedia.in/short/lc?k=lcZsyz58eRyj6ZyPoQ7fHQ>

