



## Ultra-Processed and Fast Foods Making India Diabetic

**For Prelims:** [Ultra-Processed Foods](#), [Diabetic Capital](#), [Oxidative Stress](#), [Insulin](#), Advanced Glycation End Products, [Food Processing](#), [Sweeteners](#), [Saturated Fat](#), [Food Safety and Standards Authority of India \(FSSAI\)](#), [High in Fat, Sugar, and Salt \(HFSS\) Foods](#), [Saksham Anganwadi](#), [Poshan 2.0](#).

**For Mains:** Impact of ultra-processed foods (UPFs) on public health, Measures to promote healthier dietary practices.

[Source: TH](#)

### Why in News?

Recently, a study published in the *International Journal of Food Sciences and Nutrition* highlights the role of **advanced glycation end products (AGEs)** found in [ultra-processed](#) and **fast foods** in India's increasing diabetes cases.

- The clinical trial was the first of its kind in India and was funded by the **Department of Biotechnology** under the **Ministry of Science and Technology**.

### What are the Key Highlights of the Study?

- **Role of AGEs:** The high intake of **AGE-rich foods** is a major factor behind India's status as the "[diabetic capital](#)" of the world, with over **101 million people** affected.
  - AGEs are **harmful compounds** formed through **glycation**, a process where **sugars react with proteins or fats** during high-temperature cooking, like frying or roasting.
  - AGEs contribute to [oxidative stress](#), which is an imbalance between **free radicals** and [antioxidants](#), leading to inflammation and cell damage.
- **Susceptibility to Diabetes:** Ultra-processed foods (UPFs) cause **rapid blood sugar spikes** and [insulin](#) resistance over time.
  - Low in fibre and high in calories, they also contribute to **weight gain and obesity**, major diabetes risk factors.
- **Impact on Insulin Sensitivity:** **Low-AGE diets**, which primarily included foods cooked by boiling or steaming, showed **improved insulin sensitivity** and reduced inflammatory levels compared to those on high-AGE diets.
  - Reducing AGEs in the diet could be a **viable strategy** for mitigating diabetes risk, particularly for those at high risk of developing [type 2 diabetes](#).

### Note:

- **Prevalence of Diabetes in India:** The prevalence of diabetes in India was **11.4% in 2021**. This equates to approximately **101 million Indians** suffering from diabetes.
- The **rapid nutrition transition** in India, with increased consumption of **refined carbohydrates, fats, and animal products**, along with **sedentary lifestyles**, has further escalated the

prevalence of obesity and diabetes.

## Why are Ultra-Processed Foods Harmful to Health?

- **Saturated Fats, Salt, and Sugar:** Ultra-processed foods are typically loaded with **saturated fat**, **salt**, and **sugar**, which contribute to health problems such as **heart disease**, high blood pressure, and **diabetes**.
- **Negative Effects of Additives:** Ultra-processed foods often contain additives like **preservatives**, artificial colours, sweeteners, and emulsifiers.
  - These substances are suggested to have negative effects on health, potentially contributing to **inflammation, gut imbalance, and metabolic issues**.
- **Alters Nutrient Absorption:** The way food is processed can significantly affect how the body responds to it.
  - For example, when nuts are **eaten whole, less fat is absorbed** compared to when they are processed and oils are released, altering the nutrient profile and **caloric intake**.
- **Effects on Gut Health:** The **gut microbiome**, which is critical for **digestion and immunity**, may be disrupted by high levels of sugar, unhealthy fats, and additives commonly found in these foods.
- **Overall Lifestyle Impact:** People who consume a high amount of ultra-processed foods may also engage in other **unhealthy behaviours**, such as physical inactivity or irregular eating patterns.

## What are Types of Food Processing?

- **About Food Processing:** It is the process of **transforming raw agricultural products** like grains, meats, vegetables, and fruits into more **valuable and convenient food products** with minimal waste.
- **Types of Food Processing:**
  - **Minimally Processed:** It includes **fruits, vegetables, milk, fish, pulses, eggs, nuts, and seeds** with no added ingredients and minimal alterations from their natural state.
  - **Processed Ingredients:** They are **added to other foods** rather than eaten by themselves, such as salt, sugar and oils.
  - **Processed Foods:** They are made by **combining minimally processed and processed ingredients** that can be made at home. E.g., **jam, pickles, cheese etc.**
  - **Ultra-Processed Foods:** They are **industrially manufactured** food products that typically contain ingredients not commonly found in a home kitchen.
    - These foods often include additives such as **preservatives, colorings, flavourings, emulsifiers, and sweeteners**.
    - They are usually **high in sugar, unhealthy fats, and salt**, while being low in fibre, vitamins, and minerals.
    - Foods marketed as **“instant” or “ready-to-eat,”** as well as **pre-packaged snacks and frozen meals** usually fall into this category.
    - Examples include **sugary beverages, packaged snacks, instant noodles,** and ready-to-eat meals.

## Why is there an Increase in Consumption of Ultra-Processed Foods in India?

- **Urbanisation:** Fast-paced living in urban areas often necessitates **quick and convenient food options**.
  - Ultra-processed foods are readily available and **require minimal preparation**, making them appealing to busy individuals and families.
- **Cultural Shifts in Dietary Preferences:** There has been a cultural shift towards **Western-style diets**, characterised by a higher intake of fast food, **sugary snacks, and ready-to-eat meals**.
- **Rising Number of Working Women:** Ultra-processed foods are viewed as **time-saving alternatives** to traditional meal preparation, helping working individuals balance their professional and personal lives more easily.
- **Fresh Food Availability:** In urban areas, the availability of fresh foods may be limited.

- Ultra-processed foods can fill this gap by providing a **readily available alternative** for those who may struggle to access healthier options.
- **Aggressive Marketing and Availability:** UPFs are **heavily advertised**, often with misleading health claims that appeal to consumers.
  - Celebrity endorsements and **targeted advertising**, especially towards children, further promote these products.
- **Status Symbol:** There is a growing perception that consuming processed and packaged foods signifies a **higher social status**.

## What are the Government Initiatives to Promote Healthy Food Habits?

- [World Food Safety Day](#)
- [Eat Right India](#)
- [State Food Safety Index](#)
- [RUCO \(Repurpose Used Cooking Oil\)](#)
- [Food Safety Mitra](#)

## What are Recommendations to Curb Consumption of UPF?

- **Low-AGE Diet:** It is recommended to adopt a **diet low in AGEs**, consisting of **fruits, vegetables, whole grains**, and low-fat dairy products.
  - Cut down bakery and sugary foods and include non-starchy vegetables in meals.
- **Cooking Methods:** Foods cooked using low-temperature methods, such as **boiling or steaming**, should replace those prepared through high-temperature methods like **frying or roasting**.
- **Clear Definition of HFSS Foods:** The [Food Safety and Standards Authority of India \(FSSAI\)](#) should define **High in Fat, Sugar, and Salt (HFSS) foods** to help identify harmful products and guide regulations on their sale and consumption.
- **Nutrient-Based Taxation:** A **higher tax** on products with excessive fat, sugar, and salt would incentivise manufacturers to reformulate their offerings and make **healthier options more affordable**.
- **Revising PLI Scheme:** Revising the [Production Linked Incentive \(PLI\) scheme](#) to support nutrition-linked production can give healthier food products a competitive market advantage.
- **Restricting Promotions:** Marketing regulations should be **tightened** to limit the promotion of HFSS foods, particularly in **media targeting children**.
- **Strengthening Policies and Programs:** Existing initiatives like [Saksham Anganwadi](#) and [Poshan 2.0](#) need to be expanded to explicitly target the dual challenges of **inadequate nutrition and diet-related diseases**.

### Drishti Mains Question:

Discuss the impact of ultra-processed foods (UPFs) on public health. What measures can be taken to discourage their consumption and promote healthier dietary practices?

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### Prelims:

**Q. Aspartame is an artificial sweetener sold in the market. It consists of amino acids and provides calories like other amino acids. Yet, it is used as a low-calorie sweetening agent in food items. What is the basis of this use? (2011)**

**(a)** Aspartame is as sweet as table sugar, but unlike table sugar, it is not readily oxidized in human body due to lack of requisite enzymes

**(b)** When aspartame is used in food processing, the sweet taste remains, but it becomes resistant to oxidation

**(c)** Aspartame is as sweet as sugar, but after ingestion into the body, it is converted into metabolites that yield no calories

**(d)** Aspartame is several times sweeter than table sugar, hence food items made with small quantities of aspartame yield fewer calories on oxidation

**Ans: (d)**

**Mains:**

**Q.** What are the challenges and opportunities of the food processing sector in the country? How can the income of the farmers be substantially increased by encouraging food processing? **(2020)**

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