The New York Times https://www.nytimes.com/2024/05/06/well/eat/ultraprocessed-foods-harmful-health.html

How Bad Are Ultraprocessed Foods, Really?

They're clearly linked to poor health. But scientists are only beginning to understand why.

By Alice Callahan

Published May 6, 2024 Updated Aug. 1, 2024

In the mid-1990s, Carlos Monteiro, a nutritional epidemiologist in Brazil, noticed something alarming: Obesity rates among children in his country were rising rapidly.

To understand why, he and his colleagues at the University of São Paulo scrutinized data on the food buying patterns of Brazilian households to see if they had changed in recent years. The researchers found that people were purchasing less sugar, salt, cooking oils and staples like rice and beans, and more processed foods like sodas, sausages, instant noodles, packaged breads and cookies.

To describe that second category of food, Dr. Monteiro said, the team introduced a new term into the scientific literature — ultraprocessed foods, or UPFs — and defined it. They would later link UPFs to weight gain in children and adults in Brazil.

Since then, scientists have found associations between UPFs and a range of health conditions, including heart disease, Type 2 diabetes, obesity, gastrointestinal diseases and depression, as well as earlier death.

That's concerning, experts say, since ultraprocessed foods have become a major part of people's diets worldwide. They account for 67 percent of the calories consumed by children and teenagers in the United States, for example.

But many questions remain. What are ultraprocessed foods, exactly? And how strong is the evidence that they're harmful? We asked experts to answer these and other questions.

What are ultraprocessed foods?

In order to study foods based on how they were processed, Dr. Monteiro and his colleagues developed a food classification system called Nova, named after the Portuguese and Latin words for "new." It has since been adopted by researchers across the world.

The Nova system sorts foods into four categories:

- **Unprocessed or minimally processed foods**, like fresh or frozen fruits and vegetables, beans, lentils, meat, poultry, fish, eggs, milk, plain yogurt, rice, pasta, corn meal, flour, coffee, tea and herbs and spices.
- **Processed culinary ingredients**, such as cooking oils, butter, sugar, honey, vinegar and salt.
- **Processed foods** made by combining foods from Category 1 with the ingredients of Category 2 and preserving or modifying them with relatively simple methods like canning, bottling, fermentation and baking. This group includes freshly baked bread, most cheeses and canned vegetables, beans and fish. These foods may contain preservatives that extend shelf life.
- **Ultraprocessed foods** made using industrial methods and ingredients you wouldn't typically find in grocery stores — like high-fructose corn syrup, hydrogenated oils and concentrated proteins like soy isolate. They often contain additives like flavorings, colorings or emulsifiers to make them appear more attractive and palatable. Think sodas and energy drinks, chips, candies, flavored yogurts, margarine, chicken nuggets, hot dogs, sausages, lunch meats, boxed macaroni and cheese, infant formulas and most packaged breads, plant milks, meat substitutes and breakfast cereals.

"If you look at the ingredient list and you see things that you wouldn't use in home cooking, then that's probably an ultraprocessed food," said Brenda Davy, a nutrition professor at Virginia Tech.

Casey Zhang for The New York Times

The Nova system notably doesn't classify foods based on nutrients like fat, fiber, vitamins or minerals. It's "agnostic to nutrition," said Maya Vadiveloo, an associate professor of nutrition at the University of Rhode Island.

That has led to debate among nutrition experts about whether it's useful for describing the healthfulness of a food, partly since many UPFs — like whole grain breads, flavored yogurts and infant formulas — can provide valuable nutrients, Dr. Vadiveloo said.

Are ultraprocessed foods harmful?

Most research linking UPFs to poor health is based on observational studies, in which researchers ask people about their diets and then track their health over many years. In a large review of studies that was published in 2024, scientists reported that consuming UPFs was associated with 32 health problems, with the most convincing evidence for heart disease-related deaths, Type 2 diabetes and common mental health issues like anxiety and depression.

Such studies are valuable, because they can look at large groups of people — the 2024 review included results from nearly 10 million — over the many years it can take for chronic health conditions to develop, said Josiemer Mattei, an associate professor of nutrition at the Harvard T.H. Chan School of Public Health. She added that the consistency of the link between UPFs and health issues increased her confidence that there was a real problem with the foods.

But the observational studies also have limitations, said Lauren O'Connor, a nutrition scientist and epidemiologist who formerly worked at the Department of Agriculture and the National Institutes of Health. It's true that there is a correlation between these foods and chronic diseases, she said, but that doesn't mean that UPFs directly cause poor health.

Dr. O'Connor questioned whether it's helpful to group such "starkly different" foods — like Twinkies and breakfast cereals — into one category. Certain types of ultraprocessed foods, like sodas and processed meats, are more clearly harmful than others. UPFs like flavored yogurts and whole grain breads, on the other hand, have been associated with a reduced risk of developing Type 2 diabetes.

How we choose health experts to talk to. Times reporters often spend weeks interviewing doctors, researchers and other health professionals to help report an article. We seek leaders in their fields, watch out for conflicts of interest and try to get a variety of viewpoints.

Here's more on our process.

Clinical trials are needed to test if UPFs directly cause health problems, Dr. O'Connor

said. Only one such study, which was small and had some limitations, has been done, she said.

In that study, published in 2019, 20 adults with a range of body sizes lived in a research hospital at the National Institutes of Health for four weeks. For two weeks, they ate mainly unprocessed or minimally processed foods, and for another two weeks, they ate mainly UPFs. The diets had similar amounts of calories and nutrients, and the participants could eat as much as they wanted at each meal.

During their two weeks on the ultraprocessed diet, participants gained an average of two pounds and consumed about 500 calories more per day than they did on the unprocessed diet. During their time on the unprocessed diet, they lost about two pounds.

That finding might help explain the link between UPFs, obesity and other metabolic conditions, said Kevin Hall, a nutrition and metabolism researcher at the National Institutes of Health, who led the trial. But the study needs to be replicated, which Dr. Hall is in the process of doing now.

Why might UPFs be harmful?

There are many “strong opinions” about why ultraprocessed foods are unhealthy, Dr. Hall said. “But there’s actually not a lot of rigorous science” on what those mechanisms are, he added.

Because UPFs are often cheap, convenient and accessible, they’re probably displacing healthier foods from our diets, Dr. Hall said.

Casey Zhang for The New York Times

But he and other scientists think that the foods could be having more direct effects on health. They can be easy to overeat — maybe because they contain hard-to-resist combinations of carbohydrates, sugars, fats and salt, are high-calorie and easy to chew. It's also possible that resulting blood sugar spikes may damage arteries or ramp up inflammation, or that certain food additives or chemicals may interfere with hormones, cause a "leaky" intestine or disrupt the gut microbiome.

Researchers, including Dr. Hall and Dr. Davy, are beginning to conduct small clinical trials that will test some of these theories. Such studies may help identify the most harmful UPFs and even suggest how they may be made healthier, Dr. Hall said.

But most researchers think there are various ways the foods are causing harm. "Rarely in nutrition is there a single factor that fully explains the relationship between

foods and some health outcome," Dr. Vadiveloo said.

What should we do about ultraprocessed foods?

In 2014, Dr. Monteiro helped write new dietary guidelines for Brazil that advised people to avoid ultraprocessed foods.

Other countries like Mexico, Israel and Canada have also explicitly recommended avoiding or limiting UPFs or "highly processed foods." The U.S. dietary guidelines contain no such advice, but an advisory committee is currently looking into the evidence on how UPFs may affect weight gain, which could influence the 2025 guidelines.

It's difficult to know what to do about UPFs in the United States, where so much food is already ultraprocessed and people with lower incomes can be especially dependent on them, Dr. Hall said.

"At the end of the day, they are an important source of food, and food is food," Dr. Mattei added. "We really cannot vilify them," she said.

While research continues, expert opinions differ on how people should approach UPFs. Dr. Monteiro said that the safest course is to avoid them altogether — to swap flavored yogurt for plain yogurt with fruit, for example, or to buy a fresh loaf from a local bakery instead of packaged bread, if you can afford to do so.

Dr. Vadiveloo suggested a more moderate strategy, focusing on limiting UPFs that don't provide valuable nutrients, like soda and cookies. She also recommended eating more fruits, vegetables, whole grains (ultraprocessed or not), legumes, nuts and seeds.

Cook at home as much as you can, using minimally processed foods, Dr. Davy said. "We can't really say a whole lot beyond that at this point."

From the conversation

S **Smilodon7**
Gilead, State Formerly Known As Missouri

Cook at home as much as I can? Folks, unless we can find a way for people to make a living without needing multiple jobs, most of us just don't have time to cook very often. I cannot cook when I am running from one low wage job job to the other and commuting long distances because I cannot afford to live near work. It doesn't matter that it's healthier and better if you simply do not have the time to do it.

Alice Callahan
Reporter

@Smilodon7 -- Absolutely, thank you for pointing this out. Yours is unfortunately the reality for so many people. There is real value in

inexpensive, shelf-stable foods that be pulled together into a balanced meal in a few minutes. And I think that's why many nutrition experts are hesitant to advice people to avoid UPF altogether.

Read full thread

Alice Callahan is a Times reporter covering nutrition and health. She has a Ph.D. in nutrition from the University of California, Davis.

A version of this article appears in print on , Section A, Page 12 of the New York edition with the headline: How Bad Are Ultraprocessed Foods, Really?