

Webinar Will Begin Momentarily

TODAY'S AGENDA:

- Welcome
- Speaker Introduction
- Presentation
- Q&A
- Closing

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Professional Education Series

Support. Inform. Educate. Empower.

Processed Foods: What Every Health Care Professional Should Know



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Disclosures

Write digestive health blog twice monthly for WebMD.com;
write a twice-monthly Substack newsletter

Co-author, *The Menopause Diet Plan: A Natural Guide to Managing Hormones, Health and Happiness*

U.S. Soy/Soy Connection (FNCE 2024)

American Pistachio Growers – Ongoing Educational Outreach Partnership

Defining Processed Foods

The Nova System

- Introduced in 2009 to classify foods according to the extent of their “industrial processing.”
- Made with ingredients you “wouldn’t normally find in supermarkets or kitchens or made with industrial manufacturing processes.”
- Food fits into one of four groups.
- Nutrient composition is **not** part of the Nova system.

<https://pubmed.ncbi.nlm.nih.gov/21180977/>

Group 1: Unprocessed or Minimally Processed Foods

- Foods from nature

- You can discard parts of the food, but you can't add to them.

- Can be dried, crushed, ground, powdered, fractioned, filtered, roasted, boiled, pasteurized, chilled, frozen, in a container, or vacuum-packed:
 - Raisins; dried beans and peas
 - Dairy milk
 - Olives
 - Fresh or frozen plain meat, poultry, seafood
 - Coffee
 - Plain grains, such as oats
 - Unsalted roasted or raw nuts

Group 2: Processed Culinary Ingredients

➤ Foods from Group 1 that have been pressed, refined, milled, including:

- Olive oil
- Butter
- Lard
- Maple syrup, honey, brown sugar, white sugar
- Seed oils
- Salt

<https://pubmed.ncbi.nlm.nih.gov/21180977/>

Group 3: Processed Foods

- Made by adding salt, sugar, oil, or other substances to foods from Group 1 or Group 2
- Food that's cured, smoked, salted, including:
 - Salami, prosciutto
 - Smoked salmon
 - Canned beans (including reduced-sodium)
 - Sourdough bread (not packaged)
 - Canned fish (tuna, salmon)
 - Freshly-made cheeses

Group 4: Ultraprocessed Foods (UPF)

➤ “Industrial formulations” made entirely or mostly from oils, fats, sugar, starch, and proteins, flavor enhancers, colors, and food additives, including:

- Hot dogs
- Chocolate milk
- Packaged whole wheat bread, white bread, pasta, rice
- Cheese puffs, snack chips, packaged cookies
- Ice cream and frozen desserts
- Sweetened yogurt
- Carbonated soft drinks, energy drinks, coffee drinks
- Frozen pizza
- Distilled alcohol, such as whisky, gin, rum, vodka, etc.



Dried chickpeas: Group 1



**Homemade hummus: Group 2
(made with dried chickpeas)**



Canned chickpeas: Group 3 (added sodium)



Packaged hummus: Group 4 (added guar gum)

“UPF are industrial formulations and/or ingredients not commonly found in your kitchen.”

Homemade



Packaged



- **Emulsifiers (soy lecithin)**
- **Artificial flavors**
- **Slightly higher in sodium**

What to Consider About Nova

- Production method outweighs nutrient content.
- The notion that food manufacturers always purposefully design and produce UPF for overconsumption.
- Avoiding all UPF doesn't guarantee a high-nutrient, balanced eating plan.

<https://www.sciencedirect.com/science/article/abs/pii/S0924224421004970>

<https://nutrition.org/limiting-ultra-processed-foods-does-not-necessarily-make-for-a-healthy-diet/>

Pros and Cons of Food Processing

Food Processing: Pros

- **Saves time**
- **Improves convenience, food security, and reduces food waste:**
 - Canned beans, tuna, fruit, vegetables are shelf-stable
- **Improves food safety:**
 - Pasteurization
- **Improves nutrition:**
 - Milk fortified with vitamins A and D
 - Kefir and yogurt with live active cultures
 - Enriched and fortified grains
- **Helps manage food allergy and intolerance:**
 - Lactose-free milk, gluten-free options



Food Processing: Cons

➤ Often lower nutrient-density/greater energy-density



➤ Reduced fiber content



➤ May have added sugar, sodium, saturated fat

➤ May use additives that could be harmful to health



➤ Texture and higher palatability of UPF may cause overconsumption

What Does the Research Say About UPF and Health?

UPF in the US Diet

➤ Americans over the age of 19: 55% of calories from UPF
- Children 1–18 years: about 62%

- Top UPF foods:
- sandwiches
 - burgers
 - sweet bakery products
 - savory snacks
 - sweetened beverages



➤ Those with the highest family income eat the least amount of UPF.

<https://www.cdc.gov/nchs/products/databriefs/db536.htm>

WSJ



This is Your Brain on Ultra-Processed Foods

Scientists are discovering clues to how these foods affect the way we learn, remember and feel

By Andrea Petersen

MARCH 22, 2024

TAP STORY >

The Washington Post
Democracy Dies in Darkness

Ultra-processed diet decreases male sex hormones, new study suggests

Researchers also found that eating ultra-processed foods led to weight gain.

August 28, 2025

Health Life, But Better Fitness Food Sleep Mindfulness Relationships

NEW Watch Listen

Life But Better
Food

Scientists criticize food manufacturers for massive profits from sales of unhealthy ultraprocessed food

UPDATED NOV 20, 2025

By  Sandee LaMotte

The New York Times

Eating Processed Foods Tied to Shorter Life

Foods like instant noodles and soups, breakfast cereals and chicken nuggets were associated with an earlier death.

Health Issues Related to Eating Patterns Higher in Calories from UPF

- Overweight and obesity
- Type 2 diabetes
- CVD
- Breast cancer, thyroid cancer, colon cancer
- Thyroid disease
- Depression
- Dementia
- IBD, Chron's disease
- Liver disease

Possible Reasons for Health Issues

- Excess calorie, sugar, saturated fat, and sodium intake
- Increased inflammation
- Advanced Glycation End Products (AGEs), associated with type 2 diabetes, CVD, and accelerated aging
- Immune system abnormalities
- Negative changes in the gut microbiome
- Aggravation of existing intestinal issues

UPF and Body Weight

UPF and Body Weight

Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of *Ad Libitum* Food Intake

Kevin D. Hall  ⁵  • Alexis Ayuketah • Robert Brychta • ... Peter J. Walter • Shanna Yang • Megan Zhou •

[Show all authors](#) • [Show footnotes](#)

[Open Archive](#) • Published: May 16, 2019 • DOI: <https://doi.org/10.1016/j.cmet.2019.05.008> •

- RCT with a cross-over design that compared a diet with **80%** calories from UPF to a minimally processed plan
- Diets matched for energy, energy density, macros, sodium, fiber, etc.
- Energy intake and **weight gain** was greater on the UPF diet than minimally processed diet.

UPF and Body Weight: Texture and Energy Density

The Journal of Nutrition 155 (2025) 2602–2610



JN THE JOURNAL OF NUTRITION

journal homepage: <https://jn.nutrition.org/>



Ingestive Behavior and Nutritional Neuroscience

The Effect of Energy Density and Eating Rate on *Ad Libitum* Energy Intake in Healthy Adults—A Randomized Controlled Study

Marlou P Lasschuijt¹, Lise AJ Heuven^{1,2}, Karina Gonzalez-Estanol¹, Els Siebelink¹, Yong Chen¹, Ciarán G Forde^{1,*}



<https://www.sciencedirect.com/science/article/pii/S0022316625003621>

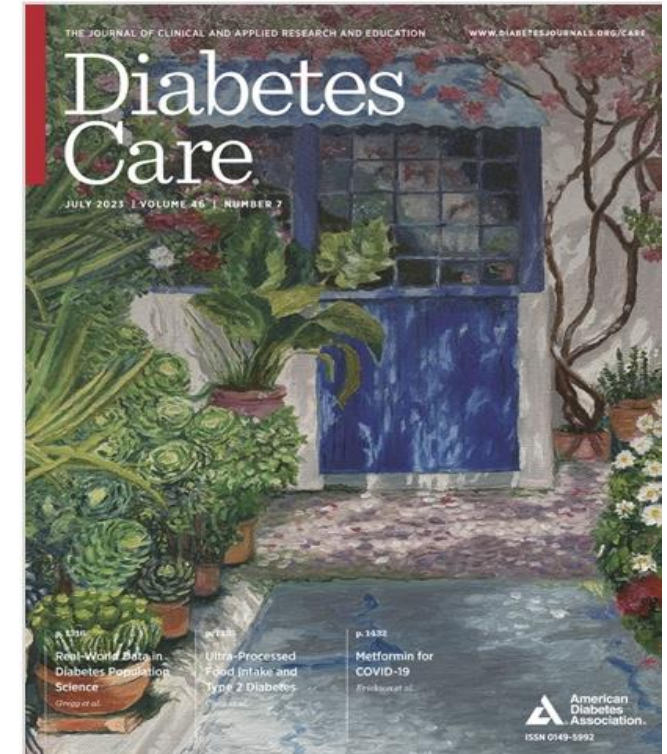
- 69 adults in a randomized crossover design
- UPF meals that varied in energy density and texture
- Meals with **softer texture** and **higher energy density** resulted in significantly higher calorie intake.
- **Firmer foods** were consumed more slowly and in smaller quantities.

UPF and Type 2 Diabetes Risk

- **People who at the most UPF were 50% more likely to develop type 2 diabetes.**

- **UPF animal-based products were associated with the greatest risk followed by ready to eat/heated mixed dishes.**

July 2023



<https://diabetesjournals.org/care/article/46/7/1335/148548/Ultra-Processed-Food-Consumption-and-Risk-of-Type>

Diabetes Care. 2023;46(7):1335-1344. doi:10.2337/dc22-1993

Subgroups
Ultra-processed breads and cereals
Ultra-processed cereals
Ultra-processed dark breads and whole-grain breads
Other ultra-processed refined breads
Sauces, spreads, and condiments
Packaged sweet snacks and desserts
Confectioneries
Packaged sweet snacks
Fruit-based products
Packaged savory snacks
Artificially and sugar-sweetened beverages
Artificially sweetened beverages
Sugar-sweetened beverages
Animal-based products
Ready-to-eat/heat mixed dishes
Yogurt and dairy-based desserts
Other ultra-processed foods
HR and 95%CI

0.98 (0.96, 0.99)

0.78 (0.75, 0.82)

0.96 (0.94, 0.98)

1.05 (1.02, 1.07)

1.05 (1.03, 1.06)

0.89 (0.87, 0.91)

0.99 (0.95, 1.03)

0.87 (0.84, 0.89)

0.82 (0.77, 0.86)

0.91 (0.87, 0.94)

1.10 (1.09, 1.12)

1.09 (1.08, 1.11)

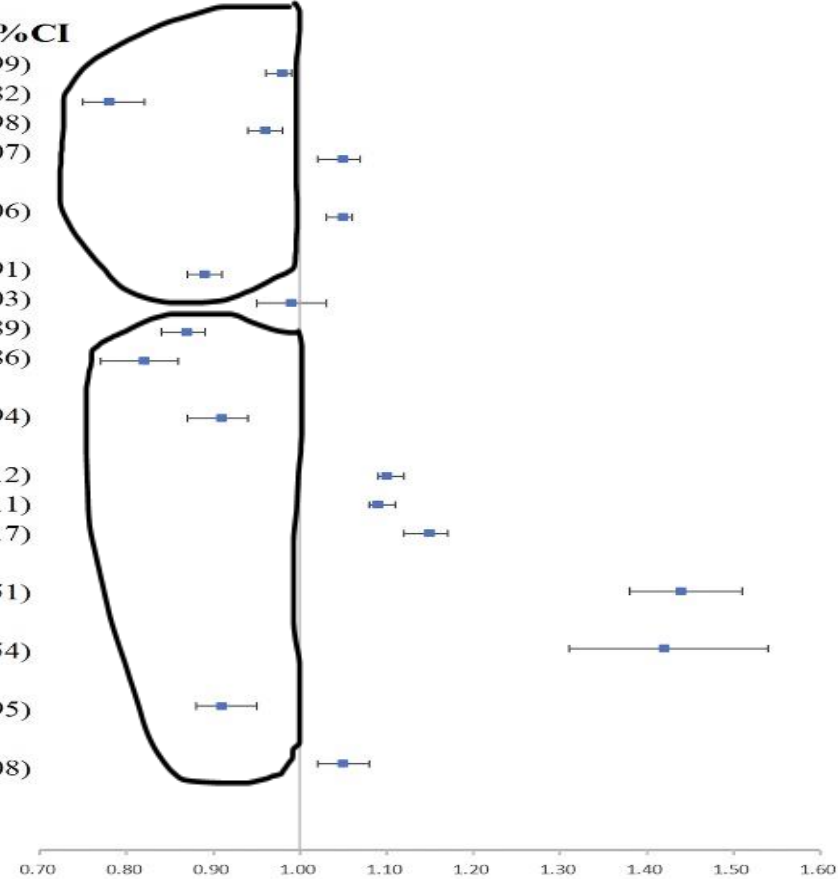
1.15 (1.12, 1.17)

1.44 (1.38, 1.51)

1.42 (1.31, 1.54)

0.91 (0.88, 0.95)

1.05 (1.02, 1.08)



<https://diabetesjournals.org/care/article/46/7/1335/148548/Ultra-Processed-Food-Consumption-and-Risk-of-Type>

UPF, Heart Disease, and Stroke Risk

- Those with the **highest intake of UPF** had a significantly greater risk for CVD, heart disease, and stroke compared to those with the lowest intake.
- Risk **varied** by food groups:
 - **Processed meats** and **sugary and artificially-sweetened drinks** associated with greater risk
 - Inverse associations observed with **bread/cold cereals, yogurt/dairy desserts and savory snacks**
- **Conclusion:** Nutrition advice for cardiovascular health should consider specific groups of UPF.

UPF: Not All Created Equal

➤ Top UPF offenders:

- Sugar- and artificially sweetened beverages
- Processed meats
- Ready-to-eat meals



➤ Protective UPF foods:

- Cereals
- Whole grain bread
- Packaged sweet snacks and desserts
- Packaged savory snacks
- Yogurt- and dairy-based desserts (flavored)



American Heart Association Advisory 2025

- Focus on cutting back UPFs that are high in unhealthy fats, added sugars, and salt.
- Allow **affordable UPFs of higher nutritional quality** as part of a healthy dietary pattern:

- Whole grain breads
- Low-sugar yogurt
- Tomato sauce
- Nut or bean-based spreads



Are UPF Addictive?

UPF and Addiction

Addiction / Early View

RESEARCH REPORT |  Open Access |  

Ultra-processed food addiction in a nationally representative sample of older adults in the USA

Lucy K. Loch , Matthias Kirch, Dianne C. Singer, Erica Solway, J. Scott Roberts, Jeffrey T. Kullgren, Ashley N. Gearhardt

First published: 29 September 2025
<https://doi.org/10.1111/add.70186>

- About **1 in 5 women** ages 50-64 addicted to UPF, using the Yale Food Addiction Score 2.0
- Only about half as many men qualified as addicted to food
- Brain is wired to seek pleasure
- UPF foods rich in fat, sugar, and salt trigger a surge of dopamine

Is Food As Addictive as Nicotine?

THE
MILBANK QUARTERLY

A MULTIDISCIPLINARY JOURNAL OF POPULATION HEALTH AND HEALTH POLICY

Original Research |  Open Access |  

From Tobacco to Ultraprocessed Food: How Industry Engineering Fuels the Epidemic of Preventable Disease

[ASHLEY N. GEARHARDT](#)  [KELLY D. BROWNELL](#), [ALLAN M. BRANDT](#)

First published: 02 February 2026 | <https://doi.org/10.1111/1468-0009.70066> |  VIEW METRICS

➤ “Cigarettes and UPFs are not simply natural products but **highly engineered delivery systems** designed specifically to maximize biological and psychological reinforcement and habitual overuse.”

<https://onlinelibrary.wiley.com/doi/10.1111/1468-0009.70066>

Food Additives

Food Additives Associated With Chronic Disease Risk

➤ Sodium

- Salt and sodium in other preservatives



➤ Sugar

- White and brown sugar, high fructose corn syrup, honey, maple syrup, etc.



➤ Fat

- Saturated fat



Food Additives Associated With Decreased Chronic Disease Risk

➤ Calcium

➤ Vitamin D

➤ Iodine

- Iodized salt largely eradicated goiter in the U.S. (UPF don't use iodized salt.)

➤ Iron

➤ B vitamins

- Folic acid: NTD have declined significantly in the U.S. since the mandatory fortification of enriched grains in 1998
- Many women don't take folic acid supplements prior to pregnancy; fortified grains help fill that gap



<https://www.cdc.gov/spina-bifida/data/index.html>;

<https://www.healio.com/news/endocrinology/20240213/iodized-salt-celebrating-the-centennial-of-a-major-us-public-health-triumph>

Synthetic Dyes (petroleum-based



- Make foods more appealing.
- May cause or worsen behavioral problems in children, including hyperactivity and inattention.
- Some animal evidence that synthetic dyes cause cancer, but no human evidence.

[https://www.jandonline.org/article/S2212-2672\(25\)00166-2/fulltext](https://www.jandonline.org/article/S2212-2672(25)00166-2/fulltext)

HHS and FDA Phase Out Synthetic Food Dyes

- Red No. 3 banned in January 2025
- Working to eliminate six remaining synthetic dyes including Citrus Red No. 2 and Orange B
- FDA now allows manufacturers to claim “no artificial colors.”

<https://www.fda.gov/industry/color-additives/fdc-red-no-3>

<https://www.fda.gov/news-events/press-announcements/hhs-fdaphase-out-petroleum-based-synthetic-dyes-nations-food-supply>

Emulsifiers

- Help oil and water components mix, provide a smooth texture, increased shelf life.
 - Carrageenan
 - Soy lecithin
 - Guar gum
 - Carboxymethylcellulose (cellulose gum)
 - Polysorbate 60, 65, 80
 - Native rice starch

Preservatives and Cancer Risk



➤ **BHA: Butylated hydroxyanisole**

- Potato chips, frozen pizza, canned soup, cured meats, breakfast cereals
- Animal studies: BHA is a potential carcinogen
- FDA launched safety review in 2026



➤ **Sodium nitrite/Celery powder and juice**

- Used to preserve meat, such as hot dogs, deli meats, etc.
- Nitrites can form carcinogenic nitrosamines in the body

<https://www.sciencedirect.com/science/article/pii/S0273230021000271>

<https://publications.iarc.who.int/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/Ingested-Nitrate-And-Nitrite-And-Cyanobacterial-Peptide-Toxins-2010>

Polydextrose



- Bulking agent, stabilizer, thickener, and humectant.
- Soluble fiber that replaces replacer of sugar, starch, and fat, and used for for calorie reduction.
- Polydextrose is fermentable and can be used by beneficial gut bacteria as food.

Incorporating Guidelines for UPF into Dietary Advice



Limit Highly Processed Foods, Added Sugars, & Refined Carbohydrates

- + Avoid highly processed packaged, prepared, ready-to-eat, or other foods that are salty or sweet, such as chips, cookies, and candy that have added sugars and sodium (salt). Instead, prioritize nutrient-dense foods and home-prepared meals. When dining out, choose nutrient-dense options.
- + Limit foods and beverages that include artificial flavors, petroleum-based dyes, artificial preservatives, and low-calorie non-nutritive sweeteners.
- + Avoid sugar-sweetened beverages, such as sodas, fruit drinks, and energy drinks.
- + While no amount of added sugars or non-nutritive sweeteners is recommended or considered part of a healthy or nutritious diet, one meal should contain no more than 10 grams of added sugars.
- + When selecting snack foods, added sugar limits should follow FDA “Healthy” claim limits. For example, grain snacks (e.g., crackers) should not exceed 5 grams of added sugar per $\frac{3}{4}$ ounce whole-grain equivalent, and dairy snacks (e.g., yogurt) should not exceed 2.5 grams of added sugar per $\frac{2}{3}$ cup equivalent.

UPF in the Dietary Guidelines for Americans

- In 2025, FDA issued a **request for information** to develop a **uniform definition** of UPF.
- A formal definition could shape what's eligible for school lunches and food assistance programs.
- More than **20 states** have passed or proposed bans on dyes, additives, and other ingredients.

Incorporating Foods Classified by Nova Into Dietary Guidance

- The concept of UPF is **subjective** and not yet defined by the FDA/DGA.
- It's possible to **misclassify** foods.
- Nearly all the studies of health effects are **observational** in nature.
- May **demonize** nutritious foods such as unsweetened soy milk, enriched grains (white rice, etc.) and tofu.
- Adds little or no value to **established metrics** and existing nutrient profiling systems.

[https://ajcn.nutrition.org/article/S0002-9165\(23\)03684-5/fulltext](https://ajcn.nutrition.org/article/S0002-9165(23)03684-5/fulltext); <https://pubmed.ncbi.nlm.nih.gov/30820487/>

What Should We Say About Processed Foods?

A brown paper grocery bag with blue handles is the central focus of the page. It is positioned on the left side, and the background is a blurred kitchen scene with a person in a blue shirt visible in the distance.

The Non-UPF Program

A nonprofit dedicated to helping consumers reduce their overall intake of ultra-processed foods and replace them with healthier foods.

DONATE

“The Non-UPF certificate is an endorsement that a food contains no ultra-processed ingredients at the time of certification approval.”

“Ultra-processed foods are industrial formulations and/or ingredients not commonly found in your kitchen. ”

Nutritious UPF Fill Nutrient Gaps

- Those living in **food deserts** with little regular access to fresh food
- People without **refrigeration or stoves**
- **Schools** that send students home with food for the weekend
- **Hunger relief** and **disaster relief** organizations
- People with **limited** mobility and dexterity
- People who need **extra nutrition** found in fortified foods and protein powders



<https://link.springer.com/article/10.1007/s00394-021-02701-1>

Group 4 NOVA Foods: Not All Created Equal

- Fortified soy milk and other plant milks
- Peanut butter (not the natural kind)
- Enriched breakfast cereal
- Packaged whole wheat bread
- Enriched white bread, pasta, rice
- Sweetened, flavored yogurt
- Dairy-based desserts
- Tofu (calcium sulfate), flavored tempeh

- Plant-based burgers, such as soy burgers
- Infant formula
- Protein powder
- Ultrafiltered milk and lactose-reduced milk
- Parmesan cheese (packaged)
- Salted nuts
- Seltzer water

Group 4: UPF

- Hot dogs, salami, and deli meats
- Cheese puffs, snack chips, packaged cookies
- Ice cream
- Fast food
- Sugary soft drinks, including soda and energy drinks
- Frozen pizza and other frozen meals
- Ready to eat/heat entrees

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(25\)01565-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(25)01565-X/fulltext)

Take-Away Messages



- **Lend nuance** to a confusing conversation.
- Recognize that not all UPF are **not the same**.
- Help consumers **make food choices** based on nutrient composition, personal health history, culture, affordability, accessibility, etc – and not necessarily based on food processing.
- Understand that some **food additives** may irritate GI conditions and educate people about how to read food labels for ingredients.
- Emphasize the effect of **overall eating patterns** and not single foods on health.

Thank you for joining us today.

RDNs and NDTRs, please complete the short survey after the webinar to download a CPEU certificate!

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