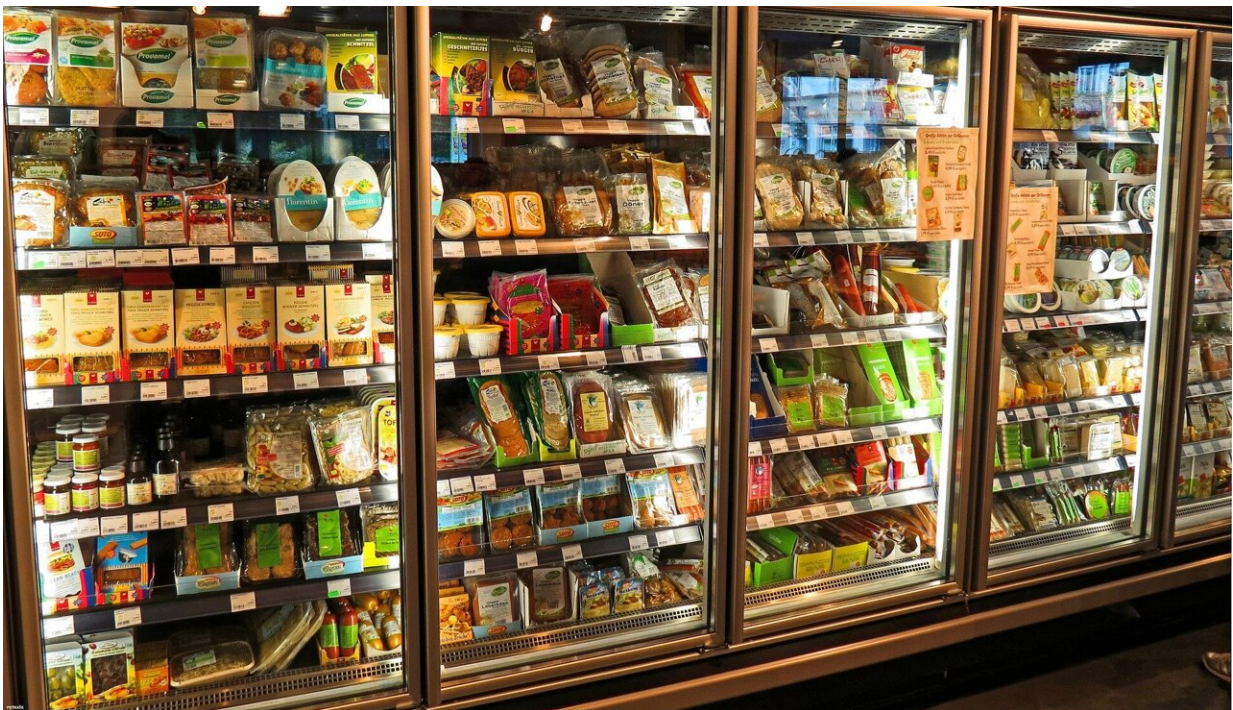


# New study links ultra-processed foods and colorectal cancer in men

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For many Americans, the convenience of pre-cooked and instant meals may make it easy to overlook the less-than-ideal nutritional information, but a team led by researchers at Tufts University and Harvard University hope that will change after recently discovering a link between the high consumption of ultra-processed foods and an increased risk of colorectal

cancer.

In a study published Aug. 31 in the *BMJ*, researchers found that men who consumed high rates of ultra-processed foods were at 29% higher risk for developing [colorectal cancer](#)—the third most diagnosed [cancer](#) in the United States—than men who consumed much smaller amounts. They did not find the same association in women.

"We started out thinking that colorectal cancer could be the cancer most impacted by diet compared to other cancer types," said Lu Wang, the study's lead author and a postdoctoral fellow at the Friedman School of Nutrition Science and Policy at Tufts. "Processed meats, most of which fall into the category of ultra-processed foods, are a strong risk factor for colorectal cancer. Ultra-processed foods are also high in added sugars and low in fiber, which contribute to weight gain and obesity, and obesity is an established risk factor for colorectal cancer."

The study analyzed responses from over 200,000 participants—159,907 women and 46,341 men—across three large prospective studies which assessed [dietary intake](#) and were conducted over more than 25 years. Each participant was provided with a food frequency questionnaire every four years and asked about the frequency of consumption of roughly 130 foods.

For the study in *BMJ*, participants' intake of ultra-processed foods was then classified into quintiles, ranging in value from the lowest consumption to the highest. Those in the highest quintile were identified as being the most at risk for developing colorectal cancer. Although there was a clear link identified for men, particularly in cases of colorectal cancer in the distal colon, the study did not find an overall increased risk for women who consumed higher amounts of ultra-processed foods.

## **The impacts of ultra-processed foods**

The analyses revealed differences in the ways that men and women consume ultra-processed foods and the prospective associated cancer risk. Out of the 206,000 participants followed for more than 25 years, the research team documented 1,294 cases of colorectal cancer among men, and 1,922 cases among women.

The team found the strongest association between colorectal cancer and ultra-processed foods among men come from the meat, poultry, or fish-based, ready-to-eat products. "These products include some processed meats like sausages, bacon, ham, and fish cakes. This is consistent with our hypothesis," Wang said.

The team also found higher consumption of sugar-sweetened beverages, like soda, fruit-based beverages, and sugary milk-based beverages, is associated with an increased risk of colorectal cancer in men.

However, not all ultra-processed foods are equally harmful with regard to colorectal cancer risk. "We found an inverse association between ultra-processed dairy foods like yogurt and colorectal cancer risk among women," said co-senior author Fang Fang Zhang, a cancer epidemiologist and interim chair of the Division of Nutrition Epidemiology and Data Science at the Friedman School.

Overall, there was not a link between ultra-processed food consumption and colorectal cancer risk among women. It's possible that the composition of the ultra-processed foods consumed by women could be different than that from men.

"Foods like yogurt can potentially counteract the harmful impacts of other types of ultra-processed foods in women," Zhang said.

Mingyang Song, co-senior author on the study and assistant professor of clinical epidemiology and nutrition at the Harvard T.H. Chan School of Public Health, added that "further research will need to determine whether there is a true sex difference in the associations, or if null findings in women in this study were merely due to chance or some other uncontrolled confounding factors in women that mitigated the association."

Although ultra-processed foods are often associated with poor diet quality, there could be factors beyond the poor diet quality of ultra-processed foods that impact the risk of developing colorectal cancer.

The potential role of food additives in altering gut microbiota, promoting inflammation, and contaminants formed during food processing or migrated from food packaging may all promote cancer development, Zhang noted.

### **Analyzing the data**

With more than a 90% follow-up rate from each of the three studies, the research team had ample data to process and review.

"Cancer takes years or even decades to develop, and from our [epidemiological studies](#), we have shown the potential latency effect—it takes years to see an effect for certain exposure on cancer risk," said Song. "Because of this lengthy process, it's important to have long-term exposure to data to better evaluate cancer risk."

The studies included:

- [The Nurses' Health Study](#) (1986-2014): 121,700 registered female nurses between the ages of 30 and 55
- [The Nurses' Health Study II](#) (1991-2015): 116,429 female nurses

between the ages of 25 and 42

- [The Health Professional Follow-up Study](#) (1986-2014): 51,529 male health professionals between the ages of 40 and 75.

After an exclusionary process for past diagnoses or incomplete surveys, the researchers were left with prospective data from 159,907 women from both NHS studies and 46,341 men.

The team adjusted for potential confounding factors such as race, family history of cancer, history of endoscopy, physical activity hours per week, smoking status, total alcohol intake and total caloric intake, regular aspirin use, and menopausal status.

Zhang is aware that since the participants in these studies all worked in the healthcare field, the findings for this population may not be the same as they would be for the general population, since the participants may be more inclined to eat healthier and lean away from ultra-processed foods. The data may also be skewed because processing has changed over the past two decades.

"But we are comparing within that population those who consume higher amounts versus lower amounts," Zhang reassured. "So those comparisons are valid."

### **Changing dietary patterns**

Wang and Zhang previously published a study that [identified a trend](#) in increased ultra-processed food consumption in U.S. children and adolescents. Both studies underscore the idea that many different groups of people may be dependent on ultra-processed foods in their daily diets.

"Much of the dependence on these foods can come down to factors like



food access and convenience," said Zhang, who is also a member of the Tufts Institute for Global Obesity Research. "Chemically processing foods can aid in extending shelf life, but many processed foods are less healthy than unprocessed alternatives. We need to make consumers aware of the risks associated with consuming unhealthy foods in quantity and make the healthier options easier to choose instead."

Wang knows that change won't happen overnight, and hopes that this study, among others, will contribute to changes in dietary regulations and recommendations.

"Long-term change will require a multi-step approach," Wang added. "Researchers continue to examine how nutrition-related policies, dietary recommendations, and recipe and formula changes, coupled with other healthy lifestyle habits, can improve overall health and reduce cancer burden. It will be important for us to continue to study the link between cancer and diet, as well as the potential interventions to improve outcomes."

**More information:** Lu Wang et al, Association of ultra-processed food consumption with colorectal cancer risk among men and women: results from three prospective US cohort studies, *BMJ* (2022). [DOI: 10.1136/bmj-2021-068921](https://doi.org/10.1136/bmj-2021-068921)

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