Health & Medicine

Why Are So Many Young Adults Getting Cancer?

New Columbia research looks at ultra-processed foods, sedentary lifestyles, and other possible explanations.

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|
Feb. 12, 2025

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When Beatrice Dionigi was in medical school fifteen years ago, she was taught that colon cancer — long known as a “silent killer” for its ability to advance undetected — was a disease of old age, striking people in their fifties and beyond. But since embarking on her career as a colon and rectal surgeon, she has found

herself operating on patients far younger than she expected.

“I’m now routinely seeing people in their thirties and forties, many of whom have advanced disease,” says Dionigi, an associate professor of surgery at Columbia University Irving Medical Center (CUIMC). “Every year, the patients are younger and younger.”

Dionigi’s experience reflects a worrisome global trend: research shows that growing numbers of people are getting cancer in early adulthood and middle age, with sharp rises seen especially in gastrointestinal cancers — including those of the colon, stomach, and pancreas — and breast and uterine cancers. One recent study found that cases of gastrointestinal cancers in Americans under the age of fifty rose by 15 percent between 2010 and 2019, while breast cancer diagnoses in women under fifty increased by 8 percent. The patterns are perplexing, experts say, given that cancer rates among older adults have declined in recent years.

“Something different is clearly happening, making young people vulnerable in ways that past generations weren’t,” says Rebecca Kehm, a cancer epidemiologist at Columbia’s Mailman School of Public Health. The rise in so-called early-onset cancers cannot be explained by improved access to screening, Kehm says, as the increases are occurring even in people too young to qualify for routine mammograms or colonoscopies. Nor can genetics explain the rise. Inherited mutations such as the BRCA variations for breast and ovarian cancer and a handful associated with colorectal and endometrial cancer are well-documented risk factors, but their prevalence in the population has remained stable over time. “If genetic changes were driving this trend, we would expect a gradual rise over multiple generations — not the sharp increases we’re seeing within a few decades,” Kehm says.

So, what is driving the surge in early-onset cancers? Experts have several theories. Some assert that rising obesity rates among young people are to blame, as excess fat tissue can fuel chronic inflammation and tumor growth. Large population studies have generally supported this idea, linking obesity to increased risks for several cancers, including those of the breast and colon. Yet other scientists argue that obesity may be a proxy for underlying risk factors, such as poor diets and sedentary lifestyles.

A forthcoming study led by CUIMC gastroenterologist Joel T. Gabre, Dionigi, and medical oncologist Yoanna S. Pumpalova builds on previous research linking ultra-

processed foods to colon cancer, providing the first molecular evidence that diet may play a pivotal role in early-onset cases. Gabre's team finds indications that certain fatty acids found in processed foods — including seed oils derived from soybean, corn, and sunflower — can disrupt the gut microbiome and ignite chronic inflammation, damaging DNA and triggering malignant changes. "Excessive fat in the body may amplify these processes, but obesity itself doesn't appear to be necessary for early-onset colon cancer to develop — or even to be a primary driver of the disease," says Gabre, whose team compared tissue samples from dozens of early-onset and late-onset cancer patients.

Gabre cautions that additional research, including experiments in mouse models, will be needed to confirm his findings. Still, he believes that his data support a hypothesis that has been gaining traction of late in public-health circles: that the epidemic of early-onset colon cancers is the consequence of a fundamental shift in human nutrition. "Beginning in the 1960s and '70s, people in the US and other industrialized nations started eating radically different diets, full of fast foods and ultra-processed ingredients," he says. "We may now be seeing what happens when entire generations grow up consuming these foods."

This theory, if true, could help explain why many young and otherwise healthy colon cancer patients do not fit the expected profile. "Often, they're not overweight or showing any other obvious risk factors for cancer," says Dionigi. "I've operated on marathon runners, ballet dancers, and people who don't drink, smoke, or eat red meat." This leads Gabre to think that harmful dietary patterns in early childhood may inflict lasting damage, even in individuals who later adopt healthier habits. "It suggests that we need to do more long-term studies on the impacts of childhood nutrition," he says, "and that we ought to think twice about what we feed our kids."

New research by Kehm indicates that early lifestyle choices can have an enduring impact on breast cancer risk, as well. In a study published last month in the journal *Cancer Epidemiology, Biomarkers and Prevention*, she and several colleagues find evidence that declining levels of physical activity among adolescents and young adults could be driving the surge in early-onset breast cancer. Kehm's team, in analyzing self-reported behavioral and medical data from 26,000 women in the US, Canada, Australia, and New Zealand, find that women who are highly active between the ages of twelve and thirty-four have a 20 percent lower risk of developing breast cancer before they hit forty, compared to those who get little exercise.

Past studies have shown that physical activity can protect against breast cancer by regulating estrogen levels, reducing chronic inflammation, and limiting oxidative stress — biological processes that, when unchecked, can fuel tumor growth. But Kehm's new paper is the first to show that the amount of exercise a woman gets is important beginning as early as adolescence, and that staying active may offer protection specifically against early-onset breast cancer. She suspects this is because puberty is a critical window for breast cancer risk, when estrogen levels fluctuate dramatically. "Regulating estrogen levels during this period appears to be especially important," says Kehm, who is also investigating the biological mechanisms by which physical activity can prevent the formation of tumors in the breast. Notably, her team finds that physical exercise helps to protect against early-onset breast cancer regardless of a person's body mass index. "The message to adolescent girls should be to maintain a healthy lifestyle overall, with physical activity as a key component, rather than to fixate on your body weight," she says.

For women who may already be on the path to developing early-onset breast cancer, emerging risk-assessment strategies could offer new ways to intervene. Columbia cancer researcher Lauren Houghton is currently investigating the possibility of measuring women's hormone levels as a way to identify those who are most vulnerable to the disease. She says that such methods could one day open the door for targeted prevention strategies — whether through exercise interventions, lifestyle changes, or earlier screening. "If we can determine who is at greatest risk while they're still young," says Houghton, "we might be able to stop the disease before it starts."

While newly identified risk factors like processed foods and sedentary lifestyles are under scrutiny, how they compare to well-established cancer risks remains an open question. Smoking, excessive alcohol consumption, and high red meat intake have long been recognized as major contributors to colon and breast cancers. But to understand the relative impact of these and other factors on early-onset disease, researchers say, studies tracking people from childhood onward are needed.

"Most studies on cancer risk have focused on exposures that accumulate across adulthood," says Kehm. "We're only beginning to uncover how lifestyle and environmental factors may affect people much earlier. We'll need larger studies of children, teenagers, and young adults to determine how various risk factors interact over time — and when interventions can be most effective."

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