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Why Are So Many Younger Adults Getting Cancer?

Columbia researchers are investigating ultra-processed foods, sedentary lifestyles, and other possible explanations.

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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 mainly in their seventies 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 assistant professor of surgery at Columbia’s Vagelos College of Physicians and Surgeons. “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 cancer in Americans under the age of fifty increased by 15 percent between 2010 and 2019, while cases of breast cancer 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 younger 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.

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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, since excess fat tissue can fuel chronic inflammation and tumor growth. Large population studies have generally supported this idea, linking obesity to increased risk 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 Columbia gastroenterologist Joel T. Gabre, medical oncologist Yoanna S. Pumpalova, and Dionigi 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 excessive consumption of certain fatty acids found in highly processed foods — including soybean, corn, and sunflower oil — 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 using mouse models, will be needed to confirm his findings. Still, he believes his data supports a

hypothesis that has been gaining traction of late in public-health circles: that the epidemic of early-onset colon cancer 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 food 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 on those 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 this year in the journal *Cancer Epidemiology, Biomarkers & Prevention*, she and several colleagues find evidence that declining levels of physical activity among adolescents and younger adults could be driving the surge in early-onset breast cancer. Kehm’s team analyzed self-reported behavioral and medical data from twenty-six thousand women in the US, Canada, Australia, and New Zealand and concluded 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, a time 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 breast tumors. 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, researchers are developing new methods to identify those most at risk and to help them while there’s still time. Columbia cancer researcher Lauren Houghton is investigating using 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, 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.”

One major question that remains is how these newly identified risk factors compare to well-established cancer risks like smoking and high consumption of alcohol and red meat. To find the answer, researchers will need to track people from childhood onward.

“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."

Cancer remains, first and foremost, a disease of aging, with nearly 90 percent of US diagnoses occurring in people over fifty. But a shift is clearly underway. In younger adults, rates are climbing for more than a dozen different cancers, including those of the gut, skin, blood, and reproductive and endocrine systems. Women’s rates are outpacing men’s in this age group, largely because early-onset breast cancer is so common; today, nearly 6 percent of women will receive a cancer diagnosis before they turn fifty, compared to 3 percent of men.

For those in the prime of life, the diagnosis is shattering. “Nobody is ever fully prepared to hear they have cancer,” says Pumpalova, who specializes in treating cancers of the gastrointestinal tract. “But we’re talking about people in their thirties and forties who are often raising children, working long hours to support their families, and feeling healthy overall. It’s the last thing they’re expecting.”

Undergoing cancer treatment at this earlier stage of life comes with distinct challenges too. In part because younger people don't qualify for routine screenings like mammograms or colonoscopies, their tumors tend to be more advanced by the time they're detected, requiring aggressive combinations of surgery, radiation, and chemotherapy. The financial strain can be crushing, especially for those balancing medical bills with mortgages and childcare. And the emotional toll is immense, since they face grueling treatments while juggling careers and family responsibilities.

At CUIMC, doctors are adapting their care to meet the needs of these younger adult patients. For example, Dionigi, Gabre, and Pumpalova have launched a new clinical program specifically for early-onset colorectal cancer; the program, one of the first of its kind, provides advanced surgical procedures and other treatments tailored to younger patients, including immunotherapies. Patients also have access to mental-health support, financial counseling, and side-effect-management strategies designed to safeguard their quality of life for decades to come. "For people who are hoping to have children one day but who need radiation treatment in the pelvic area, which can affect fertility, there are options available," says Dionigi. This can include freezing eggs or sperm, or even a surgical procedure to permanently relocate the ovaries higher in the abdomen, out of the field of radiation. "We have multidisciplinary teams of physicians who guide patients through these types of interventions, from diagnosis to recovery," she says.

Columbia's medical center has long been a leader in treating early-onset breast cancer, the most prevalent cancer among younger adults. It tends to spread more quickly than the breast cancers that emerge in older people; its virulence, combined with the fact that it is often diagnosed at a later stage, makes it one of the hardest cancers to treat. Survival rates are improving, though, due not only to advances in treatment but also to innovative strategies for reducing these treatments' side effects, which can help patients adhere to their regimens. "Some women require years of hormonal therapy to prevent recurrence of breast cancer, which can be extremely disruptive, causing everything from joint pain and heart problems to cognitive problems and depression," says Dawn Hershman '01PH, a Columbia oncologist and breast-cancer specialist. She notes that large numbers of women may cease treatment early or reduce their dosages as a result. But Hershman and her colleagues have found creative ways of easing side effects, boosting adherence and improving patients' chances of recovery. "This can involve something as simple as acupuncture, exercise, or dietary adjustments," she says.

For younger adults concerned about their cancer risk, experts recommend paying close attention to changes in their body — like unexplained lumps, pain, bleeding, or fatigue — and visiting a physician if these symptoms persist. “It’s also important to know your family history of cancer, as this can indicate whether you should start cancer screenings earlier than most people,” says Hershman, who is also the chief of the division of hematology and oncology at Columbia’s medical school.

Of course, it is important to maintain perspective. Not every ache or pain signals a malignancy. And while cancer rates among younger adults are rising, they still remain quite low. “The vast majority of younger people who develop gastrointestinal issues don’t have colorectal cancer,” says Pumpalova.

At the same time, she says, people need to talk openly with their physicians about any symptoms they are experiencing, even if it feels awkward or embarrassing at first. “One of the big obstacles in diagnosing colorectal cancer is that people are often reluctant to tell their doctors about digestive or intestinal issues,” says Pumpalova. “So they convince themselves that what they’re experiencing is no big deal. But it may or may not be. You have to come forward and talk about your symptoms, because an earlier diagnosis could save your life.”

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