

Cancers in adults under 50 are on the rise globally

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Over recent decades, more and more adults under the age of 50 are developing cancer. A study conducted by researchers from Brigham and Women's Hospital reveals that the incidence of early onset cancers

(those diagnosed before age 50), including cancers of the breast, colon, esophagus, kidney, liver, and pancreas among others, has dramatically increased around the world, with this drastic rise beginning around 1990. In an effort to understand why many more younger individuals are being diagnosed with cancer, scientists conducted extensive analyses of available data in the literature and online, including information on early life exposures that might have contributed to this trend. Results are published in *Nature Reviews Clinical Oncology*.

"From our data, we observed something called the birth cohort effect. This effect shows that each successive group of people born at a later time (e.g., decade-later) have a higher risk of developing cancer later in life, likely due to risk factors they were exposed to at a young age," explained Shuji Ogino, MD, Ph.D., a professor and physician-scientist in the Department of Pathology at the Brigham. "We found that this risk is increasing with each generation. For instance, people born in 1960 experienced higher cancer risk before they turn 50 than people born in 1950 and we predict that this risk level will continue to climb in successive generations."

To conduct this study, Ogino and lead author Tomotaka Ugai, MD, Ph.D., also of the Department of Pathology, and their colleagues first analyzed global data describing the incidence of 14 different cancer types that showed increased incidence in adults before age 50 from 2000 to 2012. Then, the team searched for available studies that examined trends of possible risk factors including early life exposures in the general populations. Finally, the team examined the literature describing clinical and biological tumor characteristics of early-onset cancers compared to later-onset cancers diagnosed after age 50.

In an extensive review, the team found that the early life exposome, which encompasses one's diet, lifestyle, weight, environmental exposures, and [microbiome](#), has changed substantially in the last several

decades. Thus, they hypothesized that factors like the westernized diet and lifestyle may be contributing to the early-onset cancer epidemic. The team acknowledged that this increased incidence of certain cancer types is, in part, due to early detection through cancer screening programs. They couldn't precisely measure what proportion of this growing prevalence could solely be attributed to screening and early detection. However, they noted that increased incidence of many of the 14 cancer types is unlikely solely due to enhanced screening alone.

Possible risk factors for early-onset cancer included [alcohol consumption](#), [sleep deprivation](#), smoking, obesity, and eating highly [processed foods](#). Surprisingly, researchers found that while adult sleep duration hasn't drastically changed over the several decades, children are getting far less sleep today than they were decades ago. Risk factors such as highly-processed foods, sugary beverages, obesity, type 2 diabetes, sedentary lifestyle, and alcohol consumption have all significantly increased since the 1950s, which researchers speculate has accompanied altered microbiome.

"Among the 14 cancer types on the rise that we studied, eight were related to the digestive system. The food we eat feeds the microorganisms in our gut," said Ugai. "Diet directly affects microbiome composition and eventually these changes can influence disease risk and outcomes."

One limitation of this study is that researchers did not have an adequate amount of data from low- and [middle-income countries](#) to identify trends in cancer incidence over the decades. Going forward, Ogino and Ugai hope to continue this research by collecting more data and collaborating with international research institutes to better monitor global trends. They also explained the importance of conducting longitudinal cohort studies with parental consent to include young children who may be followed up for several decades.

"Without such studies, it's difficult to identify what someone having cancer now did decades ago or when one was a child," explained Ugai, "Because of this challenge, we aim to run more longitudinal cohort studies in the future where we follow the same cohort of participants over the course of their lives, collecting health data, potentially from electronic health records, and biospecimens at set time points. This is not only more cost effective considering the many cancer types needed to be studied, but I believe it will yield us more accurate insights into [cancer](#) risk for generations to come."

More information: Tomotaka Ugai et al, Is early-onset cancer an emerging global epidemic? Current evidence and future implications, *Nature Reviews Clinical Oncology* (2022). [DOI: 10.1038/s41571-022-00672-8](#)

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