

Today's obesity epidemic may have been caused by childhood sugar intake decades ago

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Current obesity rates in adults in the United States could be the result of dietary changes that took place decades ago, according to a new study published by researchers at the University of Tennessee, Knoxville.

"While most public health studies focus on current behaviors and diets, we took a novel approach and looked at how the diets we consumed in our childhood affect obesity levels now that we are adults," said Alex Bentley, head of UT's Department of Anthropology and lead researcher of the study, which was published in *Economics and Human Biology*.

Consumption of excess sugar, particularly in sugar-sweetened beverages, is a known contributor to both childhood and [adult obesity](#). Many population health studies have identified sugar as a major factor in the obesity epidemic. One problem with this theory, however, has been that [sugar consumption](#) in the US began to decline in the late 1990s while [obesity rates](#) continued to rise well into the 2010s.

That increase shows in the numbers: By 2016, nearly 40 percent of all adults in the US—a little over 93 million people—were affected by obesity. In Tennessee alone, the adult obesity rate more than tripled, from about 11 percent in 1990 to almost 35 percent in 2016. By 2017, however, obesity in Tennessee had fallen 2 percent from the previous year.

If high-sugar diets in childhood have long-lasting effects, the changes we see now in adult obesity rates may have started with diets decades ago, when those adults were children.

"Since the 1970s, many available infant foods have been extremely high in sugar," said Hillary Fouts, coauthor of the study and cultural anthropologist and professor in the UT Department of Child and Family Studies. "Other independent studies in medicine and nutrition have suggested that sugar consumption during pregnancy can cause an increase in fat cells in children," she added.

"Up to this point, no studies had explicitly explored the temporal delay between increased sugar consumption and rising obesity rates," says Damian Ruck, postdoctoral research fellow in the Department of Anthropology and coauthor of the study. To address the problem, the authors modeled the increase in US adult obesity since the 1990s as a legacy of the increased excess sugar consumption measured among children in the 1970s and 1980s.

The researchers tested their model using national obesity data collected between 2004 and 1990 by the Centers for Disease Control and Prevention. They compared those obesity rates with annual sugar consumption since 1970 using the median per capita rates issued by the US Department of Agriculture.

The model also roughly captures how obesity rates vary by age group among children and teenagers.

"Our results suggest that the dietary habits learned by children 30 or 40 years ago could explain the adult obesity crisis that emerged years later," said Ruck.

A large portion of the sugar increase before 2000 was from [high fructose corn syrup](#) (HFCS), which after 1970 quickly became the main sweetener in soft drinks and a common ingredient in processed foods. At peak sugar consumption, in 1999, each person in the US consumed on average around 60 pounds of HFCS per year and more than 400 calories per day in total excess sugars.

US sugar consumption has declined since 2000. "If 2016 turns out to be the peak in the obesity rate," Bentley added, "that is coincidentally one generation after the peak in excess sugar [consumption](#)."

The researchers are planning to continue their studies in the area by exploring the effect of [sugar](#)-sweetened beverages. "This is important because obesity disproportionately affects the poor," said Bentley.

In a paper published in *Palgrave Communications* in 2018, Bentley and his colleagues found that the relationship between low income and high rates of obesity became noticeable on a national scale in the early 1990s. The 2018 study shows that the correlation between household income and [obesity](#) rate has grown steadily, from virtually no correlation in 1990 to a very strong correlation by 2016.

More information: R. Alexander Bentley et al, U.S. obesity as delayed effect of excess sugar, *Economics & Human Biology* (2019). [DOI: 10.1016/j.ehb.2019.100818](#)

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