

Living near a 'food swamp' may increase stroke risk among adults 50 and older

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Adults ages 50 and older who lived near dense fast food and unhealthy food environments known as "food swamps" had a higher risk of stroke

compared to those who lived in areas with fewer retail and fast food choices, according to preliminary research to be presented at the American Stroke Association's International Stroke Conference 2023. The meeting, to be held in person in Dallas and virtually, Feb. 8-10, 2023, is a world premier meeting for researchers and clinicians dedicated to the science of stroke and brain health.

The term "food swamp" was coined more than a decade ago to define communities where [fast-food chains](#) and convenience stores abound, swamping the neighborhoods with unhealthy eating options rather than [healthy food choices](#). Food swamps often coincide with [food deserts](#), where a lack of grocery stores makes it harder to get fresh produce and [nutritious food](#).

"Despite major advances in stroke care, stroke continues to be a significant problem, and some people will remain at risk despite optimal medical treatment," said Dixon Yang, M.D., lead author of the study and a postdoctoral fellow at Columbia University Irving Medical Center in New York City. "An unhealthy diet negatively impacts blood pressure, blood glucose and cholesterol levels that increases the risk of stroke. Independent of one's own demographics or socioeconomic status, living in a neighborhood with an abundance of poor food choices may be an important factor to consider for many people."

Food swamps and the potential link to stroke is not well-studied. In this study, researchers analyzed whether food swamp environments might be associated with greater odds of stroke. They reviewed data from the Health and Retirement Study (HRS), an ongoing study conducted at the University of Michigan that recruits participants throughout the U.S. to study the challenges and opportunities associated with aging and retirement. This data was then cross-referenced with food environment information from the U.S. Department of Agriculture to derive a retail food environment index (RFEI), which indicates the ratio of fast-food

restaurants and convenience stores to the number of retail healthy food options within neighborhoods.

This study was a secondary analysis of data collected from 2010 to 2016. Researchers then applied an expanded retail food environment index based on the participants' health data. The retail food environment index included [convenience stores](#), fast-food and full-service restaurants as unhealthy food options; grocery stores, farmer's markets and specialized food stores were classified as healthy food retailers.

The study included 17,875 adults (average age of 64 years; 54% women; 84% of whom were white adults) with statistical weighting applied to represent the general U.S. population. Each person was weighted based on survey design/sampling so that the group was representative of a much larger U.S. population of more than 84 million community-dwelling, stroke-free adults. Two categories were created for retail food environment index—a ratio lower than 5, or a ratio of 5 or more. "The two categories were chosen for comparison because prior research has shown that a retail food environment index ratio of 5 or higher may predict the prevalence of people with obesity in a neighborhood," Yang said.

More than 3 million people, or 3.8% of those studied, self-reported as having had a stroke. The analysis found:

- The percentage of people living in areas with a retail food environment index below 5 was 28%, and the percentage of those living in areas ranked as 5 or higher on the food environment index was 72%.
- People in the higher retail food environment index group (ratio 5 or more) had 13% higher odds of incident stroke compared to those who lived in neighborhoods with an index score below 5.
- The overall median retail food environment index across all

communities was a ratio of 6, "meaning many of the participants lived in an area with 6 times the amount of unhealthy to healthy food retailers," Yang noted.

"Our research highlights the potential importance of an area's retail food options as a structural factor affecting stroke, especially since most participants resided in areas with 6 times the amount of relative unhealthy to healthy food choices," Yang said.

The study was limited by its cross-sectional design, which captured only a single period of time, so researchers were unable to prove cause and effect between retail food environment index and stroke. In addition, stroke was self-reported, and there was no information on type of stroke.

"At this early stage of our research, it's important to raise awareness that a person's neighborhood and food environment are potentially important factors affecting their health, especially among people who may have difficulty in reaching optimal cardiovascular health targets. In the future, it may help to focus on community-based interventions or dietary guidance to improve cardiovascular health, thereby, hopefully reducing the risk of stroke," Yang said.

The American Heart Association's 2022 [policy statement, Strengthening U.S. Food Policies and Programs to Promote Equity in Nutrition Security](#), encourages policies that ensure nutrition security for all people across their lifespan, and that all people have the knowledge and tools to prepare, eat and store nutritious foods. According to the policy statement, the availability, accessibility and affordability of nutritious foods is not equitable in the United States. In 2015, 12.8% of the U.S. population had both [lower income](#) and limited access to a grocery store, supermarket or supercenter.

Cardiovascular health can be improved by following the American Heart

Association's [Life's Essential 8](#): eating healthy food, being physically active, not smoking, getting enough sleep, maintaining a healthy weight, and controlling cholesterol, blood sugar and blood pressure levels. Dietary intake, which is affected by food insecurity, is one of the key contributors to cardiovascular disease risk, and the low prevalence of ideal diet drives the overall low prevalence of ideal cardiovascular health in the U.S.

"In this study of older, community-dwelling, adults in the U.S., the majority of the people lived in areas with a high-density of unhealthy food options. The association between having a [stroke](#) and living in an unhealthy food environment highlights the importance of having effective policies and programs that can help to improve access to healthier [food](#) options for all Americans," said Anne N. Thorndike, M.D., M.P.H., FAHA, immediate past chair of the American Heart Association's Nutrition Committee and a member of the Association's Lifestyle Council and director of the Cardiac Lifestyle Program at Massachusetts General Hospital in Boston. Dr. Thorndike was not involved in this study.

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More information: [professional.heart.org/en/meet ... al-stroke-conference](https://professional.heart.org/en/meet...al-stroke-conference)

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