For people with epilepsy, neighborhood may be tied to memory, mental health

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People with epilepsy living in disadvantaged neighborhoods—areas with higher poverty levels and fewer educational and employment opportunities—may be more likely to have memory, thinking, and

mental health problems compared to people with epilepsy living in neighborhoods with fewer disadvantages, according to new research published in the April 19, 2023, online issue of *Neurology*. The study does not prove that living in disadvantaged neighborhoods causes memory and mental health problems for these individuals. It only shows an association.

"Epilepsy research has arguably ignored the potential impact of the social determinants of health in neighborhoods on cognition—factors that have been hiding in plain sight for many years," said study author Robyn Busch, Ph.D., of Cleveland Clinic in Ohio. "Our study shows that these neighborhood social factors are linked to epilepsy outcomes."

For the study, researchers reviewed a registry of people with temporal lobe epilepsy, the most common adult form of epilepsy, which is associated with high risk for thinking problems and depressed mood. Researchers identified 800 people with an average age of 38 whose epilepsy was resistant to treatment and who were evaluated for potential epilepsy surgery. The researchers compared the participants' scores on measures of intelligence, attention, memory and other thinking skills, depression and anxiety.

The researchers then used the home address of each participant and a measure called the Area Deprivation Index to determine whether each participant lived in an advantaged or disadvantaged neighborhood. The index incorporates information on the socioeconomic conditions of each neighborhood and its residents, ranking neighborhoods based on 17 indicators including income, employment, education and housing quality. Neighborhoods in the index are determined by census areas of about 1,500 residents.

Researchers divided participants into five groups based on neighborhood advantage.

In a composite score of all attention tests, with scores ranging from 60 to 135, people in neighborhoods with the most disadvantage had an average score of 85 compared to those in neighborhoods with the least disadvantage, who had an average score of 95. Higher scores indicate better attention. Similar results were seen on measures of intelligence, processing speed, language, visuospatial skills, and memory, with people in the most disadvantaged neighborhoods showing lower test scores than those in less disadvantaged neighborhoods.

When compared to people in neighborhoods with the least disadvantage, people in neighborhoods with the most disadvantage were more likely to have worse cognitive outcomes across tests of different thinking skills. People who self-identified as Black, Hispanic or from other non-white groups were overrepresented in the most disadvantaged neighborhood group and were nearly three times more likely to have reduced scores on multiple cognitive tests than non-Hispanic white people.

Based on their self-reported symptoms, people in neighborhoods with the most disadvantage reported mild symptoms of depression and anxiety compared to those in neighborhoods with the least disadvantage, who reported minimal symptoms of depression and anxiety.

"These study findings elevate the need to consider the role of social and neighborhood issues in assessing the outcomes for people with epilepsy," said editorial author Lidia M. V. R. Moura, MD, MPH, Ph.D. of Massachusetts General Hospital in Boston and Fellow of the American Academy of Neurology. "More research is needed to identify these social factors that may be modifiable that can help improve cognition and prevent further worsening. More community-based partnerships and the usage of screening and mapping tools may help reduce these disparities among people with epilepsy."

A limitation of the study was that Area Deprivation Index scores were

measured at only one point in adulthood. This does not include neighborhood information during critical periods of early development or changes throughout life.

More information: *Neurology* (2023).

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