After 50 years of pioneering research in rural Louisiana, study pivots from heart to brain

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The Bogalusa Heart Study spent 50 years solving the mysteries of heart disease in the rural Louisiana town it's named for, yielding landmark medical findings and forging deep ties to the community. (Photo by Sabree Hill)

Fifty years ago, in the fall of 1973, a landmark study began in the rural Louisiana town of Bogalusa that would change how the world sees heart disease.

The Bogalusa Heart Study, which tracked the health of the town's children into adulthood, found for the first time that heart disease begins in childhood.

The community-wide study pioneered a new approach to pediatrics by proving that high blood pressure and high cholesterol in children doesn't fade with age, with no intervention, and could result in hypertension and heart disease later in life. One of the longest-running biracial health studies in the world, it was also one of the first to identify race-based health disparities between Black and White participants.

"This study had a global impact on healthcare and left a tremendous public health legacy," said Lydia Bazzano, principal investigator of the Bogalusa Heart Study and director of the Center for Lifespan Epidemiology Research at Tulane University School of Public Health and Tropical Medicine. "There's never going to be a clinical trial that proves that childhood intervention results in improvements 40-50 years later. This is the best evidence we have, and I don't know if there will ever be another study like this."

This fall, Tulane University is celebrating 50 years of groundbreaking research by the Bogalusa Heart Study, while also looking ahead to what the study's next 50 years can achieve.

The Bogalusa Heart Study – in collaboration with researchers from LSU's Pennington Biomedical Research Center and Mary Bird Perkins Cancer Center – received a $14.5 million grant from the National Institute on Aging in 2019 to investigate whether

high blood sugar levels in early life can later lead to declines in brain health.

With a now middle-aged cohort of participants, Bazzano said she believes Bogalusa "can do the same thing for brain health in the next 50 years that we did for heart health in the last 50."

"It all starts with the heart," Bazzano said. "The brain is one of the first stops for blood that comes from the heart, so it made sense to look at how vascular aging impacts the brain."

Early results indicate that participants who perform worse on neuropsychological testing previously showed more heart disease risk factors. Brain scans of middle-aged participants also revealed white brain lesions on those who, as young adults, had slightly elevated blood sugar levels. These lesions, called white matter hyperintensities, indicate not enough oxygen and nutrients are reaching the smallest blood vessels in the brain and are associated with cognitive decline.

Researchers are also working to identify blood biomarkers of dementia in the hopes of one day being able to identify risk of dementia via a blood test.

"Just as childhood was not thought of as a time when heart disease would start, early middle age is not seen as time when dementia might originate," Bazzano said. "This could have a revolutionary effect on the field."

The Bogalusa Heart Study has included more than 16,000 participants since it was started by pediatric cardiologist and Tulane University graduate Dr. Gerald Berenson. The data collected continues to be vital to research around nutrition, childhood obesity and genetic risk factors.

While the longevity of the Bogalusa Heart Study can be partly attributed to the dedication of its researchers, the study's historic streak may have ended long ago without its deep roots in the community.

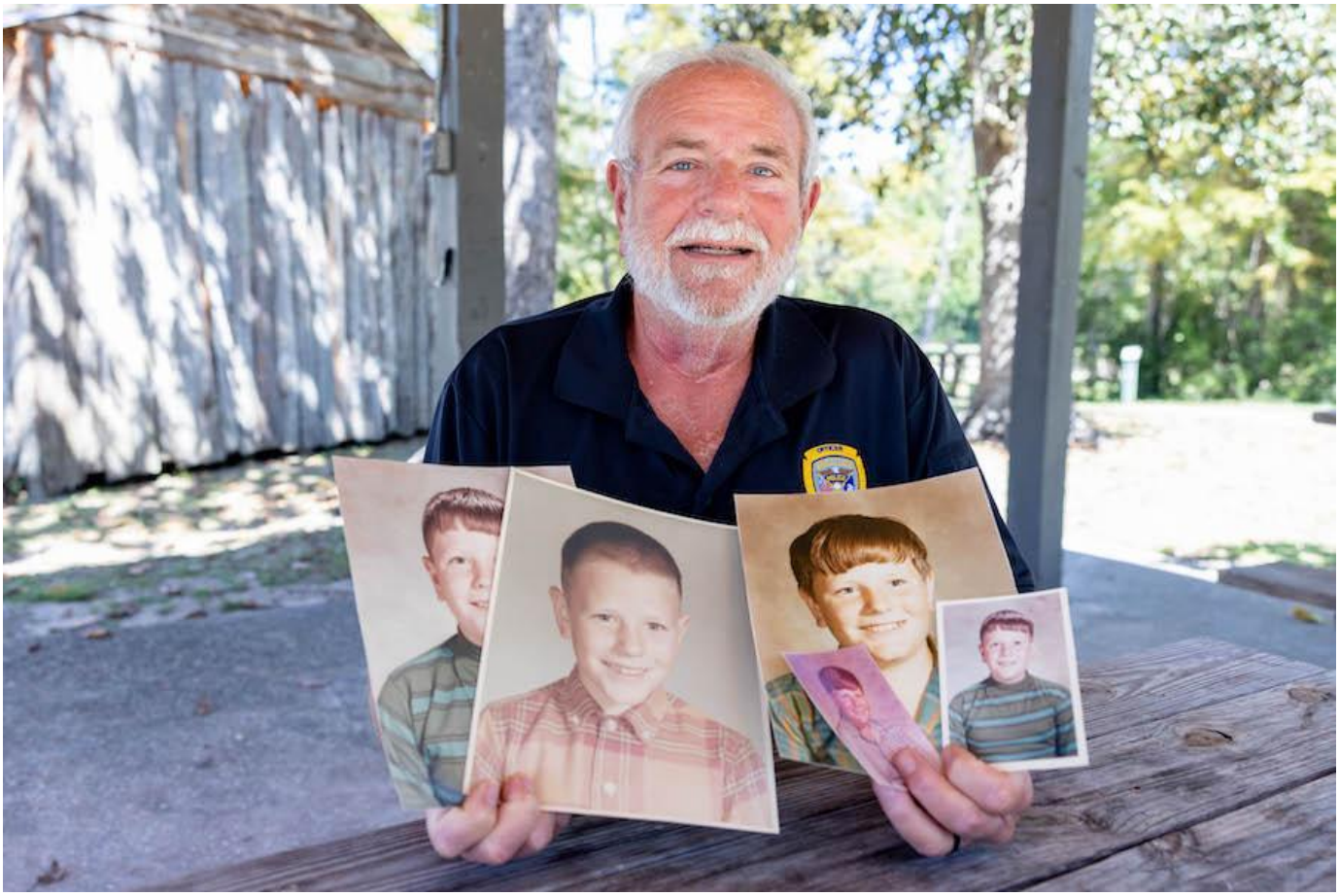
Joe Culpepper, a native and former police chief of Bogalusa, was 11 years old when he and 5,000 children first began receiving health screenings in 1973. A long white trailer of lab equipment pulled up to his elementary school. Researchers organized students into groups with bracelets of colored yarn. Blood pressure was checked. Weight was measured. Blood was drawn.

The check-ups continued as years went on, but Culpepper had no idea that the findings of the study would have global implications.

“I still go to get tests done. One of my brothers is still actively participating. Friends in Baton Rouge occasionally come back to Bogalusa to participate, and my sister-in-law now manages the lab,” Culpepper said. “We’re all proud of the study, and the medical knowledge gained from studying folks like me our whole lives hopefully makes things better for the kids coming up.”

At the Bogalusa Heart Study lab, two current employees are former participants in the study. Another, Phylis Cothern, has been a lab technician for 10 years, but before her, her mother began working for the study in 1972, when the pilot was underway. Now, Cothern’s two daughters and her granddaughter are study participants.

“We depend on the community and the community depends on us. It’s overwhelming the amount of good this study has done for the community, but I’m just honored to be a part of the legacy,” Cothern said.



Joe Culpepper was 11 years old when he first began taking part in the Bogalusa Heart Study. Fifty years later, he still gets check-ups. (Photo by Sabree Hill)