

School garden-based interventions can improve blood sugar, reduce bad cholesterol in children

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School garden-based interventions can improve metabolic parameters such as blood sugar and cholesterol in children, according to a new study

from UTHealth Houston.

A cluster randomized controlled trial conducted by researchers with UTHealth Houston School of Public Health and The University of Texas at Austin found that Texas Sprouts—a gardening, nutrition, and cooking intervention implemented in [elementary schools](#) in Austin—improved glucose control and reduced bad cholesterol in high-risk minority youth. The results were published today in *JAMA Network Open*.

"The Dietary Guidelines for Americans recommends 2.5 cups of vegetables per day for children 9 to 13 years old," said Adriana Pérez, Ph.D., senior author of the study and professor of biostatistics and data science with the Michael & Susan Dell Center for Healthy Living at UTHealth Houston School of Public Health. "Texas Sprouts incorporates nutrition, gardening, and cooking components that improved glucose control and reduced bad cholesterol in children."

From 2016 to 2019, researchers analyzed 16 low-income elementary schools in the greater Austin area with majority Hispanic student populations. The schools were randomly assigned to either Texas Sprouts intervention or delayed intervention.

Texas Sprouts spanned the nine-month school year and involved the formation of a Garden Leadership Committee; a quarter-acre outdoor teaching garden; a series of 18 student gardening, nutrition, and cooking lessons taught by trained educators throughout the [school year](#); and nine monthly parent lessons. The delayed intervention was implemented the following academic year and received an identical intervention.

The team measured students' height, weight, and body mass index (BMI) parameters, as well as their glucose, insulin, [insulin resistance](#), and lipid panel—a [blood test](#) that measures the amount of certain fat molecules known as lipids in the blood—via an optional fasting blood draw.

Compared to schools in the [control group](#), Texas Sprouts schools saw a 0.02% reduction in HbA1c, or mean [blood sugar](#) levels over the past three months, and a 6.4 mg/dL reduction in bad cholesterol, indicating a reduced risk of diabetes and prediabetes among this population. There were no intervention effects on glucose, insulin, insulin resistance, or other lipid parameters.

Based on the study results, Perez said more elementary schools should incorporate garden-based interventions.

"Small increases in dietary fiber and vegetable intake, as well as reductions in added sugar intake, may have combined effects on lowering bad cholesterol and improving [glucose control](#)," said Pérez, who is based in Austin.

Other co-authors from UTHealth Houston School of Public Health Austin Campus included Deanna M. Hoelscher, Ph.D., RDN, campus dean and director of the Michael & Susan Dell Center for Healthy Living; and Alexandra E. van den Berg, Ph.D., MPH, professor in the Department of Health Promotion and Behavioral Sciences and associate director of the center.

Additional co-authors, all with The University of Texas at Austin, were Jaimie N. Davis, Ph.D., RD; Matthew J. Landry, Ph.D., RDN; Sarvenaz Vandyousefi, Ph.D., MS, RD; Matthew R. Jeans, MS, MM; and Erin A. Hudson. Landry is also with Stanford University, while Vandyousefi is also with New York University School of Medicine and Jeans is affiliated with The Health Management Academy in Virginia.

More information: Effects of a School-Based Nutrition, Gardening, and Cooking Intervention on Metabolic Parameters in High-risk Youth, *JAMA Network Open* (2023). [DOI: 10.1001/jamanetworkopen.2022.50375](#)

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