



IS FIBER THE ANSWER TO SOLVING STOMACH PAIN?

Around 5 to 10% of schoolchildren and adults report frequent (or chronic) abdominal (belly) pain. Reasons for pain may vary, but many children and their parents believe diet plays a role. Research suggests that children with belly pain may eat less dietary fiber than those who do not have belly pain. In general, most children in the U.S. do not eat enough dietary fiber. Researchers at [Baylor College of Medicine](#) studied whether adding fiber to children's diets can decrease how often their belly hurts. Initial results were published in [Clinical Gastroenterology and Hepatology](#), while the latest results were recently published in [Gastroenterology](#).

Researchers at the [USDA/ARS Children's Nutrition Research Center \(CNRC\)](#) at Baylor College of Medicine conducted a randomized controlled trial assigning children with chronic abdominal pain to either a fiber supplementation group or a placebo group. The placebo group received a food that looks like a fiber supplement but does not affect the intestine or the gut bacteria. Children kept a log of their pain levels for two weeks before they started the study and during the last two weeks of the six-week study. Children who received fiber supplementation had significantly fewer pain episodes



than the placebo group. Chronic abdominal pain is thought to happen when the nerves in the gut and the brain interact with each other in an abnormal fashion.

"Originally when we analyzed the data, we put the boys and girls together, and the results showed a benefit of fiber supplementation for the group as a whole. Other studies we did later suggested that in some children, there might be differences between boys and girls in factors contributing to (belly) pain," said [Dr. Robert Shulman](#), professor of pediatrics and director of the [Center for Pediatric Abdominal Pain Research](#). "Therefore, we went back and analyzed the fiber supplementation study data for the boys and girls separately. We found that the number of pain episodes had indeed significantly decreased in the boys but not in the girls, showing that the boys benefited from the fiber supplementation. We analyzed pain and diet data from a separate group of children with pain and confirmed that boys, but not girls, appeared to benefit from dietary fiber supplementation."

This may happen because there is a large and close nerve network connecting the brain to the gut. This means that the brain and the gut can influence how the other functions.

"In some circumstances, dietary components (or lack thereof) may activate signals in the gut that are transmitted to the brain that (are interpreted) as pain. The brain also may not do a good job of stopping these pain signals from reaching the brain. There also is evidence that sometimes the brain can activate the gut in ways that, in a susceptible person, can cause belly pain. There can also be other factors in the gut unrelated to diet that can send pain signals to the brain," Shulman said.

The team is continuing to explore why fiber supplementation benefits boys, but not girls. They aim to understand other problems between the brain and gut connection among children with (belly) pain.

By Homa Warren, senior communications associate
at Baylor College of Medicine

THE CHANGING FACE OF HUNGER FOR FAMILIES IN THE U.S.

Food insecurity, defined as not having access to sufficient food, affects children and households in urban, suburban and rural areas across the country. While more densely populated areas are thought to have easier access to food for a well-balanced diet, a [study](#) conducted by experts at the CNRC shows that this is not the case. Households across all regions of the U.S. face food insecurity and share similar shortcomings.

“We’ve been hearing about health disparities when it comes to people living in rural areas, but there are few studies that did a direct comparison of rural versus urban dietary quality,” said [Dr. Jayna Dave](#), associate professor of pediatrics at Baylor and first author of the paper.



Dave’s team used data from responses the National Health and Nutrition Examination Surveys had published between 2013 and 2016 and compared them to participation in the federal nutrition assistance programs. Among approximately 6,400 children and adolescents, 13% reported child food insecurity and 30% reported household food insecurity. Among responders, 90% participated in the assistance programs, and 88% were enrolled in school lunch programs.

Children in urban areas were significantly more likely to report household food insecurity than those in rural areas.

“This finding contradicts a lot of findings from other studies,” Dave said. “Children in urban areas, especially those in the 6- to 11-year-old age range, reported higher household food insecurity compared to those living in rural areas.”

When looking at the quality of diets in the survey responses, the team used the Healthy Eating Index of 2015 (HEI), which scores a diet based on the number of food groups and nutrients to emphasize and those to minimize. HEI scores of less than 51 indicate a poor diet. Overall, children of both urban and rural residence were found to have a poor diet, with an average HEI score of below 50. Those aged 2 to 5 had a slightly higher average score of 51, and those aged 12 to 17 had the worst average score at 46.

While the data used in this study looked at numerous factors such as income level, age, and others, Dave says more research is needed to understand the various barriers that lead to the higher probability of urban families experiencing food insecurity.

“In urban areas, we see that access to healthy food is limited by access to transportation. Many low-income families don’t have their own cars,” Dave said. “There are a lot of food assistance programs, but especially in places where there isn’t adequate public transportation, they may not be able to get to these programs.”

Dave’s team says there is a need for improvement in children’s diet quality, regardless of age or urban or rural residence. Improving children’s diets will require broader action, as well as the prioritization of children in urban areas who experience food insecurity, through future dietary interventions.

By Aaron Nieto, communications associate
at Baylor College of Medicine

MORE IS NOT ALWAYS BETTER — FOLATE REQUIREMENTS MAY DIFFER BY LIFE STAGE



Folate is a member of the vitamin B family and is an essential nutrient that is obtained from the diet. Pregnant women are advised to increase their intake of folic acid (a synthetic form of folate) because it reduces the risk that their fetus will develop neural tube defects. However, new research in animal models suggests that extra dietary folic acid at other stages in life might increase the risk for cancer.

Scientists at the CNRC are conducting studies to better understand how lifestyle factors such as diet can contribute to an increased risk for developing cancer.

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Dr. Lanlan Shen, professor of pediatrics and a member of the Dan L Duncan Comprehensive Cancer Center, has found that mice consuming more than the recommended levels of folic acid for mice had a greater risk for developing colon cancer, the second leading cause of cancer death in the U.S. “Understanding this link between diet and cancer is a big deal. It’s like finding a missing piece of a puzzle about how to keep our bodies healthy,” Shen said.

Studies by Shen and her colleagues showed that when adult mice that are genetically predisposed to developing colon cancer were fed a diet supplemented with folic acid, they developed a more severe colon cancer than animals that did not consume extra folic acid.

However, at this point in time these findings only apply to mice, and human studies will be needed to determine if the same processes happen in people. “We found that folic acid turns off certain protective genes, which helps colon cancer grow faster,” Shen said. “Although more studies are needed to determine the effect of excessive folic acid on the health of nonpregnant humans, we

provide valuable insights into how diet can influence the risk for developing cancer. The findings open new avenues to treat or prevent colon cancer.”

About 25 years ago, the U.S. established folic acid food fortification programs, which have contributed to a marked reduction in neural tube birth defects in the U.S. The current study findings do not contradict the folic acid recommendations for women who could become pregnant and pregnant women to reduce the incidence of neural tube defects. Adults, including women capable of becoming pregnant, should consume 400 micrograms of folic acid daily, and the requirement increases to 600 micrograms per day during pregnancy.

“Folic acid fortified foods are widely available. Our findings show potential harmful effects of folic acid on human health and stress the need for more research to determine if adding folic acid to foods is safe for everyone,” Shen said.

By Ana María Rodríguez, Ph.D.,
lead science writer at Baylor College of Medicine

CNRC RESEARCHER ELECTED TO NATIONAL ACADEMY OF MEDICINE



The CNRC is proud to announce that [Dr. Teresa Davis](#), professor of pediatrics-nutrition and faculty member for more than 30 years, has been elected to the [National Academy of Medicine \(NAM\)](#), an organization whose mission is to advance science, inform policy and catalyze action to achieve human health for all. In October 2024, she was elected alongside 90 other regular (national)

members and 10 international members for their professional achievements and commitment to service in the health and science fields.

“I am tremendously overjoyed to be elected to the National Academy of Medicine. It’s so wonderful to be recognized by my peers in the NAM for the work and research I have done over the years and the accomplishments of my lab team,” Davis said. “It’s particularly exciting to be the first person within the CNRC to be elected based on the research conducted here.”

For decades, Davis has been continuously funded by the National Institutes of Health and U.S. Department of Agriculture and has worked with researchers within the CNRC and several universities across the country. She is a global leader in protein and amino acid requirements, has international expertise in both nutritional and hormonal regulation of growth and

has discovered fundamental mechanisms by which nutrients regulate muscle protein synthesis and growth, with direct implications for improving lean growth and the health of infants. Currently, she serves on a NAM committee that focuses on infant formula research and policy.

“A highlight of the research that we’ve done is to show the body’s ability to utilize nutrients to promote healthy growth,” Davis said.

In addition to being elected to the NAM, Davis has been awarded by the Department of Pediatrics for her mentorship training of Ph.D. and M.D. postdoctoral students and summer students at the CNRC. She has held numerous leadership roles in organizations, such as Baylor’s Institutional Animal Care and Use Committee and the CNRC Postdoctoral Fellowship Program, and national professional organizations such as the American Society for Nutrition, the American Society of Animal Science and many more.

Davis also has played a significant role in shaping national nutrition policies. She has served as the editor-in-chief of two highly impactful scientific journals and was a member of the U.S. Dietary Guidelines Advisory Committee that provides science-based recommendations to the federal government on what Americans should eat.

By Taylor Barnes, senior communications associate
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JOIN A CNRC NUTRITION STUDY!

Houston-area residents are invited to participate in the following nutrition research projects designed to help CNRC scientists learn more about the nutritional needs of children. Free parking is provided. For most studies, financial compensation is provided. **For questions on becoming a CNRC research volunteer, call Noemi Islam at 713.798.7002 or email nislam@bcm.edu**

DISCOVERY of Risk Factors for Type 2 Diabetes in Youth H-55870

IDISCOVERY is a study for children 9-14 years old who may be at higher risk of developing type 2 diabetes. This study does not involve medications and there is no cost to you. You will be compensated for your time in this study. Join families across the U.S. to help us make a difference for all children and young people! Contact us at **713.798.6791**, discovery@bcm.edu or fill out the Study Interest Form. Visit our Study Website for more information.

Melatonin Sensor Study H-54855

Join our Innovative New Study! Help us develop a new sensor that detects melatonin in sweat. This innovative technology may help to improve how we monitor sleep health. Seeking adults and children. Who qualifies: adults 18-64 years old and/or children 4-9 years old. \$100 compensation will be provided for participation. To learn more/enroll, go to: for adult: <https://redcap.link/MelatoninSensorStudyAdult> or for child: <https://redcap.link/MelatoninSensorStudyChild> or contact us at **713.798.055**; email: dadabhoy@bcm.edu

Goodnight Screen Media Study H-52269

Help us learn about the effects of screen media use on children's sleep, memory and attention. The study will include three in-center assessments to measure height, weight, mental skills tasks (working memory, flexible thinking, and self-control) and saliva collection with two overnight visits at the Children's Nutrition Research Center. We will assess your child's sleep and circadian rhythms via saliva sampling. Participants may be compensated up to \$510 for participation. Free parking. To

learn more please visit <https://redcap.link/goodnight>. You can contact us at: **713.798.0557** or GoodNightScreenMedia@bcm.edu

SCREENS Study H-52533

We are recruiting parents and children aged 8-11 years old to participate in a study conducted jointly by Baylor College of Medicine and University of Houston to learn about children's screen use and sleep. Study activities will include in home data collections involving the assessment of children's sleep, cognitive skills, screen use, and melatonin levels in saliva. Families who complete the study will receive up to \$500 as a thank you for their time. If you're interested in joining this study, visit <https://redcap.link/SCREENS> or contact us at **713.798.0555** or Screens_Study@bcm.edu.

Super Chef: Family Fun in the Kitchen H-51143

Researchers are looking for parents and their 10-12 year olds to participate in a study to help us evaluate an online program helping families adopt the Mediterranean Diet. Family must qualify for or participate in free/reduced priced lunch at school. Compensation provided. For more information, contact: Chishinga Callender, chishinga.callender@bcm.edu (**713.798.0506**) or Noemi Islam at nislam@bcm.edu (**713.798.7002**).

Baylor Infant and Toddler Biomarker of Nutrition Study (BITBONS) H-52929

Infants are needed for a study of whether a rapid, skin sensor measurement is as good as surveys and blood measurements at determining what a child eats. The study involves six visits from 4-24 months of age to

the CNRC. Visits involve length and weight; small blood and milk samples; food diaries; skin sensor measurements; and vision testing. To be eligible to participate, children must meet health criteria. Participants receive convenient and free parking, refreshments, and up to \$300 in pre-paid credit cards. There is no cost to participate. To learn more about the Toddler Biomarker of Nutrition Study and see if your child qualifies, complete the [Prescreening Eligibility Questionnaire](#), contact us at **713.798.0517**, or email BITBONStudy@bcm.edu.

Technology Effects on Child Health (TECH) Study H-52282

Does screen time influence your child's sleep and health? The TECH Study is inviting parents with a 3-4-year-old child in the Greater Houston area to participate in a study using new technology to measure screen time effects on children's sleep, growth, problem solving, learning, and memory over a 12-month period. Our study involves assessments in your home and at the CNRC located in the Texas Medical Center. Up to \$410 in compensation. If interested, please call **713.798.0388** or email screentimesleep@bcm.edu.

Fit24+ H-50331

Ready to boost your health? Join the Fit24+ Study! We're seeking Hispanic youth ages 12-16 who struggle with their weight and have a cell phone. Participants get a Fitbit watch, motivational texts and weekly nutrition and health classes. The 12-week study offers up to \$140. Interested? Call **713.798.7138** or **713.798.7092** or email Marbelly.Partida@bcm.edu or Pedro.Garcia@bcm.edu.

