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STUDY FINDS DISPARITY IN ACCESS TO HEALTHY FOODS

The obesity epidemic in the United States and its contributing factors are a growing concern, especially among low-income minority populations. According to experts at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine, a contributing factor that could be of significant concern is the lack of access to healthy foods in low-income and minority neighborhoods across the country. Their report appears in a recent issue of the *American Journal of Public Health*.

Dr. Jayna Dave, assistant professor of pediatrics at BCM and the CNRC, and her colleagues applied the idea of environmental justice in their report. Environmental justice is concerned with the unequal distribution of environmental burdens, including the unequal distribution of unhealthy foods.

Researchers reviewed studies that looked at access to fast food outlets and convenience stores in low-income versus high-income areas across different ethnic groups. Twenty-four studies met the criteria for their review and focused on access to fast food outlets, convenience stores and bodegas—convenience stores that specialize in Hispanic foods.

"We found that the density of fast food outlets was much higher in low-income areas as compared to high-income areas," said Dave. "We also looked at studies conducted in other countries such as Australia, Canada and the United Kingdom, and found similar results—the density of fast food outlets is higher in low-income areas."

Additionally, their review identified a disparity in the access to healthy foods when comparing ethnicities. There was greater access to unhealthy foods, such as fast food outlets and convenience stores, and less access to healthy

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Lunches from home

LACKING IN HEALTHY OFFERINGS

There have been numerous initiatives focused on improving the nutritional quality of school lunch meals, but little attention has been paid to the quality of packed lunches that students bring from home.

A recent study led by Dr. Craig Johnston, assistant professor at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine, sought to compare the foods in lunches brought from home versus those offered in the school cafeteria. The study was published in a recent issue of *Childhood Obesity*.

"What is clear through the study is that the majority of kids with packed lunches are not bringing what we would consider a healthy lunch," Johnston said.

Second grade students at a Southeast Texas school district were observed on three separate days. More than 38 percent of lunches were brought from home.

Compared to children who selected school lunch meals, children with a lunch from home were significantly less likely to include fruit (75.9 percent of school lunches vs. 45.3 percent of home lunches), vegetables (29.1 percent vs. 13.2 percent) and dairy foods (70 percent vs. 41.8 percent). Lunches brought from home were more likely to contain snacks high in sugar and/or fat (17.5 percent of school lunches vs. 60 percent of home lunches) and non-100

percent fruit juice (less than 1 percent vs. 47.2 percent).

The results were somewhat surprising, Johnston said, because in previous studies about the school lunch program, parents whose children did not opt for lunches offered at school indicated it was because their children didn't like the food and because they could provide healthier food from home.

Johnston says that many parents want to make sure their children eat something during the school day, so they pack items they know their kids like.

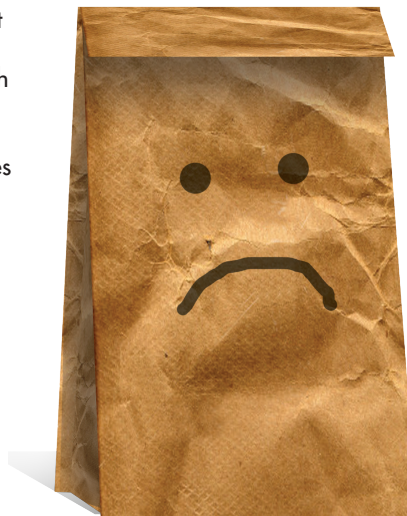
"Parents are concerned that if they provide a fruit and vegetable, their kids won't eat it. But they might be surprised,

because their kids are probably hungry and are likely to eat what's there," he said.

Johnston emphasized that a healthy lunch packed from home should include:

- A vegetable such as cut-up carrots or celery
- A fruit, either fresh or packed in juice or water
- Dairy, such as milk, yogurt or cheese
- Juice drinks should be 100 percent juice

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NEWS BRIEFS

Rainosek honored in management role

Perry Rainosek, administrative officer of the ARS/USDA Children's Nutrition Research Center at BCM, received a 2012 Administrative and Financial Management Support Award for Excellence from the U.S. Department of Agriculture/Agriculture Research Service. Rainosek earned the Gold Medal Honor in recognition of outstanding achievements that have increased efficiency in the areas of administrative and financial management.



Nichols earns honorary degree

Dr. Buford Nichols, professor emeritus of pediatrics—nutrition at the Children's Nutrition Research Center at BCM and Texas Children's Hospital, received an honorary doctorate in science from the Universidad Francisco Marroquín in Mexico at a special event in October 2012. The award is the highest honor given by the institution and recognizes Nichols' career achievements.

RESEARCHERS TAKE IMPORTANT STEPS IN UNDERSTANDING THE PHYSIOLOGY OF BREASTFEEDING

Much research has been done to show the benefits of breastfeeding in infants and mothers, but little is known about what is occurring in the bodies of mothers who have difficulty breastfeeding.

Researchers at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine are taking the first important steps in understanding why some women are not able to breastfeed by studying the breastfeeding process in those who are able to do so. Their report appears in a recent issue of the *American Journal of Physiology – Endocrinology and Metabolism*.

The American Academy of Pediatrics recommends that mothers exclusively breastfeed newborns for about the first six months of their life and then combine breastfeeding with the introduction of new foods until about 12 months of age. They cite benefits to the newborn that include protection against respiratory illnesses, ear infections, and gastrointestinal diseases and defending against allergies, such as asthma, eczema and atopic dermatitis.

In this study, Dr. Morey Haymond, professor of pediatrics at BCM and the CNRC, and his associates used milk fat collected from breast milk to measure the expression of various genes during the early stages of milk production. The milk fat offered a simple way to assess what is going on in the milk-producing cells of the breast.

They found a series of genes associated with specific enzymes involved in the production of milk sugars that were upregulated significantly between 6 and 72 hours after birth. Because the synthesis of the milk sugar lactose (a combination of glucose and galactose) is a critical part of the production of milk, the entire cascade of enzymes, including those involved in galactose synthesis, are important for the production and nutritional quality of breast milk.

A better understanding of this intricate interplay of the regulation of gene expression and the induction of certain enzymes in the human breast may help scientists understand why some women have no trouble breastfeeding their babies and others never produce enough milk.

Traditionally speaking, teenage mothers, women who have premature babies and women who are obese have trouble breastfeeding their newborns. Haymond and colleagues plan to extend their research to these groups of women to understand what is occurring that restricts the breastfeeding process in their bodies.

Others who took part in the study include Mahmoud A. Mohammad and Darryl L. Hadsell of BCM and the CNRC.

Funding for this study was made possible by a grant from the National Institutes of Health, RO1-DK-55478, HD-37857, MO1-RR-00188 and the USDA/ARS 58-6250-0-008.



Volunteers

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 and transportation may be available.

For more information on any CNRC study, contact Marilyn Navarrete at 713-798-7002 or rilynn@bcm.edu.

Visit CNRC study opportunities online by scanning the QR code to the right using your smart phone.



BUTTERFLY GIRLS NEW!

8- to 10-year old African American girls and a parent needed to participate in an 8-week online program promoting healthy eating and physical activity. No meetings to attend. Participate from the comfort and convenience of home. Watch an informative video at <http://www.bcm.edu/cnrc/butterflygirl/butterflygirlintrovideo.html>.

FATTY LIVER NEW!

13- to 21-year old overweight adolescents and young adults with and without liver disease are needed for a research study investigating risk for early heart disease in youth. Study involves body composition, liver scan and blood tests.

STOMACH PAIN & BACTERIA NEW!

Do you have a child between 7 to 12 years of age? We are seeking children who either often have stomach aches or never have stomach aches. We are doing a research study to learn how bacteria in our body keeps us healthy or causes problems. It's easy and there is no pain!

BREAKFAST STUDY

Children who are 8 to 10 years old are needed for a study on breakfast consumption and mental abilities. The study includes three overnight visits to the CNRC. There will be blood draws at each visit (numbing creams and sprays are available).

CARDIOVASCULAR STUDY

13- to 18-year old adolescents and young adults (normal weight and overweight) with and without type 2 diabetes are needed for a research study investigating risk for heart disease in youth. Study involves body composition, heart scan and blood tests.

VEGGIE KIDS STUDY

Researchers at BCM are seeking healthy vegetarian (no red meat for the past 6 months) children ages 4 to 10 years old to participate in a nutrition study looking at iron absorption. Three short study visits to the CNRC are required.



STUDIES PROVIDE IMPORTANT FINDINGS ON TYPE 2 DIABETES IN CHILDREN

A recent study has led to important pieces of information about the mechanisms that affect glucose control in children with type 2 diabetes while another has identified differences in the factors that lead to the development of the disease in African American versus Caucasian children.

These two manuscripts with Dr. Fida Bacha, associate professor of pediatrics at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine as lead author, were published in *Pediatric Diabetes*.

"Regardless of the mechanism of the disease, what parents and children need to know is that type 2 diabetes is largely preventable through lifestyle choices and by preventing obesity," Bacha said.

Once known as adult-onset diabetes, type 2 diabetes is increasingly common among children. Obesity is one of the primary risk factors for type 2 diabetes, and African American and Hispanic children have an even greater risk of developing the disease.

The first large-scale study of treatment effectiveness for children with type 2 diabetes, called the TODAY study, was conducted in several U.S. institutions and funded by the National Institutes of Health.

Bacha's recent manuscript examined whether insulin sensitivity or insulin secretion was the greater determinant of glycemic control, or control of blood sugar levels, in children with type 2 diabetes at their entry in the TODAY study. Insulin is important to keep blood sugar in a normal range. Insulin secretion refers to the pancreas' ability to produce insulin, while insulin sensitivity refers to the body's ability to respond to the insulin produced.



"We found that in children with type 2 diabetes, insulin secretion rather than insulin sensitivity was the main determinant of hemoglobin A1c level, which is a marker of blood glucose control over time," Bacha said.

Additional TODAY study results point to the fact that type 2 diabetes is harder to treat in children than in adults, which highlights the fact that prevention is the key when it comes to type 2 diabetes in children, especially those with increased risk factors, Bacha said.

Dr. Morey Haymond, professor of pediatrics at Baylor College of Medicine and a CNRC researcher, is also an investigator of the TODAY study at BCM. He pointed out that the outcome results were surprising, as standard adult treatment was effective in only about half the children over the course of the study. The TODAY study is important because it was the first time to research this patient population, Haymond said.

Meanwhile, Bacha's other recent study sought to determine if there are differences in the mechanism of the disease in children depending on race. The study included 14 African American children and 14 Caucasian children, all with type 2 diabetes and a similar body mass index.

"The study found that in the diabetic state, there are differences between the two racial groups for the mechanism of disease," she said. "Caucasian children have more of a deficiency in insulin secretion while African Americans have more insulin resistance, both mechanisms being involved in the development of the disease."

"For researchers and physicians, these racial differences need to be considered as we try to devise treatment options for children with type 2 diabetes," Bacha said.

The study was funded by the Thrasher Research Fund.

PUBERTY & INSULIN RESISTANCE

Texas Children's Hospital and BCM are recruiting subjects to participate in a research study to see how weight and puberty influence sugar metabolism. We are seeking both lean and overweight children who are approximately 8 to 15 years old. The study requires two office visits in a research unit. A no-cost health exam will be included. Saturdays and Sundays are available for your visits.

PREGNANCY & CHILD HEALTH

Did you have a pregnancy complicated by preeclampsia or a baby with low birth weight? Can a complicated pregnancy in mom put the child at risk for future health problems? To answer this question, we are conducting a research study that looks at pregnancy history and its effect on the child's health. 8- to 11-year old children of both eclamptic and non-preeclamptic pregnancies are needed as well as 8- to 17-year olds of pregnancies with high blood pressure. Study involves body composition and blood tests.

DIET AND STOMACH PAIN

Does your child have stomach pain that you believe is related to his/her diet? Children between the ages of 7 and 17 are needed for a research study. Researchers are interested in learning more about the role of diet in childhood stomach pain. Participants will be asked to start a specific diet on two separate weekends to determine whether this will help the pain. Food will be provided.

LACTATION STUDY: GENE EXPRESSION

Pregnant mothers who are healthy, between 13 and 35 years of age, who will exclusively breastfeed for the first two months and who will be delivering at Texas Children's Pavilion for Women or Ben Taub Hospital are needed for a research study that will investigate factors (the regulation of gene expression) that affect breast milk production during the first six weeks.

LUNCHES FROM HOME (continued from page 1)

This study demonstrated that the national school lunch program provides nutritionally balanced food, Johnston said.

"Really what this study does is provide some evidence that the national school lunch program is providing healthy food choices for students. The kids who choose the school lunch had healthier foods on their trays compared to the foods that either the students or their parents packed in their home lunches," he said.

Johnston emphasized that the study only observed what foods children selected at school or brought from home, not whether they actually ate those items.

Others who contributed to this study included Dr. Jennette Moreno and Abeer El-Mubasher of the CNRC and Deborah Woehler of the Cluthe and William B. Oliver Foundation. The study was supported by a grant from the Cluthe and William B. Oliver Foundation.

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DISPARITY IN ACCESS *(continued from page 1)*

foods in neighborhoods that were predominately African American compared to neighborhoods that were primarily Caucasian.

"Accessibility and availability are environmental issues related to the food environment. We adapted the concept of environmental justice to investigate the food environment, and found that low-income, minority communities are not getting fair treatment when it comes to access to healthy food sources," said Dave.

In the review, Dave and colleagues identify suggestions to potentially address this disparity, which includes bringing mobile grocery stores to the communities and local policy actions that may support or influence the establishment of new stores in certain areas.

"At the end of the day, accessibility is the determinant for consumption—if you don't have access to the right foods, you're not going to eat them," she said. "Measures have to be taken to provide transportation for those in low-income neighborhoods to supermarkets or taking supermarkets and healthy foods to them."

Dave's work focuses on health disparities in low-income minority populations, specifically focusing on diet and obesity issues.

Dave says there needs to be additional education in these neighborhoods addressing how to read food labels, how to prepare foods and even how to select healthier options at fast food outlets.

She and her colleagues are currently working with low-income populations at local food banks using community-based participatory research, where various members of the community are directly involved in creating effective strategies to educate low-income populations about nutrition.

Others involved in the review include Dr. Angela Hilmers and Dr. David C. Hilmers of BCM.

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