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NUTRITION & YOUR CHILD

NATIONAL SCHOOL MEAL PROGRAMS PROVIDE IMPORTANT DAILY NUTRITION

Developed in 1946, the National School Lunch Program – joined by the School Breakfast Program two decades later – was designed to safeguard the health and well-being of the nation's youth by providing free and reduced-priced meals that meet federal nutrition standards to income-eligible children.

<u>A recent study</u> led by researchers at the USDA/ARS <u>Children's Nutrition</u> <u>Research Center</u> at Baylor College of Medicine shows that the programs are an important contribution to low-income children's daily dietary intake.

"This study suggests that the programs provide a safety net for these kids to help meet the daily recommended nutrition guidelines, and that's exactly why they were created," said Dr. Karen Cullen, professor of pediatrics – nutrition at the CNRC.

The study evaluated the contribution of the School Breakfast Program and the National School Lunch Program meals to the dietary intakes of 5- to 18-year-old children participating in the National Health and Nutrition Examination Surveys (NHANES) from 2007 to 2012. The participants completed 24-hour dietary recalls where they reported what they ate and where. Income levels also were reported for the participants in the NHANES study.

The study included 7,800 children; 1,035 reported eating a school lunch meal; 448 consumed both school breakfast and school lunch.

Children eating both school meals received almost one-half, or 47 percent, of the day's total energy intake (calories) from those meals. For the major food groups, the contribution of school meals to daily recommended guidelines was 40 percent for vegetables, 77 percent for milk, 58 percent for fruit, 52 percent of grains and 38 percent of protein.

All school meals must meet federal nutrition standards that are consistent with the <u>Dietary Guidelines for</u> <u>Americans</u>. Cullen pointed out that if all of the food offered by the two meals was consumed, it would total 58 percent of daily energy intake – so children could be getting even more of their daily recommended nutrition.

FACTORS THAT AFFECT EATING

AFFECT EATING BEHAVIORS AMONG FOOD PANTRY CLIENTS

While it may seem that the cost of food is the main factor that affects eating behaviors among individuals from low-income families who rely on food pantry services, several other factors also may play a part. In a new study, researchers at the USDA/ ARS Children's Nutrition Research Center at Baylor. College of Medicine found that not only were the lowincome participants concerned about obesity and other chronic diseases in their families, but they also reported several barriers to eating healthy that influenced their eating behaviors. Their report was recently published in the journal <u>Health Equity</u>.

"While previous studies have shown that food pantry recipients report low food security, poor diets and limited access to other affordable nutritious foods, we don't know the factors that actually influence poor diets and eating behaviors among these low-income families," said <u>Dr. Jayna</u> <u>Dave</u>, assistant professor of pediatrics - nutrition at Baylor and first author of the paper.

In this study, Dave and colleagues conducted focus groups and interviews at 10 food pantry sites with food pantry clients between the ages of 21 and 50 years of age. In addition, clients

CELEBRATING THE CAREER CONTRIBUTIONS OF DR. MICHAEL GRUSAK

As Dr. Michael Grusak reflects on his time at the USDA/ ARS Children's Nutrition Research Center at Baylor College of Medicine, he is reminded of how much he learned that helped him in his work to improve human nutrition and health.

He joined the CNRC 26 years ago after working at the USDA/ARS Plant, Soil and Nutrition Laboratory in Ithaca, N.Y. He was excited about the opportunity to come to Houston to work at a new facility where he could use some of the tools he had developed in his early years as a scientist and translate that work to help improve human nutrition.

Grusak's work focused on measuring vitamin and mineral absorption and metabolism from different foods for which he developed the necessary methodologies and resources. As he learned more about the important aspects of food that related to nutrition, he became interested in focusing on how he could improve the nutritional quality of crops. **"The quality of**

"The quality of our diets is really dependent on the food products that are available to us, and plant foods are a big portion of that," Grusak said. "We know that there are people in the United States and around the world who are not getting enough food and that there are deficiencies in iron, zinc and vitamin A, and plants can provide these nutrients. We are working to increase the density of these nutrients in the food supply so that the foods people are consuming "The quality of our diets is really dependent on the food products that are available to us, and plant foods are a big portion of that," – Dr. Michael Grusak

are helping to provide adequate amounts of minerals and other nutrients."

While some believe that the focus should be on supplementation of the food supply, Grusak notes that in developing countries, the infrastructure is not always available to do this. Having plants with increased nutritional value that are available as a food source has added value, he said.

Initially, his work at the CNRC focused mostly on plant physiology. He then began working with plant breeders and different crops to extend the work that he was doing to the development of new cultivars, which are the plant varieties that are produced in cultivation by selective breeding. This would help get the nutrients into the food supply in order to have an impact on human health.

"In college, my focus was on pure basic science, but I realized I wanted to pursue a more applied aspect of it as well," Grusak said. "Coming to a human nutrition center without having that background in my prior education, I did learn a lot about human nutrition and what we could do with the food supply to improve human nutrition and health. Our lab evolved over the years to find more ways to contribute to the human side of the equation, as well as to learn from the nutritionists to apply back to the crop side."

One of the projects that Grusak is most proud of is his work with Golden Rice, a rice that was created in the early 1990s that is enriched in beta-carotene, a vitamin A precursor. Grusak and his team helped demonstrate the nutritional value of the rice.



"It was a big step forward. It was a demonstration of the fact that nutritionally enhanced foods can have an impact," he said. "The work we did with Golden Rice was the biggest success story that we had."

A more recent study of Grusak's focused on the nutritional value of new varieties of dry beans.

"One of the issues that is important, especially in the developing world, is that you do not want to develop new varieties of beans that might take longer to cook, because fuel for cooking is an issue," Grusak said. "If you develop a new variety of bean that has a higher yield or nutritional value, but takes four times as long to cook, nobody will want to adopt that variety."

In this study, researchers were looking at how cooking time might contribute to the nutritional value of the beans if they cook over a shorter period of time. They found that if they bred for faster-cooking beans, those beans retained more of their nutrients than those that took longer to cook.

"Because they cook faster, there is a value for fuel efficiency for the consumer but the beans also retain more of the minerals, which is a nutritional advantage," he said.

Now, Grusak serves as the director of the USDA/ARS Red River Valley Agricultural Research Center in Fargo, N.D. He plans to continue to do mineral-related studies and is looking at ways to contribute to the ongoing research at the center.

His work at the CNRC over the past quarter century has truly shaped his career path and interest in improving human nutrition.

"I always enjoyed having the diversity of the program – getting to learn from so many different people about so many different things. Having the opportunity to have colleagues that were involved in so many disciplines was really exciting," Grusak said.

He noted that nutrition and health are always going to be a significant issue in the United States and for the world's population, and he hopes that the CNRC continues to have a strong mix of individuals to carry the work forward.

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(CONTINUED FROM PAGE 1)

"They're not perfect, but this study shows that these are important programs for children. We also learned that we need to do a better job of encouraging children to eat all the food on their school meal plates and of meeting their dietary needs through home meals," Cullen said.

The study was published in *Preventive Reports*. Tzu-An Chen with Baylor College of Medicine also contributed to the research. It was supported by federal funds from the U.S. Department of Agriculture (USDA)/Agricultural Research Service under Cooperative Agreement no. 6250-51000-058-02S. "They're not perfect, but this study shows that these are important programs for children..." - Dr. Karen Cullen, professor of pediatrics -Nutrition at the CNRC.



FACTORS THAT AFFECT EATING BEHAVIORS AMONG FOOD PANTRY CLIENTS (CONTINUED FROM PAGE 1)

completed questionnaires assessing their food security status, food availability at home, food bank usage and participation in other food assistance programs.

They found that most participants were concerned that obesity and other chronic diseases, including diabetes, were a problem for them and their family members. They wanted to learn about how to prevent and/or manage these health problems.

They also identified several barriers to eating healthy, including:

- Financial uncertainty
- Cost of healthy food
- The need to ration food within the family
- Lack of time
- Lack of transportation
- Lack of adequate kitchen equipment
- Lack of nutrition knowledge and skills
- Lack of social support for eating healthy

"These issues along with findings from other studies with low-income populations need to be systematically addressed and incorporated into programs and nutrition education interventions for food pantry clients, and for that matter, individuals from low-income families," Dave said. "Knowledge about the household's food-related environment is essential for both the nutrition educators and families themselves. To help lowincome families and their children improve their nutritional health one could examine the trigger events in people's lives that cause them to start using food pantries. Understanding what leads some but not others to use food pantries would allow for appropriate programs and policies to be developed."

Others who took part in the study include CNRC researchers Deborah I. Thompson with USDA/ ARS and Karen W. Cullen with Baylor and Ann Svendsen-Sanchez with the Department of Health and Human Performance at the University of Houston.

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The Children's Nutrition Research Center is operated by Baylor College of Medicine, in cooperation with Texas Children's Hospital, for the Agricultural Research Service of the United States Department of Agriculture.

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. Financial compensation is provided for most studies.

FOR MORE INFORMATION ON ANY OF THE FOLLOWING CNRC NUTRITION STUDIES, CONTACT Noemi Islam at

713-798-7002 or nislam@bcm.edu



Adult Volunteers Needed H-34291

Healthy, overweight volunteers aged 18 to 65 and volunteers diagnosed with type 2 diabetes within the last three years, also aged 18 to 65, are needed for a metabolic study. The study will investigate whether healthy volunteers, type 2 diabetics and ketosis-prone diabetics make an important compound called arginine in different amounts. Healthy, overweight volunteers should have no chronic medical conditions, and all who reply should consume a diet adequate in calories and protein. Women must not be pregnant.

Baylor Infant Twin Study (BITS)

H-36097Are you expecting twins or have twins less than 4 months of age? Twin infants are needed for a research study on twins from four months through 3 years of age. The research is to learn more about infant and child feeding and behavior. Two visits are required at the Children's Nutrition Research Center, and other visits are conducted by mailed questionnaires.

Fatty Liver H-31469

11- 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.

Teen Heart Health H-30665

Normal weight and overweight volunteers aged 12 to 21 with and without type 2 diabetes are needed for a research study investigating risk for heart disease in youth. Study involves body composition, scan and blood tests. Compensation provided. If interested, please call (713) 798-6791 or (713) 798-6715.

Baylor Infant Orometer Study H-40416

Infants 1 to 4 months old are needed for a one-visit study at the CNRC. Financial compensation and free parking provided. Please contact Maria Papaioannou at 713-798-7054 or papaioan@bcm.edu.

Satiety Regulation Study H-40538

4- and 5-year-olds children are needed for a one-visit study at the CNRC. Lunch, financial compensation and free parking provided. Please contact Sandra Lopez at 713-798-6779 or slopez@bcm.edu.