



STUDY FINDS SCHOOL LUNCHES FROM HOME NOT UP TO NATIONAL STANDARDS

In a study of lunches brought from home at elementary and middle schools in the Houston area, researchers at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine found that the lunches did not meet National School Lunch Program guidelines. Their report appears in *JAMA Pediatrics*.

"Most studies focus on the foods provided by the schools but many children bring their lunches from home. Lunches from home should contain healthy foods and help children meet national dietary recommendations," said Dr. Karen Cullen, professor of pediatrics at Baylor and senior author of the study.

Researchers examined lunches that were brought from home by 242 elementary and 95 middle school students. Nutrient and food group content of the lunches were assessed and compared with current National School Lunch Program guidelines. Per-serving prices for each item also were averaged. The study found that lunches from home had more sodium and fewer servings of fruits, vegetables, whole grains and milk. About 90 percent of lunches contained desserts, snack chips and sweetened beverages, which are not permitted in reimbursable school meals. The average cost of an elementary lunch from home was \$1.93 and \$1.76 for intermediate school students.

"These results suggest that lunches from home may be an important area for future interventions to help parents and children work together to plan and prepare healthy lunches," said Cullen.

Michelle L. Caruso from the Houston Department of Health and Human Services also took part in the study. The study was funded by the USDA/ARS and also supported by the Eunice Kennedy Shriver National Institute of Child Health and Development.



IMPORTANCE OF PROPER NUTRITION AND CARE DURING TEENAGE PREGNANCY

Teenage pregnancy is a major healthcare problem worldwide because it is associated with a higher prevalence of low birth weight babies, who in turn have more newborn illnesses. But a recent study suggests that a teenage pregnancy can have a normal outcome if the mother is well-nourished and has comprehensive antenatal care during the pregnancy.

"Teenage pregnancy is an added burden to the healthcare budget of both developed and developing countries," said Dr. Farook Jahoor, professor of pediatrics at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine. "Ensuring that pregnant teenagers receive adequate nutrition and comprehensive antenatal care throughout pregnancy can reduce the prevalence of low birth weight babies and hence, the cost associated with it."

One of the challenges for the pregnant teenager is to provide an adequate supply of amino acids to meet the demands for her own anatomical growth together with the additional needs associated with the growth of her reproductive tissues and fetus. This study sought to determine whether an inability to provide a sufficient amount of amino acids for protein synthesis was the underlying reason why teenagers were giving birth to smaller babies.

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NARROW WINDOW EXISTS FOR SUCCESSFUL RECOVERY OF MUSCLE IN MALNOURISHED INFANTS

Evidence is emerging that adults who were born with a low birth weight have diminished muscle mass. This has important consequences for health, especially with aging, so it is important to determine what causes this long-term effect. Because of the difficulty of doing long-term human studies in this area, researchers at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine studied mice to determine whether mouse pups malnourished in early life had a critical window of opportunity during which they should be re-fed in order to regain lost muscle mass. Their report recently appeared in *The Journal of Physiology*.

"We know that as people age they lose muscle mass, and consequently, they have less strength, their mobility is reduced and they become more vulnerable to falls. So if they have less muscle to start with the occurrence of these problems could be accelerated," said Dr. Marta Fiorotto, associate professor of pediatrics at Baylor and the CNRC.

Because the muscle is an organ that is normally able to regenerate itself, Fiorotto and colleagues wondered why muscle growth retardation early in life could not be recuperated later. Why was the early effect persistent? They also wanted to determine whether there was a specific "window" of development during which the impairment in growth was irreversible, resulting in the long-term detrimental outcome.

The researchers focused specifically on the suckling period in mice, the first 22 days of life when infant mouse pups remain with and are nursed by their mother. They found that if these newborns were malnourished during the first half of this period, they completely recovered their muscle mass whereas those who were malnourished during the second half of the suckling period were never able to recover and had small muscles even after maturity.

Next, the researchers wanted to determine what was responsible for this effect. They found that muscle is growing very rapidly during the suckling period and that its ability to synthesize protein is responsible for rapid muscle growth.

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low birth weight

low muscle mass



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 OF THE FOLLOWING CNRC NUTRITION STUDIES, contact Marilyn Navarrete at 713.798.7002 or rlynn@bcm.edu.

VOLUNTEERS

SUN Study

Boys and girls ages 9 to 13 are needed to test an e-Button that takes pictures of what they eat and do for two days and to complete an interview about their experience each day. Visit <http://www.surveymzmo.com/s3/1990530/> eButton to complete the SUN Study eligibility screening survey.

Teen Heart Health

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.

BAT Study

Healthy 10 to 17 year olds are needed for a study to determine how much brown adipose tissue, or BAT, you have and how many calories you burn during cold exposure. BAT helps a person burn more calories and is activated by cool temperatures. The study includes one overnight visit to the Children's Nutrition Research Center for measurements of physical fitness, body composition and energy expenditure.

Baylor Infant Twin Study (BITS)

Do you expect twins or have twins less than 4 months of age? We are seeking twin infants for a research study on twins from 4 months through 3 years of age to learn more about infant and child feeding and behavior. Two visits are in the Children's Nutrition Research Center and other visits are conducted by mailed questionnaires.

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TEENAGE PREGNANCY CONTINUED FROM COVER

All the participants in the study conducted in Kingston, Jamaica, including 22 adult women and 32 adolescent girls, had normal body weights, comprehensive antenatal care, good quality pregnancies and nearly all of them delivered at term. The results show that these teenage girls were able to achieve similar adaptations in amino acid and protein metabolism to those observed in the adults, with an increase in body protein breakdown and synthesis and a decrease in amino acid oxidation after an overnight fast. Not surprisingly, there were no differences in pregnancy outcomes and newborn characteristics between the teenagers and the adult women, Jahoor noted.

This is the first and only study to compare the protein and amino acid metabolic responses to pregnancy in adult women and teenagers, he said.

"We were surprised to find that the pregnancy outcomes of the teenagers were just as good as those of the adults and that like their adult counterparts the teenagers were able to provide the extra amino acids required for increased maternal protein synthesis during pregnancy by increasing body protein breakdown and decreasing amino acid oxidation," Jahoor said.

It cannot be assumed, however, that the results would be similar in underweight teenage mothers or in those who did not receive adequate antenatal care.

Others who participated in the research include Minerva Thame, Raquel Gibson, Tameka Baker, Asha Badaloo, and Horace Fletcher, all of the University of the West Indies, Jamaica; Jean Hsu and Grace Tang, of the CNRC, and Alan Jackson of the NIHR Southampton Biomedical Research Center, UK.

The study was supported with federal funds from the USDA Agricultural Research Service and from the International Atomic Energy Agency and the National Institute of Health Research. ■



Joanne Salman

CNRC ADMINISTRATOR HONORED FOR DEDICATION UPON HER RETIREMENT

Joanne Salman retired in May from her position as administrator at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine after nearly 20 years. She was honored at a reception for the leadership, dedication and compassion she brought to her job.

In her position, Salman was the administrator responsible for the Baylor College of Medicine operations of the CNRC. The Center is operated by Baylor in coordination with Texas Children's Hospital and the Agricultural Research Service of the U.S. Department of Agriculture.

Salman attended American University in Beirut, Lebanon, where her father was from, and later

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NARROW WINDOW CONTINUED FROM PAGE 2

The mice that were malnourished during the first half of the suckling period, but then re-fed, were able to ramp up their rates of muscle protein synthesis and recuperate the deficit in muscle mass. However, mice that were malnourished during the second half of the suckling period were unable to do this and their muscles remained small.

When the scientists looked further into was controlling the rates of protein synthesis at the different ages, they found that the muscles of young mice were able to increase the number of ribosomes, the cellular machinery that controls protein synthesis. Moreover, the ribosomes were working maximally.

The older mice, however, were not able to increase the number of ribosomes to make up for the loss. The reason for this appears to be the result of insufficient growth factors to stimulate the production of ribosomes.

While there is more to be done before this is translated into humans, it is important research because it may have implications for how premature infants should be fed to prevent them from having long-term health problems.

Others who took part in the study include Teresa A. Davis, Horatio A. Sosa, Carolina Villegas-Montaya, Irma Estrada and Ryan Fleischmann of Baylor and the CNRC.

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CNRC ADMINISTRATOR HONORED

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earned a Master's degree in pathology from Columbia University. Her love of science helped her function so successfully as the administrator of a science-based facility.

She was described by colleagues as hard-working and creative and always strived for the success of others. She also helped create a friendly atmosphere in the office.

"Anyone who ever walked through Joanne's door, either at work or at home, was greeted with warmth and a smile. Thank you for your service and commitment over the years. The CNRC is a better place because of your time here," said Perry Rainosek, USDA/ARS administrative officer at the Center. ■

VOLUNTEERS

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Ayuda a los científicos aprender sobre las experiencias alimenticias de los niños con su participación en clases educativas y actividades alimenticias con otras familias. Todas las madres serán recompensadas por su tiempo en cada día de pruebas. Las clases se llevarán a cabo en el código postal 77092.

Newborn Colic

Does your infant cry and fuss a lot? Researchers at Baylor College of Medicine and Texas Children's Hospital are seeking infants between 14 and 28 days of age who are very fussy for possible participation in a feeding study. You must be able to read and understand English and have telephone access to be eligible.

Adult Volunteers Needed

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.

Fatty Liver

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. The study involves body composition, liver scan and blood tests.

Games for Health

Children ages 10 to 12 years old are needed for a 6-month study to understand how to help them eat healthier and be more physically active. Must play two "Games for Health" video games and provide three blood samples. Sign up at www.g4hstudy.org/s3/Eligibility. Watch game trailers at <https://www.youtube.com/watch?v=K89f7lqFJ-w> and https://www.youtube.com/watch?v=3e2z0L_bpZM.