Maternal & Infant Nutrition Briefs

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Early Growth of Children at High Risk of Obesity

Given the current epidemic of childhood obesity, more studies are needed to determine how and when to start prevention efforts. Few longitudinal studies have tracked the early growth patterns in children at risk of obesity. The purpose of this study was to determine the growth patterns in the first six years of life among children at high risk of obesity. Risk of childhood obesity was defined based on the mother's pre-pregnancy Body Mass Index (BMI), since other studies have found a significant correlation between the child's and parent's weight status.

In this observational study, the authors collected data on 78 white infants, starting a three months of age and continuing through six years. Retention of subjects over that time period was high (complete data are available for 70). Of these, 33 were at high risk and 37 at low risk of obesity. Research staff took anthropometric measurements every three months in the first year; every six months thereafter until age four; and yearly until age six years. Measurements included weight, length or height, skinfold thicknesses, and dual-energy X-ray absorptiometry (to measure body fat and lean mass).

At two years of age, the high and low risk children did not differ in weight, height, BMI, lean body mass, skinfold thicknesses, or percent body fat. However, by four years of age, weight, BMI, and waist circumference were all significantly greater in the high risk, compared to the low risk group ($p < 0.030$ for all). By six years of age, fat mass was also greater in the high risk group (6.7 kg vs. 3.8 kg, $p < 0.02$). At that age, 30% of the high risk children were above the 85th percentile for BMI –for-age, compared to3% of the lowrisk children ($p< 0.01$). Factors associated with an accelerated weight gain pattern included low income, high weight at two years of age, and family risk (i.e., high maternal BMI).

Conclusions and Implications: Children at high risk of becoming overweight have a pattern of weight and fat mass gain that diverges early in life and significantly exceeds that of low risk children by three to four years of age. Prevention efforts need to be started early for children of overweight mothers. More related research is needed in ethnically diverse populations.

Source: Berkowitz RI, Stallings VA, Maislin G, Stunkard AJ. Growth of children at high risk of obesity during the first 6 y of life: implications for prevention. A J Clin Nutr 2005; 81: 140-6.

New Recommendations from AAP on Breastfeeding

In February, the American Academy of Pediatrics (AAP) published its latest set of recommendations on Breastfeeding and the Use of Human Milk. This statement cites new research on the importance of breastfeeding and sets forth principles to guide pediatricians and other health care professionals in encouraging women to breastfeed. These recommendations replace that last statement, published in 1997. In the new statement, AAP reviews the benefits of breastfeeding to infants and mothers. While human milk is considered "uniquely superior for infant feeding", AAP also notes a few conditions where breastfeeding is contraindicated. These include galactosemia; mothers currently exposed to radioactive materials, chemotherapy, and a few other medications; mothers with active untreated tuberculosis or human T-cell lymphocytes; maternal substance abuse (i.e. street drugs); mothers with herpes simplex lesions on a breast (nursing on the other breast is okay); and in the US, mothers infected with HIV. The statement presents data from 2001 showing that rates of breastfeeding initiation and duration in the US are well below the Healthy People 2010 goals, particularly for duration of any breastfeeding until six months. The statement includes the following specific recommendations to promote breastfeeding:

• Recommend breastfeeding for all infants, except where contraindicated (see above). Ensure that feeding decisions are based on informed choice. Where direct breastfeeding is not possible, expressed human milk should be provided.
• Develop practices and policies that optimize breastfeeding. Educate both parents before and after delivery. Minimize or avoid procedures that interfere with breastfeeding, including those that traumatize infants or alter their state of alertness. Place healthy newborns in direct skin-to-skin contact after delivery and delay some procedures until after the first feeding.
• Do not provide supplements (water, formula, other fluids) unless ordered by a physician for medical reasons. Pacifier use is also to be avoided until after breastfeeding is fully established.
• In the early weeks, provide at least 8 to 12 feedings every 24 hours, offering the breast whenever the infant shows early signs of hunger. Note: crying is a late sign of hunger. Increase frequency later on as needed, such as during a growth spurt.
• Evaluate breastfeeding at least twice a day in the hospital and at three to five days postpartum ,as recommended by AAP. A second evaluation is recommended at two to three weeks.
• Breastfeed exclusively (no formula, water, juice, foods or other supplement, except vitamins and possibly minerals) for the first six months of life. Introduce iron-rich foods at six months. Some infants may need iron supplements before six months. Water and juice are not necessary during the first six months of life, even in hot weather.
• Provide vitamin K (intramuscular at birth), 200 IU vitamin D (drops starting at two months), and, depending on the local water supply possibly fluoride after six

months.
• Make sleeping arrangements so that mother and infant are in close proximity
• For premature and other high risk infants, recommend breastfeeding and implement procedures to promote direct breastfeeding or use of the mother's own expressed milk or banked human milk, if necessary. Fortification of expressed human milk is recommended for very low birth weight infants.

Conclusions and Implications: Given the many benefits of breastfeeding for infants and their mothers, AAP recommends exclusive breastfeeding for approximately the first six months of life and continued breastfeeding, with complementary feeding for at least the first year of life and beyond as long as mutually desired.

Source: American Academy of Pediatrics. Section on Breastfeeding. Breastfeeding and the use of human milk. Pediatrics; 115 (2): 496-506.

Is the DRI for Added Sugar Too High for Preschoolers?

The Dietary Reference Intake (DRI) recommendation for added sugar is 25% or less of total energy intake. This cut-off was based on evidence of obesity, dental caries, heart disease and other poor outcomes being associated with high intakes of added sugar. In contrast, the World Health Organization (WHO) sets a much lower guideline of less than 10% of total energy intake. The purpose of this article was to determine the effect of added sugar on dietary quality of preschool children.

The data come from the Continuing Survey of Food Intakes of Individuals (CSFII), 1994-96 and 1998, which yielded a sample of 5437 children ages two through five years of age. In that dataset, "added sugar" includes all sugars and sugar-containing ingredients, added during processing or food preparation and sugars eaten separately (like candy) or added at the table. "Added" sugar does not include naturally occurring sugars, such as fructose in fruit. The authors grouped added sugar intake into five levels: 1) < 10%; 2) 11-15%; 3) 16-20%; 4) 21-25%; and 5) >25% of total energy intake.

Mean sugar intake was significantly higher in the 4-5 year olds (16.5% of energy intake) than in the 2-3 year olds (14.9%). Up to 12 % of the 4-5 year olds exceeded the 25% cutpoint.

Except for vitamin C and carbohydrate intakes, consumption of protein, fat, and other nutrients decreased as added sugar intake increased in this cross-sectional sample. Also, the proportion of children below the Adequate Intake (AI) for calcium or the Estimated Average Requirement (EAR) for other nutrients was greater with increasing levels of sugar intakes. For example, 40% of 2-3 year olds and 70% of 4-5 years with the highest added sugar intakes consumed less than the AI for calcium The observation that, as intake of added sugar increases fat intakes decrease, may explain why high sugar intake is not consistently associated with childhood obesity.

Conclusions and Implications: High intake of added sugar is associated with lower dietary quality in US preschoolers. The current DRI for added sugar may be too high. Further research examining the effects of added sugar intake on body weight, growth, and health are needed to determine whether a change in guidance is warranted.

Source: Kranz S, Smicklas-Wright H, Siega-Riz AM, Mitchell D. Adverse effect of high added

sugar consumption on dietary intake in American preschoolers. J Pediatr. 2005; 146: 105-111)

Neighborhood Stores and Diet Quality of Pregnant Women

Supermarkets typically do better than convenience stores or small neighborhood grocers in being able to provide their customers with quality foods at the best price. However, many low-income communities in both urban and rural areas have fewer supermarkets than more affluent areas do. At the same time, many fast food restaurants are steadily increasing their reach into new locations, including gas stations, superstores, department stores, offices, and convenience stores. The purpose of this research was to determine how distance and location of food retail stores affects diet quality in pregnant women. The authors used data collected in Wake County, North Carolina from 918 women who were recruited into a longitudinal study at 24 to 29 weeks of pregnancy. About 62% had income levels at or below 185% of the poverty level, and 47.8% of the women were African American. The authors used a 120 item modified Block food frequency questionnaire to estimate usual dietary intake in the second trimester. They also developed an index to score dietary quality for these pregnant women, based on daily servings of grains, fruit, and vegetables; percent of the Recommended Daily Allowance (RDA) or Adequate Intake (AI) for iron, folate, and calcium; percent of total energy from fat; and meal patterns. Using the geocoded address data, the authors calculated the distance to the nearest supermarket, small grocery store, and convenience store for each of the women. In this nonrural county, the average distance to the closest supermarket was 1.6 miles (0-8.3 miles). Pregnant women who lived more than four miles from a supermarket had significantly low quality diets than women living closer to supermarkets, after controlling for race, age, marital status, income, and education.

Conclusions and Implications: Limited local access to supermarkets is a factor influencing the diet of pregnant women.

Source: Laraia BA, Siega-Riz AM, Kaufman JS, Jones SJ. Proximity of supermarket is positively associated with diet quality index for pregnancy Prev Med 2004; 39: 869-875.

Maternal and Infant Nutrition Briefs is a research-based newsletter prepared by Dr. Lucia Kaiser *(llkaiser@ucdavis.edu*), a Cooperative Extension Specialist in the Department of Nutrition, University of California at Davis. This newsletter is written for health professionals interested in nutrition of mothers and young children.