

Early Childhood Food Pyramid Intake and Change in Central Adiposity

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Childhood obesity has been shown to be linked to early onset of insulin resistance and other markers of metabolic syndrome. Central obesity is now considered a core component of metabolic syndrome. The dietary predictors of increased central adiposity during childhood are largely unknown. We used multiple sets of three-day diets records for approximately 100 children in The Framingham Children's Study to estimate each child's average early intake in each of the 5 major USDA food pyramid groups. We classified each child into sex-specific intake tertiles of grain, fruit, vegetable, dairy, and meat at 3 to 6 years of age. After controlling for baseline age and anthropometry, mean energy intake, % calories from fat, physical activity, and mother's education, we found that those children with lowest intakes of fruit and dairy products had the greatest yearly gains in waist circumference from preschool to early adolescence (table below).

Effect of Five Food Groups on Slope of Waist Circumference					
	Grain	Fruit	Veg	Dairy	Meat
	Slope of Waist Circumference (adj. mean yearly gain \pm s.c.)				
Sex Specific					
Tertiles					
Tertile 1	3.3 \pm 0.20	3.7 \pm 0.21	3.4 \pm 0.19	3.8 \pm 0.20	3.3 \pm 0.19
Tertile 2	3.2 \pm 0.19	3.3 \pm 0.18	3.2 \pm 0.18	3.2 \pm 0.18	3.5 \pm 0.19
Tertile 3	3.5 \pm 0.20	3.1 \pm 0.20	3.4 \pm 0.19	3.1 \pm 0.19	3.3 \pm 0.22
<i>(p for trend)</i>	<i>0.61</i>	<i>0.04</i>	<i>0.92</i>	<i>0.03</i>	<i>0.94</i>

We also examined the same food group effects on the sum of the three skinfolds most strongly correlated with central adiposity: suprailiac, abdominal, and subscapular. Children in the lowest tertile of fruit intake gain an extra 1.6 mm per year ($p=0.19$) compared with those consuming more; children in the lowest tertile of dairy intake gained nearly 3 mm more per year in the sum of three skinfolds compared with those consuming more dairy ($p=0.02$). These results suggest that in child's food intake pattern in early childhood may have differential effects on the risk of central obesity. In this study, low intakes of fruit and dairy products were associated with greater gains in central adiposity.