



The Influence of Dietary Energy Density on Childhood Obesity

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Dear Editor-in-Chief

The epidemic of childhood overweight/obesity has now been reported worldwide. Childhood overweight/obesity is widely recognized as a risk factor for coronary heart disease, dyslipidemia, hypertension, diabetes and metabolic syndrome in childhood or later life.

Overweight/obesity is well known as a result from a combination of genetic, behavioral and environmental influences. Dietary energy intake (EI) as a major environmental factor has been identified in numerous studies among children. With the increased intakes of high energy-dense foods over the past decades, the impact of high energy-dense food or dietary energy density (ED) on childhood obesity was received increasing attentions. The high ED diets may challenge appetite control systems and then lead to overeating and overweight in adulthood. The WHO recommended that an important way for preventing obesity epidemic was to restrict the energy-dense foods intake among children. Moreover, the American Academy of Pediatrics encourages child to consume low-ED foods, such as vegetables/fruits and dairy products, and recommends macronutrient-balanced diet. In addition, higher ED diet was found to be associated with higher EI among U.S. children.

However, evidences of the influence of ED on childhood overweight/obesity from epidemiological studies were inconsistent: ED was associated with overweight or body fat mass in two cross-

sectional studies among U.S. (1) or Japanese children (2), and prospective studies among British children (3, 4); while the relations of ED to BMI, weight status or excess adiposity were not found in one cross-sectional study among European children (5), three prospective studies among German (6), Danish (7) or U.S. children (8) and two cohort studies among American children (9). Moreover, in Irish children the results about the association of ED with body composition were different because of the methods for ED calculation and obesity definition (10).

In any case, with the overconsumption of energy-dense, micronutrient-poor foods (i.e. snack and processed food) among children, the prevalence of childhood obesity has indeed increased dramatically over the past decades. It is possible that high energy-dense food or ED diet will contribute to the epidemic of child adiposity. To identify the potential relevance of ED on the body weight among children may help to prevent obesity and related diseases in their later life.

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