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## Child Feeding Practices and the Etiology of Obesity

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The obesity epidemic has had an impact on young children; the prevalence of obesity among 2- to 5-year-olds has doubled since the 1970s (1). Research that can inform effective early obesity prevention is key to reducing obesity among children and to reducing the overall population prevalence of obesity (2). For both adults and children, changes in eating environments are implicated in the obesity epidemic, and current environments are characterized by the ready availability of inexpensive, palatable foods, high in energy content but low in nutrient density. Among adults, personal responsibility plays a role in determining food choice, intake, and weight status in such environments. In contrast, infants and young children are dependent on parents and other caregivers to provide food that will promote healthy diets, growth, and development. Parents can filter, buffer, and interpret macro-environmental influence, thereby playing a critical role in structuring children's early eating environments. For example, child feeding practices determine the foods and portion sizes that children are offered, the frequency of eating occasions, and the social contexts in which eating occurs (3). Limited evidence reveals that parents' feeding practices are influential in shaping children's eating environments, their food preferences (4), and eating behaviors (5) and can affect children's regulation of energy intake (6). An important question is whether child feeding practices influence children's weight status and the development of childhood obesity (7). The paper by Johannsen et. al. (8) in the current issue of this journal was designed to address this question.

Johannsen and colleagues (8) provide data on relations among parents' eating, child feeding practices, and children's weight status in a sample of ~150 3- to 5-year-old children and their parents. The stated aim of the research is to relate children's BMI and adiposity to parental BMI, eating behaviors, and child feeding practices. They report that children's weight status was more strongly related to maternal BMI than paternal BMI, a finding consistent with the previous literature (9). As indicated by the title of the paper, "Influence of Parents' Eating Behaviors and Child Feeding Practices on Children's Weight Status," the authors interpret their findings as evidence that parenting practices are causally linked to children's weight status. However, findings based on cross-sectional observational data cannot provide evidence regarding causality. In parent-child dyads, bi-directional influence is most likely; parental behavior does influence child outcomes. The reverse is also true; parenting behaviors are also influenced by child characteristics. In this case, it is more likely (and more parsimonious) that children's weight status (or concerns about the child's weight status) influences parents' feeding practices. For example, parents of heavier children may use restrictive feeding practices in response to their concerns about childhood overweight (10). Presumably, any influence of child feeding practices on children's weight status is mediated via effects on children's eating behavior, which, in turn, influences weight status. Because no data on children's eating behavior were obtained, it is not possible to test whether parents' feeding practices influenced children's food intake or whether the relationship between feeding practices and children's weight status was mediated by effects of feeding practices on food intake. Child feeding practices were assessed by Johannsen and colleagues using an early version (11) of our current instrument (12), and subsequent work has produced an instrument with good psychometric characteristics that provides a clearer picture of the types of feeding practices parents report using (12).

Research that delineates how child feeding practices influence the quality and quantity of foods consumed by children is especially important in light of recent epidemiological data from the FITS (Feeding Infants and Toddlers Study), which further implicates feeding practices in promoting patterns of food intake that are fueling the childhood obesity epidemic (13). Data from FITS (14) reveal that infants and toddlers are not eating enough fruits and vegetables and are consuming too many sweetened drinks and too many sweet and salty energy dense snacks, and that these foods are being introduced into diets too early. French fries were the most commonly consumed vegetables among toddlers; many young children consumed no fruits or vegetables during the data collection day. While the caveats and limitations of self-report measures are relevant to the FITS study findings, the findings reveal that current child feeding practices are resulting in diets that can promote excessive weight gain and childhood overweight during the first years of life.

Finally, it is important to note that our child feeding practices have evolved from the time when food scarcity was the major nutritional threat to children's development, a situation not relevant today, when too much food has become a major threat. Traditional feeding practices, which evolved to address the threats to child health posed by food scarcity, may be promoting overeating and overweight in current environments (5). Traditional feeding practices, which are a part of culture and tradition, vary across groups but include offering food frequently and, as a first response to child distress, giving palatable, preferred foods, when available, and coercing or forcing children to eat. Because they are part of culture and tradition, feeding practices are not easy to change. Parents tend to continue to use traditional feeding practices routinely, automatically, and without question, even in the face of dramatic changes in our eating environment (15-17). Changing traditional feeding practices will take time and will require changing parental beliefs, attitudes, and perceptions regarding the threats to child health posed by the current food environment. To do this, research is needed that moves beyond cross-sectional, correlational studies to the use of longitudinal and randomized experimental designs. These approaches can evaluate the impact of child feeding practices on patterns of dietary intake in children and assess whether those dietary patterns promote healthy weight status in current food environments. Additional research is needed to assess how a wide range of factors influence parents' use of feeding practices, including child characteristics, parental attitudes and concerns about child health and weight, socioeconomic factors and ethnicity, and current eating environments. Such findings are essential to the design of preventive interventions to support parents in adopting feeding practices that can prevent childhood obesity.

## References

1. Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among U.S. children, adolescents, and adults, 1999-2002. *J Am Diet Assoc* 2004;291:2847-50.
2. Institute of Medicine. Preventing childhood obesity: health in the balance. National Academies; Washington, DC: 2004.
3. Birch LL, Davison KK. Family environmental factors influencing the developing behavioral controls of food intake and childhood overweight. *Pediatr Clin North Am* 2001;48:893-907. [PubMed: 11494642]
4. Birch LL. Psychological influences on the childhood diet. *J Nutr* 1998;128:407S-10S. [PubMed: 9478037]
5. Birch LL, Fisher JO, Davison KK. Learning to overeat: maternal use of restrictive practices promotes girls' eating in the absence of hunger. *Am J Clin Nutr* 2003;78:215-20. [PubMed: 12885700]
6. Birch LL, Fisher JO. Mothers' child-feeding practices influence daughters' eating and weight. *Am J Clin Nutr* 2000;71:1054-61. [PubMed: 10799366]
7. Faith MS, Scanlon KS, Birch LL, Francis LA, Sherry B. Parent-child feeding strategies and their relationships to child eating and weight status. *Obes Res* 2004;12:1711-22. [PubMed: 15601964]

8. Johanssen DL, Johanssen NM, Specker BL. Influence of parent's eating behaviors and child-feeding practices on children's weight status. *Obesity* 2006;14:431–9. [PubMed: 16648614]
9. Maes HH, Neale MC, Eaves LJ. Genetic and environmental factors in relative body weight and human adiposity. *Behav Genet* 1997;27:325–51. [PubMed: 9519560]
10. Costanzo PR, Woody EZ. Domain specific parenting styles and their impact on the child's development of particular deviance: the example of obesity proneness. *J Soc Clin Psychol* 1985;3:425–45.
11. Johnson SL, Birch LL. Parent's and children's adiposity and eating style. *Pediatrics* 1994;94:653–61. [PubMed: 7936891]
12. Birch LL, Fisher JO, Grimm-Thomas K, Markey CN, Sawyer R, Johnson SL. Confirmatory factor analysis of the Child Feeding Questionnaire: a measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite* 2001;36:201–10. [PubMed: 11358344]
13. Hendricks K, Briefel R, Novak T, Ziegler P. Maternal and child characteristics associated with infant and toddler feeding practices. *J Am Diet Assoc* 2006;106:S135–48. [PubMed: 16376637]
14. Fox K, Reidy K, Novak T, Ziegler P. Sources of energy and nutrients in the diets of infants and toddlers. *J Am Diet Assoc* 2006;106:S28–S42. [PubMed: 16376628]
15. Bentley M, Gavin L, Black MM, Teti L. Infant feeding practices of low-income, African American adolescent mothers: an ecological, multigenerational perspective. *Soc Sci Med* 1999;49:1085–1100. [PubMed: 10475672]
16. Whitaker RC, Deeks CM, Baughcum AE, Specker BL. The relationship of childhood adiposity to parent body mass index and eating behavior. *Obes Res* 2000;8:234–40. [PubMed: 10832766]
17. LeVine, RA. Parental behavior in diverse societies. In: LeVine, RA.; Miller, PM.; West, MM., editors. *New Directions Child Development*. Jossey-Bass; San Francisco, CA: 1988. p. 3-12.