

Maternal Feeding Practices and Childhood Obesity

A Focus Group Study of Low-Income Mothers

Amy E. Baughcum; Kathleen A. Burklow, PhD; Cindy M. Deeks, MEd, RD;
Scott W. Powers, PhD; Robert C. Whitaker, MD, MPH

Objective: To identify maternal beliefs and practices about child feeding that are associated with the development of childhood obesity.

Design: Four focus groups. One group of dietitians from the Supplemental Nutrition Program for Women, Infants, and Children (WIC) in the Northern Kentucky Health District and 3 groups of mothers with children enrolled in WIC.

Setting: The WIC program in the Northern Kentucky Health District.

Participants: Fifteen WIC dietitians and 14 mothers (14 to 34 years of age) with young children (12 to 36 months of age) enrolled in WIC.

Results: The mothers in this study (1) believed that it was better to have a heavy infant because infant weight was the best marker of child health and successful parenting, (2) feared that their infants were not getting enough to eat,

which led them to introduce rice cereal and other solid food to the diets before the recommended ages, and (3) used food to shape their children's behaviors (eg, to reward good behavior or to calm fussiness). The mothers acknowledged that some of their child-feeding practices went against the advice of their WIC nutritionists and physicians. Instead, the participants relied on their mothers as their main source of information about child feeding.

Conclusions: Physicians and allied health professionals discussing childhood growth with mothers should avoid implying that infant weight is necessarily a measure of child health or parental competence. Parents who use food to satisfy their children's emotional needs or to promote good behavior in their children may promote obesity by interfering with their children's ability to regulate their own food intake. Interventions to alter child-feeding practices should include education of grandmothers.

Arch Pediatr Adolesc Med. 1998;152:1010-1014

Editor's Note: I'll bet that the vast majority of mothers, grandmothers, great-grandmothers, and others in this country also believe yes, yes, and yes to the 3 issues cited in the "Results" section. Any takers?

Catherine D. DeAngelis, MD

ONE IN 3 ADULTS and almost 1 in 4 children in the United States are obese, and the prevalence of obesity is increasing rapidly.^{1,2} Once obesity develops, it is difficult to treat.³ Obese children are more likely to become obese adults.^{4,5} Seventy percent of obese 6- to 9-year-old children with obese parents will become obese adults.⁶ For all of these reasons, prevention of obesity in early childhood is essential. However, to develop early methods of prevention, a better understanding of the environmental factors in early childhood that promote obesity is needed so that specific behaviors can be targeted.

Research has failed to show a consistent relationship between the nutritional content of a child's diet (eg, energy or fat intake) and the presence or devel-

opment of obesity.⁷ This may be due to reporting biases⁸ in dietary records and imprecision in measuring food intake.⁹ Examining the beliefs and practices of parents related to child feeding rather than the nutritional content of the child's diet may lead to a better understanding of childhood obesity.^{10,11}

This investigation focused on the child-feeding practices of low-income mothers because maternal obesity disproportionately affects low-income women,¹² is a major risk factor for offspring obesity, and because mothers are the primary caretakers involved in feeding children. Any efforts to prevent obesity in children must consider maternal attitudes about child feeding and obesity. To obtain this information about mothers, focus groups were used. This method allowed participants to respond spontaneously to open-ended questions and to share information that may not have emerged in a questionnaire.

RESULTS

Three major themes emerged regarding the feeding relationships between parents and

From the Department of Pediatrics, Children's Hospital Medical Center (Mss Baughcum and Deeks and Drs Burklow, Powers, and Whitaker), and the University of Cincinnati College of Medicine (Drs Burklow, Powers, and Whitaker), Cincinnati, Ohio.

PARTICIPANTS AND METHODS

Four focus groups investigating childhood obesity and child-feeding practices were conducted in northern Kentucky between August 1, 1997, and October 31, 1997. One consisted of 15 female dietitians from the Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the other 3 consisted of mothers of children enrolled in WIC (14 mothers total). The study was approved by the Institutional Review Board at Children's Hospital Medical Center in Cincinnati, Ohio, and informed consent was obtained from all participants. All groups were moderated by a clinical psychologist (K.A.B.) from the research team who has extensive experience as a focus group leader. Each focus group was audiotaped and videotaped. The audiotapes were later transcribed.

By conducting focus groups with the WIC dietitians and the mothers of children in WIC separately, we were able to examine attitudes about child-feeding practices from the perspectives of both the nutrition professional and the parent. The prompting questions used in the dietitians' focus group related to the dietitians' perceptions of the child-feeding practices and attitudes about obesity among mothers with children in WIC (eg, How much of a concern is nutrition for these families? Is it a concern for parents if their child is overweight? What do you think are some of the things that might contribute to a child becoming overweight?). We designed the prompting questions used for each group of mothers to address issues relating to obesity and the feeding of children (eg, What has been most difficult about feeding your children? How do you know when your child is hungry? Who is your main source of information about how to feed your child? How do you know when you have done a good job feeding your child? Did you notice a change in your child's appetite as he or she got older? When did you first give table foods to your child?).

STUDY SITE AND PARTICIPANTS

Focus Group 1: WIC Dietitians

Fifteen of the 16 registered dietitians from the Northern Kentucky Health District (NKHD) WIC program participated. These dietitians staff the 7 WIC clinics in the health district that serve approximately 5000 infants and children. The WIC director of NKHD recruited the participants. The focus group was conducted at a regularly scheduled staff meeting of the dietitians. No monetary compensation was provided to the dietitians.

Focus Groups 2 and 3: WIC Mothers

A community pediatrician working for NKHD recruited 6 WIC-eligible mothers from his practice. To be eligible for WIC, family income must not exceed 185% of the federal

poverty level (\$29 693 per year for a family of 4 in 1997). These mothers were 16 to 34 years old. All were English-speaking, non-Hispanic whites who had at least 1 healthy child between 12 and 36 months of age. The 2 focus groups consisted of 3 mothers each and took place at the clinic where the children received regular medical care. Three of the 6 participants had 1 child, 2 of the mothers had 3 children, and 1 of the mothers had 4 children. Participants received \$10 compensation.

Focus Group 4: Teenaged WIC Mothers

To better understand feeding experiences of low-income teenaged mothers and to facilitate open communication with them, we conducted a focus group that included only teenaged mothers from the Resource Moms Program. This NKHD program uses case managers (known as "Resource Moms") to bring social services and support to pregnant teenagers and teenaged mothers in northern Kentucky. The Resource Moms recruited participants for this focus group during their regularly scheduled home visits with the teenaged mothers. The focus group was conducted in a familiar setting where program activities and meetings occur with these young mothers in the Resource Moms Program. Of the 8 participants, 3 were white and 5 were African American, and they ranged in age from 14 to 21 years. All had a child between 12 and 36 months of age, and 2 participants had 2 children in this age range. Each participant received \$10 compensation, and free child care was provided.

DATA ANALYSIS

The transcripts were read by each of us: a general pediatrician (R.C.W.), 2 clinical psychologists (K.A.B. and S.W.P.), a nutritionist (C.M.D.), and a research assistant (A.E.B.). Data were coded by identifying recurrent themes contained in the text of all focus group transcripts. Each reviewer independently identified a set of themes and selected quotations from the transcripts as evidence of the themes. The coding sheets were then consolidated into 1 form so that we could further develop the major themes and group related themes into broader categories.

VALIDITY

Two outside reviewers also coded the transcripts and generated a set of themes and supporting quotations from the transcripts. Each reviewer also participated in a discussion meeting with two of us (A.E.B. and K.A.B.) on completion of coding. One of the independent reviewers was a dietitian formerly associated with the WIC Program in Ohio. The other reviewer had a master's degree in psychology and worked on an interdisciplinary feeding team at Children's Hospital Medical Center, Cincinnati. In addition, our findings were summarized and reviewed by the Resource Moms who had observed the focus group of teenaged mothers.

children from infancy through toddlerhood. These themes are interrelated, but are presented separately for clarity.

A BIGGER INFANT IS A BETTER INFANT

Mothers believed that a heavy infant was a healthy infant and was the result of successful feeding and parenting. No mother indicated that an infant could be *too* heavy and no mother could identify any particular age at which an infant

or toddler might be considered overweight. One mother's comments reflected this perspective, "If they [my children] are overweight, at least I know they are eating. If they are underweight, they are not eating and they are not getting the nutrients they need." Parents believed that the bigger and the faster their children grew, the better their food intake must be and, therefore, the better their health must be. As one mother stated, "If he kept gaining more weight then it means he was getting fed. That he was growing right, or get-

ting the right amount of food.” In addition, the mothers believed that a heavier baby proved to others that they were effective parents. Some mothers in the groups noted that if their infants were underweight, it might indicate to social service agencies (such as child protective services) that they did not care well for their child. As one mother explained, “Say you [are] my baby’s doctor and I come to you. You tell me he’s overweight. Three months later, you tell me he’s underweight, way underweight. What would you think? You would look into that . . . what is wrong with this child?”

Among mothers who were overweight, there was the assumption that their children were genetically predisposed to be heavy and, therefore, it was expected and acceptable. One mother described this belief: “You got to look at me and his father, so he’s not gonna be little either.”

The mothers’ perspective of “bigger is better” was confirmed by the dietitians. As one dietitian described, “They [mothers] would rather see an overweight than a skinny child because they [would] feel like they’re not feeding them [the skinny child] as well. Mothers like them [their children] to be bigger.” The WIC dietitians stated that among mothers of children who appeared overweight, including those children who measured in the 90th percentile or higher in weight-for-length, some mothers seemed to be completely unconcerned and others emphatically denied that their children were overweight. One dietitian stated,

I think unless a family member . . . had a medical problem associated with the weight, they really don’t see that there is a need for any type of intervention or to do anything. The families have so many other things that they are dealing with on a day-to-day basis than to prioritize [weight] for a child who is obviously healthy, happy, can do anything they want to do. The overweight child is not a problem compared to a lot of other issues they are dealing with.

Most dietitians believed that parents who were uninterested in addressing their own obesity were almost always uninterested in addressing their child’s weight problem. As one dietitian explained, “Especially if the parents are a little bigger, then they want their child to be bigger.” Another said she hears numerous clients say, “His [the child’s] daddy is stocky like that. He’s going to be like that, so I just let him go.”

MY BABY IS NOT GETTING ENOUGH TO EAT

Although these mothers denied that there were food shortages in their households, they frequently perceived that their infants were not satiated. This led mothers to introduce cereal early to the child’s diet and also to introduce table food at an early age. Most mothers reported that they introduced cereal to their infants within the first month of life, some as early as 3 days of age. “The WIC people say, don’t feed your baby [solid] food because they get overweight. I fed all my kids cereal from the time they was about a month old because the formula wasn’t enough for them,” commented one mother. Another mother said, “I gave him cereal because he just wasn’t getting enough food. He would be up every 2 hours screaming. And finally, when I gave him cereal at about 6 weeks, he slept a lot longer.” Almost all of the mothers believed that cereal was effective for inducing better sleep at night. As one mother stated,

It’s 6 in the morning and your baby is crying and all he wants is a bottle and you can’t do nothing but give him milk because that’s all they [WIC] gave you. He takes like 4 bottles every hour. Just a little dab of cereal would do that baby. Give that baby some cereal and milk and that baby is out for the whole night. That’s all the baby want is cereal.

Adding cereal to the bottle was a practice that seemed to be handed down from the grandmothers. When asked who their main sources of information were regarding child feeding, almost all mothers responded by saying that they listened to their mothers. A dietitian explained that in her clinical interactions she often heard, “My mom told me that if he doesn’t sleep through the night, give him cereal and he’ll sleep better.” The dietitian added,

Sometimes we’re battling some of the issues from other family members giving advice, and so we may see a 2-week-old child receiving cereal from the bottle. . . . When we see patients prenatally, we kind of address the fact that infants don’t need anything in their diets [but milk or formula] until at least 4 months if not longer. We’re even battling that [early feeding of cereal] sometimes before the baby’s even here because it’s something you see quite often.

The mothers also reported introducing pureed or jarred baby food and regular table food almost simultaneously to their children. Most of the children were started on regular table foods, not just baby food, between 4 and 6 months of age. Convenience was a significant issue for the mothers. Not only did the mothers believe that it costs less to feed their children the same “adult” foods that they eat, but also that it is easier because no additional meal preparation is involved.

The mothers believed that if they were hungry, then their children must also be hungry. They became very concerned when their children did not eat well all day (“picky eating”), or preferred to eat only one food (“food jags”). As one mother described,

It’s kind of scary . . . you feel really bad because you know that you’ve eaten because you were hungry, and they won’t eat. You know that . . . they have to be hungry, because if you’re hungry, you know that they’re human too. They feel the same things that you do.

The mothers also reported that they mainly fed their children foods that they themselves liked, which is the explanation a few of the mothers gave as to why they fed their children table food, including snack foods, so early.

The mothers in this study reported a variety of cues they followed to perceive hunger in their children. Crying in infancy was always a reliable indicator of hunger to the parents. Many mothers assumed that if the child started to reach for table food, it meant that the child was hungry and wanted to eat the food item. The mothers believed that since the child indicated hunger by grabbing a table food item, they should not deprive the child of the item regardless of the appropriateness of the texture or type of food chosen. In many cases, mothers introduced solid food early because it seemed to them that their children “wanted” solids and were developmentally “ready” for them.

The mothers in this study set few behavioral limits on eating for their children. The children were often permitted to eat what they wanted, as much as they wanted, and when they wanted. Also, the mothers believed that once they started their children on a particular type of food, such as jarred baby food or regular table food, they

could not stop offering these foods and return to the previous stage, even if doing so was suggested by a health professional because the child's diet was not developmentally appropriate. The mothers did not want to deprive their children of foods already introduced to the diet and believed that doing so would be the same as "starving" them.

USING FOOD TO SHAPE BEHAVIOR

Mothers frequently used food as a tool to reinforce appropriate behaviors and good conduct in their children. Rather than using food to satisfy the child's hunger, the mothers frequently used food to quiet a fussy baby, calm a toddler's temper tantrum, or as a bribe to promote a toddler's good behavior. Mothers perceived that a crying baby must be hungry. One dietitian described the interpretation of crying as follows:

We spend a lot of our time focusing on refining parenting techniques—that every time your 2-month-old cries it may not necessarily be hungry, but needs a diaper change or to change positions. A lot of the newer mothers or younger mothers may think that every time they cry it [baby] has to be fed.

The mothers engaged in very little discussion of strategies other than offering food to soothe infants. They thought that giving a fussy infant a bottle was a "quick fix" for quieting them. The mothers used crying as the main signal to help them determine how often their babies needed to be fed. One mother said that she knew that just feeding her baby formula was not "enough":

You can tell. Every time you give them a bottle . . . and then they get to crying again a half hour later, then you give them another bottle and they take that, they are not gettin' full enough. That's how I think.

When their infants reached toddlerhood, the mothers seemed to switch from using the bottle to using table foods to alter the child's behavior. The mothers in this study used favorite foods as treats or rewards when their children cooperated with them in various settings, such as at the physician's office, at mealtimes, or in the car. The mothers almost unanimously called this use of food a bribe. One of the older mothers with several children said,

It is mostly a treat. It's like we buy those fruit gummy things, and if they are being really good, we kind of bribe them sometimes with it. Sometimes it works and sometimes it doesn't. They get suckers when we are going on the road. I have a bag of suckers I keep in the glove box and they get those and they are not screaming and throwing fits, fighting.

In fact, if the child was demanding a particular food, the mothers were likely to give it to the child. One mother explained,

Bribe them. And sometimes it does work. But if they've got their mind set on that one hot dog that they want, and that's all they want, then that's all they're going to want, and they're going to scream and cry and kick and everything else until they get it. If you don't have any [hot dogs] in the freezer, then it's like, let's run to the store real quick.

From these focus groups with low-income mothers, we have identified some beliefs and practices about feeding that may be related to the development of childhood obesity. These mothers uniformly believed that "bigger is better" where infant and toddler growth was concerned, and they viewed having a heavy infant or toddler as a mark of both their child's health and their competence as a parent. This belief that bigger is better was especially true with mothers who were overweight.

When neither parent is obese, being overweight before 3 years of age does not increase the risk of being obese as an adult.⁶ However, an overweight toddler with an obese parent is at higher risk of being obese as an adult. Parent obesity is the best available clinical predictor that a nonobese child will become obese. Even if childhood obesity prevention strategies are focused on the offspring of obese parents, if obese parents perceive that bigger is better, this perception may constitute a major barrier to prevention efforts. According to WIC dietitians in our focus groups, most obese mothers seen in the WIC clinic did not view their obesity as either a medical hazard or a negative social stigma. Further, the obese mothers in our groups perceived that body size was an inherited trait. Big parents believed they should have big children. Having a child who was not big might even cause the mother to doubt her competence in feeding her child.

Our study also showed that most of the low-income mothers engaged in premature feeding of solid foods. This pattern began with very early introduction of rice cereal and was maintained through early introduction of table foods to infants. It is unclear whether the early introduction of solid foods increases the risk of childhood obesity.¹³ Whether the calories from these solid foods result in increased energy intake in infants may depend on whether milk intake is decreased to compensate for the addition of solid foods. If this compensation occurs, an energy balance can be preserved. We hypothesize, however, that this compensation may not occur in some children because the mothers begin solid foods based on the perception that milk alone will not satisfy their infant's hunger. When their infants were 1 month of age, the mothers in this study began feeding their children cereal because they interpreted crying as a sign of hunger. However, the mothers did not understand that crying does not always indicate hunger. It seemed especially common for mothers to introduce cereal at 4 to 6 weeks of age, a period when crying increases in normally developing newborns.¹⁴

It seems as if starting cereal early is also associated with starting other solid foods ahead of schedule, including regular table food. At each stage it seems that the motivation for early feeding is the mother's perception that the infant is dissatisfied with the type or amount of food they are being fed. The mothers fed their children solid food ahead of schedule knowing that it was against the advice of the WIC nutritionists and their physicians. However, grandmothers often strongly endorsed the early infant feeding and seemed to have the most influence on the mothers in this area. Once solid foods were introduced, the mothers perceived that it was unfair to the infant to eliminate an already-introduced food, even if the food was developmentally inappropriate.

Early introduction of solid foods or even excessive bottle feeding in response to nonhunger cries may establish a pat-

tern of mothers using food to soothe children instead of to alleviate their hunger. This type of feeding during a critical developmental period may lead to the use of a bottle in toddlerhood or in response to nighttime crying in older infants. As the children in our study grew older, their mothers commonly used food to shape their behavior. Parents offered food or treats as rewards or bribes to promote better conduct. Whether this type of feeding leads to obesity depends on whether it creates an energy imbalance. We hypothesize that in those children with a genetic predisposition to obesity, feeding in response to difficult behaviors unassociated with hunger (ie, fussiness, irritability, or whining) may interfere with the child's ability to perceive their normal hunger and satiety cues.¹⁵ Foods of high energy density and low nutritional content are used by parents to soothe irritable toddlers who may be lonely, bored, or tired.

Mothers in our focus group were often concerned if their children were not hungry at regular meal times; this concern was heightened if the mother herself was hungry. While children maintain a stable energy intake over time, there is a significant variation in energy intake from meal to meal.¹⁶ If a parent coerces a child to eat at meal-times when he or she is not hungry, there may be a disruption in the child's ability to regulate energy intake.

Although our sample of mothers was small, there was strong convergence between the 3 groups of mothers regarding feeding beliefs and practices. Further, these child-feeding practices were accurately perceived by the dietitians. We did not examine a comparison group of mothers who were from higher income levels, and the beliefs and practices in such a group might differ. The mothers in these focus groups were not selected based on their weight or that of their children. Because we perceived that there might be a social stigma attached to being obese or having an obese child, we invited a cross-section of mothers to participate and structured our discussion around general child-feeding practices rather than concentrating on the subject of childhood obesity.

We believe that these findings have important implications for pediatricians in practice. First, physicians and nutritionists counseling mothers should be sensitive to the way growth charts are used to discuss infant growth. How high a child is on the growth curve may be interpreted as a measure of parental competence. Parents may believe that an infant of average weight represents average parenting, that an above-average rate of weight gain indicates improved parenting, or that infant weight loss indicates parental failure. These issues may be particularly relevant if the parents are obese, as their children may be at high risk for childhood obesity. Similarly, the infants of shorter parents may experience slower than average linear growth in early infancy, which should not cause the parent to respond by over-feeding.¹⁷ Second, health care professionals cannot assume that parents, even obese parents, perceive that being obese is a medical risk. If the parent is not experiencing social difficulties due to their obesity or if a weight-related health problem is not present in the family, parents may not be inclined to intervene on their infant's or toddler's behalf to prevent obesity. Finally, to the mothers in our focus groups, neither physicians nor dietitians were the most authoritative source on feeding children. Although the parents clearly understood their recommendations regarding introduction to solid foods, it was the maternal grandmother who often

guided their decision making and encouraged early feeding of solid foods.

Qualitative research must be viewed as hypothesis generating rather than hypothesis testing. We believe that this work yielded some testable hypotheses regarding child-feeding practices that may lead to childhood obesity, especially for infants born to obese parents. We hypothesize that parents who introduce rice cereal before 2 months of age do not accurately perceive hunger cues in their infants and that a pattern will subsequently develop in which the parents use feeding to shape noneating behavior. This may in turn increase the risk for childhood obesity. We also hypothesize that obese parents who believe that their infants are genetically predisposed to be large will engage in child-feeding practices that promote obesity in their child.

Accepted for publication April 27, 1998.

This study was supported by the Generalist Physician Faculty Scholars Award from the Robert Wood Johnson Foundation, Princeton, NJ (Dr Whitaker).

We thank Phil Lichtenstein, MD, for recruiting participants, and the Northern Kentucky Health District for their support of the project. In particular, we would like to thank the Resource Moms for their invaluable assistance in planning and recruiting our teenaged participants and Leigh Ann Chamberlin, MEd, for her efforts in facilitating our relationship with the Northern Kentucky Health District and the Supplemental Nutrition Program for Women, Infants, and Children. We also appreciate the contributions and thoughtful insights made by our project consultant, Susan Johnson, PhD.

Reprints: Robert C. Whitaker, MD, MPH, Children's Hospital Medical Center, Division of General and Community Pediatrics, CH-1S, 3333 Burnet Ave, Cincinnati, OH 45229-3039.

REFERENCES

1. Kuczmarski RJ, Flegal KM, Campbell SM, Johnson CL. Increasing prevalence of overweight among US adults: National Health and Nutrition Examination Surveys, 1960 to 1991. *JAMA*. 1994;272:205-211.
2. Troiano RP, Flegal KM, Kuczmarski RJ, Campbell SM, Johnson CL. Overweight prevalence and trends for children and adolescents: National Health and Nutrition Examination Surveys, 1963 to 1991. *Arch Pediatr Adolesc Med*. 1995;149:1085-1091.
3. NIH Technology Assessment Conference Panel. Methods for voluntary weight loss and control. *Ann Intern Med*. 1993;119:764-770.
4. Power C, Lake JK, Cole TJ. Measurement and long-term health risks of child and adolescent fatness. *Int J Obes Relat Metab Disord*. 1997;21:507-526.
5. Serdula MK, Ivery D, Coates RJ, Freedman DS, Williamson DF, Byers T. Do obese children become obese adults? a review of the literature. *Prev Med*. 1993;22:167-177.
6. Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med*. 1997;337:869-873.
7. Dietz WH. Childhood obesity: susceptibility, cause, and management. *J Pediatr*. 1983;103:676-686.
8. Bandini LG, Schoeller DA, Cyr HN, Dietz WH. Validity of reported energy intake in obese and nonobese adolescents. *Am J Clin Nutr*. 1990;52:421-425.
9. Leibel RL. Obesity: a game of inches. *Pediatrics*. 1995;95:131-132.
10. Klesges RC, Coates TJ, Brown G, et al. Parental influences on children's eating behavior and relative weight. *J Appl Behav Anal*. 1983;16:371-378.
11. Johnson SL, Birch LL. Parents' and children's adiposity and eating style. *Pediatrics*. 1994;94:653-661.
12. Flegal KM, Harlan WR, Landis JR. Secular trends in body mass index and skin-fold thickness with socioeconomic factors in young adult women. *Am J Clin Nutr*. 1988;48:535-543.
13. Kramer MS. Do breast-feeding and delayed introduction of solid foods protect against subsequent obesity? *J Pediatr*. 1981;98:883-887.
14. Brazelton TB. Crying in infancy. *Pediatrics*. 1962;29:579-588.
15. Birch LL, Zimmerman SI, Hind H. The influence of social-affective context on the formation of children's food preferences. *Child Dev*. 1980;51:856-861.
16. Birch LL, Johnson SL, Andresen G, Peters JC, Schulte MC. The variability of young children's energy intake. *N Engl J Med*. 1991;324:232-235.
17. Smith DW, Truog W, Rogers JE, et al. Shifting linear growth during infancy: illustration of genetic factors in growth from fetal life through infancy. *J Pediatr*. 1976;89:225-230.