

Drinks, Munchies, and Desserts... Ay De Mi!

Meal and Snack Patterns of Hispanic and Non-Hispanic Children

According to the U.S. Census, Hispanics are the fastest-growing ethnic minority group in the country. Projections estimate that by 2050, one of every four Americans will be Hispanic.¹ Related research points to an increase in overweight for all children,² particularly for Hispanics—of all U.S. children, Hispanic boys are the most overweight, with Hispanic girls coming in second.³

To help encourage more healthy dietary habits, scientists are searching for information concerning the establishment of eating patterns early in life. What kinds of patterns do young children have, and do they contribute to what we know is happening in adults? Genetics, acculturation, physical activity, and energy intake are now being examined, along with the rising trend of snacking.

Scientists at the University of North Carolina at Chapel Hill have confirmed that U.S. children snack more often now than they did in the late 1970s, and that these snacks are typically comprised of unhealthy food choices. “When compared to regular meals,” said Dr. Barry Popkin, “snacks generally provide fewer nutrients, more calories and a higher proportion of energy from fat.”⁴ The Feeding Infants and Toddlers Study (FITS, *J Am Diet Assoc.* 2004),⁵ reported that



meal and snack patterns begin at age 7–8 months and are well established by 9–11 months.⁶ Previous studies have shown that children in the youngest age groups have the healthiest food choices, with older children showing a marked decline in quality of diet that continues into adolescence.^{7–9}

To gain a fuller understanding of how snacking and overall food choices are affecting the nutrient and calorie intake of both Hispanic and non-Hispanic children, a more recent FITS report (*J Am Diet Assoc.* 2006) analyzed the eating patterns of both groups.¹⁰ By reviewing foods consumed and nutrient intakes by eating occasion, we provide more depth as to the types of foods and nutrients consumed by Hispanic and non-Hispanic infants and toddlers throughout the course of a day.

At breakfast, both Hispanic and non-Hispanic toddlers (12–24 months) commonly consumed unsweetened and sweetened cereals, butter and oils, eggs, bananas, and hot cereals, but a higher percentage of Hispanics consumed sweets than non-Hispanics.



Classifying Eating Occasions

To classify eating occasions, mothers (or other primary caregivers) were called, asked the time and location of each eating occasion, and if they considered it a breakfast, lunch, dinner, snack, or other. Snacks were further categorized as: morning snack (waking until noon or lunch), afternoon snack (noon or lunch until 6 p.m.), and evening snack (after 6 p.m. or dinner to bedtime). “Other” eating occasions were those which mothers didn’t consider either a meal or a snack. Typically these occasions included night feedings and between-meal feedings of breast milk or formula.

If a caretaker responded that a child had more than one eating occasion during one day, such as two morning snacks, then the nutrients from foods consumed at these eating occasions were summed for the meal- or snack-specific nutrient intake.

Infants 4–5 Months

In general, most food choices for infants 4–5 months were appropriate. As expected, both Hispanic and non-Hispanic children commonly consumed infant formula, breast milk, water, and dry baby food cereal across all eating occasions. Snacks from complementary foods were mainly fruit and cereal, and Hispanics more frequently consumed fruit at afternoon and evening snacks.

In reviewing infants’ consumption of juice, we found that 19.3% of Hispanic and 15.3% of non-Hispanic 4–5-month olds were drinking 100% fruit juice. Other researchers also have reported early introduction of 100% juice,^{11–13} with daily amounts of 6 oz. consumed by some children.¹⁴ However, the American Academy of Pediatrics recommends that juices *not* be introduced before 6 months.¹⁵

When reviewing nutrient intake, the 4–5-month-old infants were similar for breakfast, dinner, snacks, and other occasions, but they differed at lunch—calcium and phosphorus intakes were significantly lower ($P<.05$) for Hispanic children than for non-Hispanic children.

Categorizing Food Types

Foods commonly consumed were calculated by categorizing those foods eaten at each eating occasion (e.g., meats, fruits, vegetables, grains), then estimating the percentage of children who consumed specific foods within major and minor food groups. For some categories, more specificity (i.e., presenting a second minor category) was necessary to accurately describe foods eaten.

The percentage of toddlers who consumed a particular food at meals, snacks, and other eating occasions was calculated and ranked in descending order of frequency, and was reported for frequencies of 10% or higher. These percentages are listed in rank order and represent the most frequently consumed foods by toddlers on any given day.

Foods Eaten During Meals and Snacks

At ages 6–11 months, both Hispanics and non-Hispanics drank formula, breast milk, water, and 100% fruit juice for breakfast and snacks. Complementary foods included non-baby food cereal, meats, sweets, vegetables, and mixed dishes including soups or baby food dinners. Non-Hispanic children more frequently consumed fruit, vegetables, and dry baby food cereal for dinner, compared with Hispanics who more frequently ate meat. Snacks included fruit, cereal, crackers, and cookies. Hispanic children also commonly consumed a meat or protein food for evening snacks. At “other” eating occasions, Hispanic children more frequently avoided fruit and consumed 100% fruit juice instead.

For toddlers 12–24 months, Hispanics and non-Hispanics had similar percentage levels of whole milk, 100% fruit juice, water, and reduced-fat milk at breakfast. Both groups commonly consumed unsweetened and sweetened cereals, butter and oils, eggs, bananas, and hot cereals, but a higher percentage of Hispanics consumed sweets than non-Hispanics.

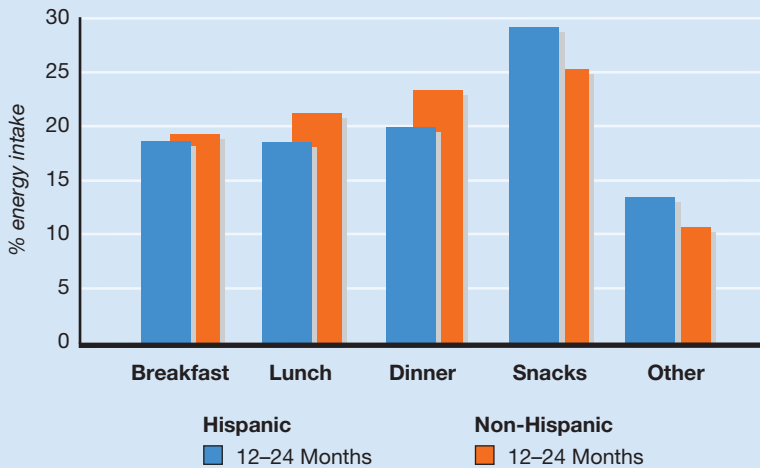
At lunch and dinner, both toddler groups frequently drank sweetened beverages and low-fat milk. Solid favorites included bread, chicken, pasta, fresh fruit, mixed dishes, meats, cooked potato, condiments and cheese. Non-Hispanic children more frequently consumed sandwiches, hot dogs, butter and oils, green beans and dessert. Common foods for

* FITS is a cross-sectional survey, a national random sample of children aged 4–24 months, categorized by Hispanic ethnicity and age group (371 Hispanic and 2,637 non-Hispanic). Data were collected in a telephone survey, including 24-hour dietary recalls of infants’ and toddlers’ food and nutrient intakes, as reported by parents or other primary caregivers. Because this article is focused on the contribution of foods to nutrient intakes at specific meals and snacks, dietary supplements were excluded from the nutrient analysis.

Caregivers should be reminded that low-fat milk, fruit drinks and other sweetened beverages should be avoided and water, 100% fruit juice and whole milk encouraged. Also, limiting desserts, candy and salty snacks while encouraging whole grains, fruits and vegetables will establish healthier eating habits.

Daily Energy Intake per Eating Occasion*

Percent of daily food energy by eating occasion of those toddlers who participated. Snacks made up more than 20% of the daily energy intake for both groups.



* The data presented meet minimum sample-size requirements and have been reviewed for reliability.

Adapted from Feeding Infants and Toddlers Study, Vol 106, Ziegler P. et al., FITS: Meal and Snack Intakes of Hispanic and non-Hispanic Infants and Toddlers, S107-123, 2006, with permission from American Dietetic Association.

Hispanic children also included raw vegetables and dried bean sources.

For liquid snacks, both groups frequently drank water, 100% fruit juice, whole milk, fruit drinks and other sweetened beverages, and Hispanic children also frequently consumed low-fat milk. Solid snacks included crackers, cookies, protein foods, fruit, salty snacks and desserts. At “other” eating occasions, whole and reduced-fat milk, water, 100% fruit juice, and sweets were consumed, with Hispanic toddlers also frequently drinking low-fat milk and breast milk.

It is obvious that many of the foods and beverages consumed by infants and toddlers were very nutritious. However, certain patterns need attention. Caregivers should be reminded that low-fat milk, fruit drinks and other sweetened beverages should be avoided and water, 100% fruit juice and whole milk encouraged.¹⁶ Also, limiting desserts, candy and salty snacks while encouraging whole grains, fruits and vegetables in addition to dairy and meat will provide greater nutrition and establish healthier eating habits. Plain cookies and crackers with low sugar and fat content make good finger foods and snacks, but parents may want to consider what they contribute to overall dietary quality.

Energy Intake Overview

Regardless of the age group, among Hispanic children the median number of daily eating occasions was seven, and the total number of meals and snacks consumed ranged from 4–12. For non-Hispanics, the 4–5-month age group had a median of six daily eating occasions, while the 6–24-month age group had seven, with a range of 3–15 meals and snacks.

Snacks provide from 15–21% of infants’ daily energy intake. This increased in the second year of life with the highest percentage (29%) seen for Hispanics aged 12–24 months. Overall, as children aged, they were reported to eat more snacks. More than 80% of all toddlers aged 12–24 months (over 90% of Hispanics) had afternoon snacks. Snacks as a group contributed a higher percentage of energy than any single meal occasion.

Carbohydrates and Fat

When measuring carbohydrates and fat, the 6–11-month-old Hispanic children had a significantly ($P<.05$) lower intake of carbohydrate at dinner as well as a significantly ($P<.05$) lower percentage of energy from saturated fat for afternoon snacks.

The main differences between the Hispanic and non-Hispanic groups were for the toddlers aged 12–24 months. (See chart, “Carbohydrate and Fat Intake,” page 5.) At lunch, Hispanic toddlers had significantly ($P<.05$) lower percentages of energy from fat and saturated fat, as well as a significantly ($P<.05$) higher percentage of energy from carbohydrate. At dinner, Hispanic children had significantly ($P<.05$) lower intakes of total fat and saturated fat compared with non-Hispanic children. These findings reinforce those of usual nutrient intakes of fat and carbohydrates among Hispanic and non-Hispanic toddlers.¹⁷

At this very young age, it’s encouraging to see Hispanic children commonly consuming cooked potatoes (16%) and raw vegetables (11%)—items that contribute a lower percentage of energy intake from saturated fat. Non-Hispanic toddlers, on the other hand, commonly consumed hot dogs (12%) and french fries (11%) for lunch, as well as more frequently consuming fat-containing butter and oil.

Unfortunately, both groups consumed less healthy sweets and pre-sweetened cereals—trends that

Fruit drinks became a common beverage at dinner and snacks by age 12–24 months. This is concerning because sweetened beverages may be replacing or adding to the consumption of more nutritious beverages, contributing to an increase in calories and a loss of nutrients.



increase as children age. Rather than concentrate on fat and carbohydrate content, which can be confusing for parents, healthcare providers can teach the importance of making good food choices. From ages 6–24 months, the variety of healthful foods in the diet should be increasing, and including items like whole grains, fruits and vegetables.

Sweetened Beverages and Other Snacks

Fruit drinks became a common beverage at dinner and snacks by age 12–24 months. This is concerning because sweetened beverages may be replacing or adding to the consumption of more nutritious beverages, contributing to an increase in calories and a loss of nutrients. Toddlers' consumption of sweetened beverages is also of concern because dietary habits are established early—soft drinks contribute approximately one third of the added sugar intake of Americans aged two years and older.¹⁸

The American Academy of Pediatrics does not have specific recommendations that limit the amounts of fruit drinks or carbonated beverages in the diets of infants and toddlers. However, the Academy does state that fruit drinks are not nutritionally equivalent to 100% juice and cannot be considered as a fruit serving.¹⁹ The types of beverages that toddlers consume, especially those at snacks, need to be closely monitored, restricting intake of high-sugar choices in favor of more nutrient-dense options.

In reviewing the consumption of solids, complementary foods commonly consumed as snacks by 6–11-month-old children draw attention to the introduction of less nutritious food items in older infants. For example, both Hispanic and non-Hispanic 4–5-month-olds commonly consumed fruit and cereal, whereas 6–11-month-olds consumed crackers and cookies in addition to fruit and cereal.

In terms of fruit and vegetable consumption, both National Health and Nutrition Examination Survey²⁰ and Hispanic Health and Nutrition Examination Survey²¹ data show that Hispanic and non-Hispanic children consume less than the recommended five or more servings per day; Hispanic children consumed the least. Although Hispanics and non-Hispanics across all age groups frequently consumed yellow vegetables at meals, and toddlers consumed fruit and

Carbohydrate and Fat Intake

Hispanic toddlers (12–24 months) had significantly lower percentages of energy from fat and a significantly higher percentage of energy from carbohydrate (at lunch and dinner).

	Hispanics	Non-Hispanics
Breakfast		
Energy (kcal)	244	243
Fat (g)	8.1 (29.3% kcal)	8.6 (28.4% kcal)
Trans fat (g)	8.6	8.4
Saturated fat (g)	3.6 (12.6% kcal)	3.7 (12.7% kcal)
Carbohydrate (g)	34.7 (57.7% kcal)	34.5 (58% kcal)
Lunch		
Energy (kcal)	271	281
Fat (g)	9.3 (26.9% kcal)*	11.0 (33.3% kcal)
Trans fat (g)	0.7	0.8
Saturated fat (g)	3.4 (9.4% kcal)*	4.5 (13.7% kcal)
Carbohydrate (g)	36.8 (57% kcal)*	34.8 (50.2% kcal)
Dinner		
Energy (kcal)	272	302
Fat (g)	8.9 (28.3% kcal)	11.6 (32.5% kcal)
Trans fat (g)	0.5*	0.7
Saturated fat (g)	3.5 (10.7% kcal)*	4.7 (13.1% kcal)
Carbohydrate (g)	36.1 (52.7% kcal)	35.6 (48.3% kcal)

* Significantly different from non-Hispanics at $P < .05$.

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cereals at snacks, they also commonly consumed crackers, cookies, salty snacks, and desserts. Not only are crackers and cookies inferior choices, studies indicate that less nutritious snacks could influence taste preferences that are developed throughout complementary feeding.^{22–25}

Nutrient Intakes

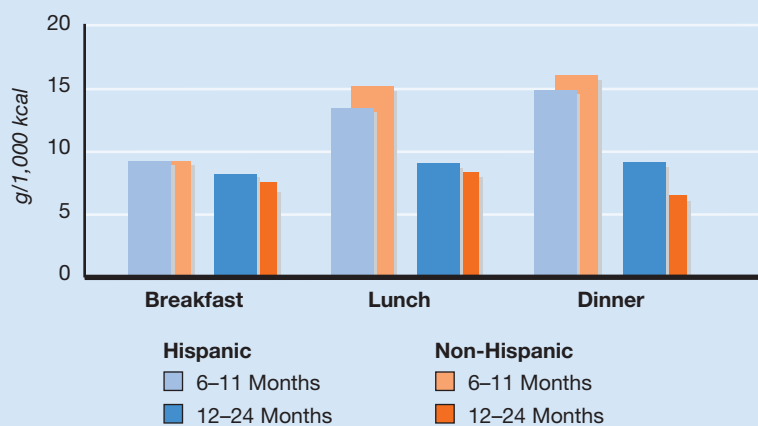
Vitamins and minerals

Most nutrients were not significantly different for Hispanic children versus non-Hispanic children. Interestingly, 6–11-month-old Hispanics had significantly lower vitamin E intakes at breakfast, lunch, and dinner, plus significantly ($P < .05$) lower vitamin C and iron intakes at dinner than non-Hispanic children. Although Hispanics reported eating meat at dinner, which is an excellent source of iron, lower iron intake may occur because non-Hispanics reported consuming more fruits and vegetables during their evening meal, which are good sources of vitamin C, along with dry

Fiber intakes decreased per 1,000 kcal for both ethnic groups between 6–11 months and 12–24 months. In other words, as the child entered the second year of life, a time when the complexity of the diet would be expected to expand and diversify, the amount of fiber per energy consumed decreased.

Reduction in Fiber Intake

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baby food cereals, which are fortified with vitamin C and iron.

The 12–24-month-old Hispanic children had significantly ($P<.05$) higher intakes of vitamin A for evening snacks compared with non-Hispanic children. For more information on nutrient intake, please see page 17.

Fiber

Fiber intakes decreased per 1,000 kcal for both ethnic groups between 6–11 months and 12–24 months. (See chart, “Reduction in Fiber Intake.”) In other words, as the child entered the second year of life, a time when the complexity of the diet would be expected to expand and diversify, the amount of fiber per energy consumed decreased. Overall, toddlers had usual fiber intakes well below the Adequate Intake of 17–19 g/day^{26–27} (based on average estimated calorie intakes of toddlers consuming 1,372 calories).[†]

Thus, fiber-rich foods should be encouraged, although the Adequate Intake of 14 g per 1,000 kcal recommendation²⁸ may be difficult to meet as fibrous

foods are often bulky and filling. Overall, the fiber content of snacks was low with snacks contributing, on average, less than one gram of fiber per snack, except for Hispanic toddlers, who had significantly higher fiber intake at afternoon snacks (1.5 g) than non-Hispanic toddlers. This difference in intake may be due to the higher consumption of fresh fruits such as bananas and apples in the Hispanic diet.

The low intakes of whole grains and fiber from snacks reflect results from the U.S. Department of Agriculture’s Continuing Surveys of Food Intake by Individuals of 1977–1978 and 1987–1988. These surveys showed children aged 2–5 years had a decreasing mean fiber intake,^{29–30} and primary sources of fiber changed, in order of ranking contribution, from vegetables, fruits, bread, nuts, legumes, starch, and cereal to bread (wheat or white), cereal, ready-to-eat cereal, fruit, vegetables, and starch. The consumption of french fries, butter/oils, and sweetened beverages by infants and toddlers emphasizes the growing trend away from consumption of whole grains, fruits, and vegetables in the diets of young children.^{31–32}

Conclusions

Considering the sizeable contribution that snacks make to overall energy, parents and caregivers should plan toddlers’ snacks to complement meals by including additional fruits, vegetables, and whole grains that are culturally appropriate rather than fruit drinks, desserts, salty snacks, and cookies and crackers with a high fat or sugar content. This will increase fiber and nutrient intake while limiting consumption of fat and sugar.

To further assist in the development of healthy eating habits, it is important to encourage new foods often. Non-Hispanic caretakers were more likely than Hispanic caretakers to introduce a food more than six times before deciding the child did not like it, yet studies show that up to 10–15 exposures may be necessary before a specific food is accepted.^{33–34} Moreover, mothers tend not to offer foods to their

† The adequate intake for children aged 1–3 years is 19 g/d, based on a recommendation of 14 g fiber/1,000 kcal and a median intake of 1,372 kcal/d for 1–3-year-old children in the Continuing Survey of Food Intakes by Individuals. Adjusting for the lower median energy intake of the 12–24-month-old FITS toddlers leads to an adjusted adequate intake of 17 g/d.

Limitations of the FITS study are that the food intake patterns are based on one 24-hour recall for each child and may not represent usual food intake. Because the Hispanic infant and toddler data are a subset of FITS, we are limited in the total population size for all age groups, and the design was not intended to be representative of the entire Hispanic population in the United States.

Future research is also needed to examine how specific ethnic sub-groups (e.g., Mexican, Cuban, Puerto Rican) and their food traditions and practices contribute to the types of foods, flavors, meals, and snacks fed to their children.



children that they themselves do not like.³⁵ Therefore, educating caregivers about variety and the timing of food introduction into meals and snacks may be important to a child's food preferences later in life.

Further research on foods and food preparation would yield more accurate nutrition databases for comparing intakes of ethnic groups. The development of appropriate serving-size standards and the influence on dietary intake analyses are needed to improve nutrition education. Future research is also needed to examine how specific ethnic sub-groups (e.g., Mexican, Cuban, Puerto Rican) and their food traditions and practices contribute to the types of foods, flavors, meals, and snacks fed to their children. In the meantime, dietetic professionals need to consider cultural differences when developing meal and snack patterns for Hispanic and non-Hispanic clients. •

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References

1. U.S. Census Web Site, Table 1a. www.census.gov/ipc/www/usinterimproj/natprojtab01a.pdf.
2. Kennedy E, Goldberg J. What are American children eating? Implications for public policy. *Nutr Rev*. 1995; 53:111–126.
3. JAMA 2002;288(1):82–90. Referenced in NIH News, "National Children's Study Seeks to Explain Hispanic Child Health Disparities." September 29, 2005. Accessed at: http://www.nichd.nih.gov/new/releases/hispanic_backgrounder.cfm
4. David Williamson. UNC scientists find U.S. children snack more now than they did two decades ago. UNC News Service, April 16, 2001—No.144. <http://www.unc.edu/news/archives/apr01/popkin040601.htm>
5. Feeding Infants and Toddlers Study 2002 results. *J Am Diet Assoc*. 2004;104(suppl 1).
6. Skinner JD, Ziegler P, Pac S, Devaney B. Meal and snack patterns of infants and toddlers. *J Am Diet Assoc*. 2004;104(suppl 1):S65–S70.
7. Lytle LA, Seifert S, Greenstein J, McGovern P. How do children's eating patterns and food choices change over time? Results from a cohort study. *Am J Health Promot*. 2000;14:222–228.
8. Gillman MW, Rifas-Shiman SL, Frazier AL, Rockett HRH, Camargo CA, Field AE, Berkey CS, Colditz GA. Family dinner and diet quality among older children and adolescents. *ArchFamMed*. 2000;9:235–240.
9. Evers S, Taylor J, Manske S, Midgett C. Eating and smoking behaviours of school children in Southwestern Ontario and Charlottetown, PEI. *Can J Public Health*. 2001;92:433–436.
10. Ziegler P, Hanson C, Ponza M, Novak T, Hendricks K. Meal and Snack Intakes of Hispanic and Non-Hispanic Infants and Toddlers. *J Am Diet Assoc*. 2006;106(suppl 1):S107–123.
11. Skinner JD, Carruth BR, Houck K, Moran J III, Coletta F, Cotter R, Ott D, McLead M. Transitions in infant feeding during the first year of life. *J Am Coll Nutr*. 1997;16:209–215.
12. Skinner JD, McLead M. Longitudinal study of nutrient and food intakes of infants aged 2 to 24 months. *J Am Diet Assoc*. 1997;97:496–504.
13. Skinner JD, Ziegler P, Ponza M. Transitions in infants and toddlers' beverage patterns. *J Am Diet Assoc*. 2004;104(suppl 1):S45–S50.
14. Skinner JD, Carruth BR. A longitudinal study of children's juice intake and growth: The juice controversy revisited. *J Am Diet Assoc*. 2001;101:432–437.
15. American Academy of Pediatrics, Committee on Nutrition. The use and misuse of fruit juice in pediatrics. *Pediatrics*. 2001;107:1210–1213.
16. Kleinman RE, ed. *Pediatric Nutrition Handbook*. 5th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2004.
17. Briefel R, Ziegler P, Novak T, Ponza M. Feeding Infants and Toddlers Study: Characteristics and usual nutrient intake of Hispanic and non-Hispanic infants and toddlers. *J Am Diet Assoc*. 2006; 106(suppl 1): S84–S95.
18. Guthrie JF, Morton JF. Food sources of added sweeteners in the diets of Americans. *J Am Diet Assoc*. 2000;100:43–48.
19. American Academy of Pediatrics, Committee on Nutrition. The use and misuse of fruit juice in pediatrics. *Pediatrics*. 2001;107:1210–1213.
20. U.S. Dept of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. Nutrition and Health Examination Survey 1999–2000. Available at: http://www.cdc.gov/nchs/about/major/nhanes/nhanes99_00.htm. Accessed August 22, 2005.
21. The Hispanic Health and Nutrition Examination Survey. *Nutr Rev*. 1991;49:156–158.21.
22. Skinner JD, Carruth BR, Bounds W, Ziegler P, Reidy K. Do food-related experiences in the first 2 years of life predict dietary variety in school-aged children? *J Nutr Educ Behav*. 2002;34:310–315.
23. Skinner JD, Carruth BR, Bounds W, Ziegler P. Children's food preferences: A longitudinal analysis. *J Am Diet Assoc*. 2002;102:1638–1647.
24. Sullivan SA, Birch LL. Infant dietary experiences and acceptance of solid foods. *Pediatrics*. 1994;93: 217–277.
25. Gerrish CJ, Mennella JA. Strategies to enhance food acceptance in infants. *Am J Clin Nutr*. 2001;73:1080–1085.
26. Devaney B, Ziegler P, Pac S, Karwe V, Barr SI. Nutrient intakes of infants and toddlers. *J Am Diet Assoc*. 2004;104(suppl 1):S14–S21.
27. Butte N, Cobb K, Dwyer J, Graney L, Heird W, Rickard K. The Start Healthy Feeding Guidelines for infants and toddlers. *J Am Diet Assoc*. 2004;104:442–454.
28. Institute of Medicine. Food and Nutrition Board. *Dietary Reference Intakes: Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein and Amino Acids*. Washington, D.C.: National Academy Press; 2002.
29. Continuing Survey of Food Intakes by Individuals, 1977–1996. [CD-ROM]. Beltsville, MD: U.S. Dept of Agriculture, Agricultural Research Service; 1998.
30. Saldanha LG. Fiber in the diet of U.S. children: Results of national surveys. *Pediatrics*. 1995;96:994–997.
31. Subar AF, Krebs-Smith SM, Cook A, Kahle LL. Dietary sources of nutrients among U.S. children, 1989–1991. *Pediatrics*. 1998;102:913–923.
32. Kranz S, Mitchell DC, Siega-Riz AM, Smiciklas-Wright H. Dietary fiber intake by American pre-schoolers is associated with more nutrient-dense diets. *J Am Diet Assoc*. 2005;105:221–225.
33. Carruth BR, Ziegler P, Gordon A, Barr S. Prevalence of picky eaters among infants and toddlers and their caregivers' decisions about offering a new food. *J Am Diet Assoc*. 2004;104(suppl 1):S57–S64.
34. Pac S, McMahon K, Ripple M, Reidy K, Ziegler P, Myers E. Development of the Start Healthy Guidelines for Infants and Toddlers. *J Am Diet Assoc*. 2004; 104:455–467.
35. Skinner JD, Carruth BR, Bounds W, Ziegler P. Children's food preferences: A longitudinal analysis. *J Am Diet Assoc*. 2002;102:1638–1647.