

# Policy on Dietary Recommendations for Infants, Children, and Adolescents

## Originating Committee

Clinical Affairs Committee

## Review Council

Council on Clinical Affairs

## Adopted

1993

## Revised

1999, 2002, 2005, 2006, 2008, 2012

## Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes its role in promoting well-balanced, low caries-risk, and nutrient-dense diets for infants, children, adolescents, and persons with special health care needs.

## Methods

The revision of this policy is based on a review of current dental and medical literature related to diet and nutrition for infants, children, and adolescents. This document is an update of the previous version, revised in 2008. The update included an electronic PubMed® search combining terms such as “caries” and “body mass index”, “breast-feeding”, “diabetes”, “hypertension”, “physical activity”, “nutrition”, “obesity”, “sugar-sweetened beverages”, “sugar-sweetened medications”, “sugar-containing medications”, “chewable vitamins”, and “sugar-sweetened vitamin supplements” and relevant articles from dental and medical literature. The search returned 3,755 articles. The reviewers agreed upon the inclusion of 36 articles that met the defined criteria. Relevant policies and guidelines of the AAPD, the American Academy of Pediatrics (AAP), US Department of Agriculture (USDA), Department of Health and Human Services (DHHS), and Academy of Nutrition and Dietetics also are included.

## Background

Establishment of a dental home by 12 months of age allows the institution of individualized caries-preventive strategies, including dietary recommendations and appropriate oral hygiene instruction, as the primary teeth begin to erupt.<sup>1</sup> Dietary choices affect oral health as well as general health and well-being.

Epidemiological research shows that human milk and breast-feeding of infants provide general health, nutritional, developmental, psychological, social, economic, and environmental advantages while significantly decreasing risk for a large number of acute and chronic diseases.<sup>2</sup> Human breast milk is uniquely superior in providing the best possible nutrition to

infants and has not been epidemiologically associated with caries.<sup>3-5</sup> Frequent night time bottle-feeding with milk is associated with, but not consistently implicated in, early childhood caries (ECC).<sup>6</sup> Breastfeeding greater than or equal to 7 times daily after 12 months of age is associated with increased risk for ECC.<sup>7</sup> Ad libitum breastfeeding after introduction of other dietary carbohydrates and inadequate oral hygiene are risk factors for ECC.

The AAP has recommended children one through six years of age consume no more than four to six ounces of fruit juice per day, from a cup (ie, not a bottle or covered cup) and as part of a meal or snack.<sup>10</sup> Night time bottle-feeding with juice, repeated use of a sippy or no-spill cup, and frequent in-between meal consumption of sugar-containing snacks or drinks (eg, juice, formula, soda) increase the risk of caries.<sup>8,9</sup>

ECC can be a particularly aggressive form of caries, beginning soon after tooth eruption, developing on smooth surfaces, progressing rapidly, and having a lasting detrimental impact on the dentition.<sup>11</sup> Consequences of this disease may lead to more widespread health issues.<sup>12-14</sup>

Caries and its sequelae are among the most prevalent health problems facing American infants, children, and adolescents. Frequent ingestion of sugars and other carbohydrates (eg, fruit juices, acidic beverages) and prolonged contact of these substances with teeth are particular risk factors in the development of caries. Along with increasing caries risk, increased consumption of sugar-sweetened beverages and snack foods also has been linked to obesity.<sup>15,16</sup> Childhood overweight and obesity have reached epidemic proportions worldwide, and the prevalence among US youth has quadrupled in children ages six to 11 and nearly doubled in adolescents ages 12 to 19 in the past 25 years.<sup>17</sup> Results from a study 2007-2008 that measured height and weight estimated 16.9 percent of children and adolescents in the US aged two through 19 were obese.<sup>18</sup> Differences were seen in estimates among ethnic groups, ranging from the lowest (14.5 percent) among non-Hispanic white girls to the highest (26.8 percent) among Mexican-American boys.<sup>18</sup> Health risks

associated with childhood overweight and obesity are strong indicators for predisposition to adult morbidity and mortality and include type II diabetes, cardiovascular disease (hypertension, hypercholesterolemia, and dyslipidemia), and psychological stress (depression and low self-esteem), as well as respiratory (obstructive sleep apnea and asthma), orthopedic (genu varum and slipped capital femoral epiphysis), and hepatic (steatohepatitis) problems.<sup>19</sup>

Although studies are limited in the pediatric population, one study indicated that adolescents aged 17 to 21 years had an increased risk of periodontal disease for each one kg increase in body weight and one cm increase in waist circumference.<sup>20</sup> Incipient periodontal disease has been found to be increased in children and adolescents with diabetes.<sup>21</sup> Excessive consumption of fruit juice has been associated with small stature in some children.<sup>22</sup> It has been shown that nearly 54 percent of US preschool children were given some form of over-the-counter (OTC) medications, most commonly as analgesics, antipyretics, and cough and cold medications.<sup>23</sup> Numerous OTC and prescribed oral liquid medications have been found to have a high sugar content to increase palatability and acceptance by children.<sup>24-26</sup> Frequent ingestion of sugar-sweetened medications has demonstrated a higher incidence of caries in chronically ill children.<sup>24,25,27-29</sup> To motivate children to consume vitamins, numerous companies have made “jelly”, “gummy”, and “candy-like” chewable vitamin supplements.<sup>30</sup> Cases of vitamin A toxicity have been reported as a result of excessive consumption of candy-like vitamin supplements.<sup>30</sup> The AAP has recommended that the optimal way to obtain adequate amounts of vitamins is to consume a healthy and well-balanced diet.<sup>31</sup>

To help the public make choices for a healthy diet, the USDA and DHHS published Dietary Guidelines for Americans.<sup>9,32</sup> These guidelines include:

- eating a variety of nutrient-dense foods and beverages;
- balancing foods eaten with physical activity to maintain a healthy body mass index;
- maintaining a caloric intake adequate to support normal growth and development and to reach or maintain a healthy weight;
- choosing a diet with plenty of vegetables, fruits, and whole grains and low in fat, saturated (especially trans-saturated) fat, and cholesterol; and
- using sugars and salt (sodium) in moderation.<sup>9,32</sup>

Food companies can encourage food and beverage selections that contribute to healthier lifestyles by increasing the prominence, simplicity, and uniformity of nutritional information on food packaging labels.

### Policy statement

The AAPD, in its efforts to promote optimal health for infants, children, and adolescents, supports the position of the Academy of Nutrition and Dietetics that all children should have access to healthy food and nutrition programs that ensure the availability of a safe and adequate food supply that promotes

optimal physical, cognitive, and social growth and development.<sup>33</sup> The AAPD encourages:

- breast-feeding of infants to ensure the best possible health and developmental and psychosocial outcomes, with care to wiping or brushing as the first primary tooth begins to erupt and other dietary carbohydrates are introduced;
- educating the public about the association between frequent consumption of carbohydrates and caries;
- educating the public about other health risks associated with excess consumption of simple carbohydrates, fat, saturated fat, and sodium.

Furthermore, the AAPD encourages:

- pediatric dentists and other health care providers who treat children to provide dietary and nutrition counseling (commensurate with their training and experience) in conjunction with other preventive services for their patients;
- food and beverage manufacturers to make nutritional content on food labels more prominent and “consumer-friendly”;
- consumers to monitor the presence and relative amounts of carbohydrates and saturated fats as listed on food labels;
- school health education programs and food services to promote nutrition programs that provide well-balanced and nutrient-dense foods of low caries-risk, in conjunction with encouraging increased levels of physical activity;
- research, education, and appropriate legislation to promote diverse and balanced diets;
- pediatric dentists and other health care providers to recommend or prescribe sugar-free medications whenever possible; and
- educating parents of the risks of overdose from excessive consumption of candy-like chewable vitamin supplements.

Additional information on nutrition recommendations may be obtained from websites for the USDA<sup>34</sup>, USDA and DHHS<sup>33</sup>, Academy of Nutrition and Dietetics<sup>35</sup>, and Centers for Disease Control and Prevention<sup>36</sup>.

### References

1. American Academy of Pediatric Dentistry. Policy on the dental home. *Pediatr Dent* 2012;34(special issue):24-5.
2. American Academy of Pediatrics. Policy statement: Breast-feeding and the use of human milk. *Pediatrics* 2012;129(3):e827-41.
3. Erickson PR, Mazhari E. Investigation of the role of human breast milk in caries development. *Pediatr Dent* 1999;21(2):86-90.
4. Iida H, Auinger P, Billings RJ, Weitzman M. Association between infant breastfeeding and early childhood caries in the United States. *Pediatrics* 2007;120(4):e944-52.
5. Mohebbi SZ, Virtanen JI, Vahid-Golpayegani M, Vehkalahti MM. Feeding habits as determinants of early childhood caries in a population where prolonged breastfeeding is the norm. *Community Dent Oral Epidemiol* 2008;36(4):363-9.

6. Reisine S, Douglass JM. Psychosocial and behavioral issues in early childhood caries. *Community Dent Oral Epidemiol* 1998;26(1 Suppl):32-44.
7. Feldens CA, Giugliani ER, Vigo Á, Vítolo MR. Early feeding practices and severe early childhood caries in four-year-old children from southern Brazil: A birth cohort study. *Caries Res* 2010;44(5):445-52. Epub 2010 Sep 13.
8. Tinanoff N, Kanellis MJ, Vargas CM. Current understanding of the epidemiology, mechanisms, and prevention of dental caries in preschool children. *Pediatr Dent* 2002;24(6):543-51.
9. Tinanoff N, Palmer CA. Dietary determinants of dental caries and dietary recommendations for preschool children. *J Public Health Dent* 2000;60(3):197-206; discussion 207-9.
10. American Academy of Pediatrics Committee on Nutrition. Policy statement: The use and misuse of fruit juices in pediatrics. *Pediatrics* 2001;107(5):1210-3. Reaffirmed October, 2006.
11. American Academy of Pediatric Dentistry. Guideline on infant oral health care. *Pediatr Dent* 2012;34(special issues):132-6.
12. Acs G, Lodolini G, Kaminsky S, Cisneros GJ. Effect of nursing caries on body weight in pediatric populations. *Pediatr Dent* 1992;14(5):302-5.
13. Low W, Tan S, Schwartz S. The effect of severe caries on the quality of life in young children. *Pediatr Dent* 1999; 21(6):325-6.
14. Clarke M, Locker D, Berall G, Pencharz P, Kenny DJ, Judd P. Malnourishment in a population of young children with severe early childhood caries. *Pediatr Dent* 2006;28(3):254-9.
15. Ludwig DS, Peterson KE, Gormaker SL. Relation between consumption of sugar-sweetened drinks and childhood obesity: A prospective, observational analysis. *Lancet* 2001;357(9255):505-8.
16. Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: A systematic review. *Am J Clin Nutr* 2006;84(2):274-88.
17. Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Overweight and obesity among US children, adolescents, and adults, 1999-2002. *JAMA* 2004; 291(23):2847-50.
18. Ogden CL, Carroll MD. Prevalence of obesity among children and adolescents: United States, trends 1963-1965 through 2007-2008. In: *Health e-stat*. Centers for Disease Control and Prevention. June, 2010. Available at: "[http://www.cdc.gov/nchs/data/hestat/obesity\\_child\\_07\\_08/obesity\\_child\\_07\\_08.pdf](http://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.pdf)". Accessed June 24, 2012.
19. American Academy of Pediatrics Committee on Nutrition. Policy statement on prevention of pediatric obesity and overweight. *Pediatrics* 2003;112(2):424-30. Reaffirmed October, 2006.
20. Reeves AF, Rees JM, Schiff M, Hujuel P. Total body weight and waist circumference associated with chronic periodontitis among adolescents in the United States. *Arch Pediatr Adolesc Med* 2006;160(9):894-9.
21. Lalla E, Cheng B, Lal S, et al. Periodontal changes in children and adolescents with diabetes: A case-control study. *Diabetes Care* 2006;29(2):295-9.
22. Dennison BA, Rockwell HL, Baker SL. Excess fruit juice consumption by preschool-aged children is associated with short stature and obesity. *Pediatrics* 1997;99(1):15-22.
23. Kogan MD, Pappas G, Yu SM, Kotelchuck M. Over-the-counter medication use among US preschool children. *J Am Med Assoc* 1994;272(13):1025-30.
24. Kenny DJ, Somaya P. Sugar load of oral liquid medications on chronically ill children. *J Can Dent Assoc* 1989; 55(1):43-6.
25. Maguire A, Rugg-Gunn AJ, Butler TJ. Dental health of children taking antimicrobial and non-antimicrobial liquid oral medication long-term. *Caries Res* 1996;30(1): 16-21.
26. Bigeard L. The role of medication and sugars in pediatric dental patients. *Dent Clin North Am* 2000;44(3):443-56.
27. Foster H, Fitzgerald J. Dental disease in children with chronic illness. *Arch Dis Child* 2005;90(7):703-8.
28. da Fonseca MA, Evans M, Teske D, Thikkurissy S, Amini H. The impact of oral health on the quality of life of young patients with congenital cardiac disease. *Cardiol Young* 2009;19(3):252-6.
29. Alaki S, Burt BA, Garetz SL. The association between antibiotics usage in early childhood and early childhood caries. *Oral Health* 2010;100(1):32-40.
30. Lam HS, Chow CH, Poon WT, et al. Risk of vitamin A toxicity from candy-like chewable vitamin supplements for children. *Pediatrics* 2006;118(2):820-4.
31. Gidding SS, Dennison BA, Birch LL, et al. Dietary recommendations for children and adolescents: A guide for practitioners. *Pediatrics* 2006;117(2):544-59.
32. US Dept of Agriculture, US Dept of Health and Human Services. *Dietary Guidelines for Americans*. 7<sup>th</sup> ed. Washington, DC: US Dept of Agriculture and US Dept of Health and Human Services; 2010. Available at: "<http://www.health.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf>". Accessed June 24, 2012.
33. Stang J, Bayerl CT, American Dietetic Association. Position of the American Dietetic Association: Child and adolescent nutrition assistance programs. *J Am Diet Assoc* 2010;110(5):791-9.
34. US Dept of Agriculture. Available at: "<http://www.choosemyplate.gov>". Accessed March 30, 2012.
35. Academy of Nutrition and Dietetics. Available at: "<http://www.eatright.org>". Accessed March 30, 2012.
36. CDC. Nutrition for everyone. Available at: "<http://www.cdc.gov/nutrition/everyone/>". Accessed March 30, 2012.