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PUBLISHED: **FEBRUARY 2024**

EXPIRES: **JANUARY 2027**

ABSTRACT

Nutrition and healthy dietary patterns play a key role in a child's long-term oral health. Parents and caregivers generally understand that sugar in the diet contributes to caries, yet they are not aware that nutrient-dense dietary patterns help to support a child's oral health. Additionally, there is much confusion surrounding the association between ultraprocessed foods, sugar-sweetened beverages, and dental caries in children and adolescents. This course will cover the evidence-based research surrounding the impact of healthy eating habits on the oral health of the infant, child, and adolescent.

EDUCATIONAL OBJECTIVES

Upon completion of this course, the dental professional should be able to:

1. Discuss the synergistic relationship between the child's diet and oral health
2. Formulate how to address the nutritional needs of the pediatric dental patient
3. Explain the emerging body of science supporting the association of a healthy eating pattern to preventing oral disease in childhood
4. Discuss the current evidence-based nutrition recommendations for children and adolescents that can be integrated into individualized, comprehensive oral health care messages



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How nutrition can support a child's health

A PEER-REVIEWED ARTICLE | by Ellen Karlin, MMSc, RDN, LDN, FADA, and Sara Karlin, DDS

A close reciprocal relationship between pediatric oral health and overall health has been well established in the academic literature. In addition, a synergistic, bidirectional relationship exists between a child's diet and nutritional status, and oral health. Nutrient-dense, whole food dietary patterns throughout infancy, childhood, and adolescence support optimal growth, development, well-being, and future dental health. Good nutritional habits are necessary for the development and integrity of the oral cavity and play a key role in a child's long-term oral health status.

Oral infectious diseases, systemic conditions with oral manifestations, and adverse medication effects can all hinder a child's ability to consume nutritious foods. This can result in the development of unhealthy eating patterns and a decline in nutritional well-being. Nutrient-poor diets often contribute to the progression of dental caries, the most prevalent chronic disease among children ages 6–19.¹ Even though childhood caries is largely preventable, it is an ongoing and significant public health challenge. According to statistics from the Oral Health in America Executive Summary, 15% of children under 12 years of age have untreated caries in their primary teeth, and 18% of children ages 6–11 have tooth decay

in their permanent teeth.² Untreated caries often causes pain, inflammation, infection, and tooth loss.² Children may experience difficulty eating, poor nutrition, delayed physical development, lower self-esteem, poor performance in school, and school absence as a result.²

Young children have unique caries risk factors. Their tooth surfaces are newly erupted with thinner enamel, making them more prone to decay. In addition, parents may have difficulty navigating through the transition from breast/bottle feeding to offering nutrient-dense complementary foods and beverages.

While dental caries in children is a multifactorial disease, if a child regularly consumes snacks high in added sugars, this eating pattern is consistently associated with a higher caries experience, according to a recent systematic review of prospective cohort studies.³ Factors that typically contribute to carious lesions include: colonization of susceptible teeth with cariogenic bacteria, types of food consumed, and frequency of exposure to cariogenic foods. Guidelines for caries prevention include: avoiding frequent consumption of juice throughout the day, discouraging sleeping with a bottle, promoting healthy snacks and healthy beverage patterns, and including dairy and nutrient-dense whole foods in the diet. Other recommended interventions for caries prevention include: good oral hygiene, appropriate use of fluoride toothpaste and mouthwash, education, and community water fluoridation.⁴

A recent study that included 120 children ages 1–12 evaluated the consumption frequency of 17 foods.⁵ Results showed a strong association between fruit juice, cereal bar, and gummy vitamin intake and early

childhood caries (ECC) involving maxillary anterior teeth in children ages 1–3. The authors point out that while parents consider these foods to be “healthy options,” they are cariogenic and should be limited in a child’s diet due to the high added sugar content. A strong association between intake of sweet tea, sports drinks, energy drinks, and fruit juice and posterior caries lesions was seen among 4- to 12-year-olds. Hence, based on the findings of this study, it can be interpreted that diet is central to children’s health and “its importance in childhood oral and general health cannot be overemphasized.”⁵

Several oral conditions including tooth erosion, oral cancer, and craniofacial development are influenced by nutrition.⁶ Diet plays a principal role in preventing other oral diseases including developmental defects, oral mucosal disease, and periodontal disease.⁶ A deficiency of dietary macronutrients and micronutrients lowers the resistance of oral tissues toward infection. Malnutrition may play a role in the etiology of the intramucosal disorder, recurrent aphthous stomatitis (RAS).⁷ It has been suggested that iron, folic acid, and vitamin B₁₂ deficiencies, frequently observed in patients with undiagnosed celiac disease, may cause RAS.⁷ Being underweight and malnourished both alter the timing and sequence of primary exfoliation and permanent tooth eruption.⁸ Children with protein-calorie malnutrition often present with delayed tooth eruption, reduced tooth size, decreased enamel solubility, and/or salivary gland dysfunction.⁹ Vitamin D and calcium deficiency leads to compromised tooth integrity, and vitamin B and iron deficiency leads to angular cheilosis.¹⁰ An observational, cross-sectional study evaluated the oral health of 82 malnourished Brazilian children ages 1–5.¹¹ Results revealed

that malnutrition negatively impacts the oral cavity as evidenced by the high prevalence of caries and a decreased salivary flow rate. A longitudinal study of 1,111 Chinese preschool children found a statistically significant negative relationship between dental caries and growth and between weight and caries, suggesting that dental caries affect the child’s ability to grow, and children who are underweight may be more susceptible to dental caries.¹²

The first 1,000 days

The child’s nutritional status during the first 1,000 days, the time period from conception until the child is 2 years of age, tremendously impacts the growth, development, and oral health status of the child.¹³ The teeth begin to form in utero with the first stage beginning in the eighth week of intrauterine life. The deciduous tooth buds appear in the first trimester of pregnancy, at the fourth week in utero, and the first permanent molars start to form during the first half of the fourth prenatal month.^{14,15} These early years are dynamic for oral development as well as physical, behavioral, and cognitive growth. When the mother consumes a nutritious and well-balanced dietary pattern during pregnancy and lactation, this provides an opportunity to influence the child’s acceptance of healthy foods, since flavors pass through amniotic fluid and breast milk. A healthy and diverse diet during pregnancy also leads to optimal fetal tissue programming and provides the child with protection against chronic diseases in adulthood.¹⁶

Research has been conducted evaluating the oral health and dietary factors during the first 1,000 days and beyond that impact the preschool child’s caries experience.¹⁷ Poor oral health and/or poor diet during pregnancy lead to poor health outcomes

for the mother and infant. A longitudinal study, based on the Norwegian Mother and Child Cohort Study, included 1,348 children followed from pregnancy to age 5.¹⁷ A clinical dental examination was performed at age 5 and questionnaires were completed by the mothers during pregnancy and in the first 18 months of their child's life. Results showed that a child with an obese mother, a mother who consumed a diet containing more fat or added sugar than recommended, a mother with low education, or a mother of non-Western origin had a statistically significant higher caries risk.¹⁷ Dental health-care providers caring for children must advocate for healthy diets during the first 1,000 days of life.¹⁸

Evidence-based nutrition guidelines and recommendations

The nutritional implications of a child's diet are key to supporting their overall and oral health. The Dietary Guidelines for Americans (DGA), the American Academy of Pediatrics (AAP), the American Academy of Pediatric Dentistry (AAPD), and the American Dental Association (ADA) provide evidence-based nutrition guidelines and recommendations for infants, children, and adolescents in order to promote health and help prevent disease. The DGA, developed by the US Department of Agriculture and the US Department of Health and Human Services, is updated every five years. The DGA plays a significant role in nutrition and oral health interventions. For the first time, the 2020–2025 DGA offers nutritional guidance to help “make every bite count” for all life stages, including infants, toddlers, and pregnant and lactating women.

Each stage of life is distinct and has unique nutritional needs that affect health and disease risk.¹⁹ Infants and toddlers ages birth to 23 months have

specific nutritional needs, including supplementation of 400 IU of vitamin D for breastfed infants soon after birth, and introducing potentially allergenic foods along with other nutrient-dense complementary foods at 6 months of age.¹⁹ Breastfed infants need foods high in iron and zinc such as fortified baby cereals, beans, soft vegetables, and soft mashed fish and beef.¹⁹ Infants at high risk for developing peanut allergy (either severe eczema or egg allergy or both) can be introduced to infant-safe forms of peanut between 4 and 6 months of age, when the infant is developmentally ready, to help prevent peanut allergy.¹⁹ Full-fat cow's milk can be introduced at 12 months.¹⁹ Added sugars, honey, foods high in sodium, and unpasteurized foods and beverages should never be given to infants.¹⁹ Since emerging evidence suggests that risk of maternal chronic disease is decreased with longer breastfeeding duration, the AAP recently revised their breastfeeding guidelines. The length of recommended breastfeeding time has been increased from 1 to 2 years of age, as long as mutually desirable by mother and child.²⁰

The next life stage in the dietary guidelines includes ages 2–18. Calorie and nutrient needs vary based on age, growth, development, and activity. Children and adolescents are encouraged to follow a healthy US-style dietary pattern, which emphasizes whole fruits and vegetables, whole grains, low-fat dairy, unsaturated fats, lean meats, poultry, and fish. Unfortunately, recent statistics from the CDC reveal that 32% of children do not eat fruit daily, 49% do not eat vegetables daily, and 57% drink sugar-sweetened beverages (SSB).²¹ When a child is eating a calorie-dense, nutrient-poor, high-sugar diet early in life, these eating behaviors significantly increase the child's risk for both

childhood obesity and ECC.²² Nutrients that are underconsumed by adolescents include calcium, vitamin D, potassium, and dietary fiber.

The amount of salt, saturated fat, and added sugar should be limited in the diets of children and adolescents. It is important to note that dietary sugars can be broken down into intrinsic sugars and added sugars. Intrinsic sugars are found in healthy foods with favorable nutrient profiles and should not be limited as part of a healthy dietary pattern. Foods with intrinsic natural sugars include: fruits, vegetables, nuts, and dairy. A healthy eating pattern limits foods and beverages with added sugars. Therefore, fresh, canned, and frozen whole foods, including fruits and vegetables, fit into a healthy dietary pattern, as long as they do not contain added salt, sugar, or saturated fats.

The action of chewing solid food is an essential motor skill that promotes craniofacial growth and muscle development, thereby helping children masticate. Nutrient-dense solid foods increase satiety, provide additional nutrients and flavors, and facilitate acceptance and tolerability of differing textures, all while promoting overall growth and healthy teeth, mandibular bones, and muscles.²³ The child and adolescent need an adequate intake of nutrient-dense foods for normal salivary function and wound-healing following oral surgery to promote a healthy oral cavity and to help lower risk for obesity and chronic disease later in life. Both the ADA and the AAPD recommend a healthy, well-balanced diet in order to support the child's oral health, general health, and well-being.

The AAPD's 2022–2023 Policy on Dietary Recommendations for Infants, Children, and Adolescents recognizes that the pediatric dentist has a potential opportunity to assess the child's dietary intake and become a

reliable source of nutrition information for the family.²⁴ Pediatric dentists have a “role in promoting well-balanced, low caries-risk, and nutrient-dense diets for infants, children, adolescents, and persons with special health-care needs. Food and flavor preferences are established when the child is young, and healthy dietary patterns during childhood and adolescence will have lifelong oral health benefits. A healthy diet is essential to optimal growth and development and prevention of chronic diet-related diseases such as caries, cardiovascular disease, and obesity.”²⁴

Approximately 40% of children and adolescents in the US are overweight or obese.¹⁹ Although the factors contributing to this issue are multifaceted, oral health-care providers can play a pivotal role in addressing obesity while promoting healthy growth and development in children. The AAP encourages pediatricians to collaborate with dental providers, monitor the child’s oral health, focus on key risk factors for dental caries, and discuss risk reduction and modifying dietary behaviors.²⁵ Oral health-care professionals can encourage parents to model healthy eating behaviors, watch portion sizes, and engage in regular physical activity. If the dentist feels that a child’s eating habits place them at an increased risk for malnutrition, any nutrition-related systemic disease, dental caries or obesity, a referral to a registered dietitian nutritionist (RDN) is warranted. The RDN is a food and nutrition professional trained to provide a detailed nutritional assessment, which includes a nutritional care plan. An important member of the health-care team, the RDN can be invaluable, particularly in explaining the role of healthy nutrient-dense foods, providing individualized nutritional counseling to meet the child’s nutritional needs, and ensuring that the child is

consuming a nutritionally balanced dietary pattern that will benefit oral and systemic health.

When children and adolescents have a high intake of added sugar, they consume an excess of calories and their dietary patterns have lower nutritional quality. Studies have linked added sugar in the diet to increased risk for caries, obesity, hypertension, diabetes, cardiovascular disease, and cancer.²⁶⁻²⁹

The DGA recommends that <10% of total energy intake should come from added sugars. Research data by Bailey et al. confirms that intake of added sugars continues to be well above these recommendations among all age groups, including children, adolescents, and teens.³⁰ This cross-sectional study confirmed that the primary source of added sugars for most of the US population (≥ 2 years) is SSB. Among children ages 2–8, SSB, sweet bakery products, and candy were the main sources of added sugars in the diet. Among adolescents and teens ages 9–18, the main sources of added sugars in their diets were ready-to-eat breakfast cereals, SSB, and breads. This research found that the type of beverages contributing to the sweetened beverage category changed with age group. Among children, juice-based and fruit beverages were the key contributors, whereas, in adolescents and teens, soda was the primary SSB.³⁰

Healthy beverage guidance

Healthy beverage choices are an integral part of a healthy dietary pattern and positively impact the child’s dental health. The AAPD, AAP, Academy of Nutrition and Dietetics, and the American Heart Association developed evidence-based guidance titled Healthy Beverage Consumption in Early Childhood.³¹ This technical report is supported by Healthy Eating Research, a national program of the

Robert Wood Foundation. This guidance provides age-specific recommendations that include breast milk or infant formula for infants from birth to 6 months, and adding a small amount of plain drinking water for infants from 6–12 months. Unflavored, unsweetened pasteurized milk along with unflavored, unsweetened fluoridated drinking water should be the go-to beverages for ages 1–5.

Introducing plain fluoridated water to the infant’s diet beginning at age 6 months provides hydration, familiarizes the child with the taste, and offers the caries-protective benefits of fluoride.³¹ Fluoridated drinking water is environmentally friendly and inexpensive, and the young child should drink water instead of SSB for oral health benefits and to help maintain a healthy body weight. If the parent chooses to offer fruit juice to the young child, a maximum of 4–6 ounces of 100% fruit juice per day is recommended.³¹ Several beverages are not recommended to children ages birth to 5 years. They include plant-based milks (unless medically indicated for cow’s milk allergy), nondairy milks, flavored milks, toddler milks, SSB, beverages with low-calorie sweeteners, and caffeinated beverages.³¹ These beverages often contain added sugars and provide no significant nutritional benefit.³¹ The dental professional can recommend the patient-friendly website healthydrinkshealthykids.org to families for further information regarding healthy beverage guidance.³¹

Reducing added sugar and ultraprocessed food intake

When children and adolescents are consuming ultraprocessed, ready-to-eat foods that include many added ingredients, including sugars, they are displacing nutrient-dense foods with calorie-rich, nutrient-poor food

choices, which negatively impacts their dental health. Examples of ultraprocessed foods that should be limited in the child's diet include: frozen prepared meals, prepackaged sandwiches, hot dogs, fries, chicken nuggets, sweetened breakfast cereals, candy, chips, doughnuts, and pastries.

A systematic review of five prospective cohort studies examined associations between consumption of sugar- and starch-containing foods and dental caries in young children and preadolescents.³ Study results found that consuming ultraprocessed snacks high in sugar and simple carbohydrates consistently resulted in a higher caries experience. There are over 60 terms for added sugars in ready-to-eat processed foods. Examples include sucrose, brown sugar, high-fructose corn syrup, corn syrup, agave, dextrose, fructose, raw sugar, honey, invert sugar, maple syrup, concentrated fruit juice, coconut sugar, and molasses.

The parent's ability to read and understand food labeling on packaged food items affects food choices. The nutrition facts label (NFL) can be a quick reference on everything from ingredients and calories to added saturated fat and sugar content, helping parents and caregivers make informed decisions on what to feed the family. The percent daily value (DV) on the food label tells how much of a nutrient in one serving contributes to daily needs. If a food or beverage contains 5% DV or lower, it is low in that nutrient. Therefore, dental professionals can encourage patients and families to select foods and beverages with less than 5% DV for added sugar.

A study published in the *Journal of the Academy of Nutrition and Dietetics* included a large national sample of over 1,000 participants and found that consumers were concerned about added sugars in foods, and

they were able to accurately gauge the amount of added sugar in a processed food by reading the NFL.³² Unfortunately, the results also showed that the NFL does not reveal the amount of refined carbohydrates in the food and “may increase intent to purchase products low in added sugars but high in refined carbohydrates—an unintended consequence that warrants further study.”³²

The dental professional plays a fundamental role in educating families to decrease intake of all foods that are high in added sugars and refined carbohydrates, while integrating evidence-based nutrition recommendations into individualized, comprehensive oral health-care messages.

Conclusion

Science demonstrates that a child's oral health is complex, multifactorial, and greatly impacted by diet. Dietary habits are key to supporting the overall and oral health of infants, children, and adolescents. Families face challenges when providing nutrition to young children, and dental professionals are uniquely positioned to offer guidance. They can provide tips for establishing healthy lifelong eating and oral health-care habits when it matters most, during those first 1,000 days of life, all the way through to adolescence. While specific nutritional requirements vary during different stages of growth, a nutrient-dense food and beverage pattern provides the foundation for a healthy oral cavity, plays a key role in the child's long-term oral health status, and impacts the child's overall growth and development.

Parents and caregivers generally understand that sugar in the diet contributes to caries, but there is confusion surrounding the association between ultraprocessed food, SSBs, and dental caries in children and adolescents. Considering that

poor nutrition is associated with an increased risk of developing caries, obesity, dyslipidemia, and diabetes, it is both important and timely for the oral health professional to implement dietary interventions as part of the clinical treatment plan for all of their pediatric patients and consider a referral to an RDN. Good childhood oral health care and nutrition work synergistically and are integral to help mitigate and reduce risks of both oral and chronic diseases. The nutritional toolbox for promoting optimal oral health has expanded, and dental professionals can and should incorporate nutritional screening and counseling into dental practice.

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dietitian in private practice who worked as a nutrition consultant to dentists in Maryland for over three decades. Ellen is a spokesperson for the American Dairy Association North East and a nationally recognized speaker. She has authored and coauthored numerous journal articles including "Dental and oral considerations in pediatric celiac disease," published in the *Journal of Dentistry for Children*. Ellen is the coauthor of several dental online continuing education courses.



Sara Karlin, DDS, is a board-certified pediatric dentist working as adjunct faculty at Arizona School of Dentistry and Oral Health and in private practice in Phoenix. She is a nationally invited speaker and the primary author of "Dental and oral considerations in pediatric celiac disease," published in the *Journal of Dentistry for Children*. Dr. Karlin is coauthor of a variety of online continuing education courses for oral health-care professionals.



Ellen Karlin, MMSc, RDN, LDN, FADA, is a registered

QUESTIONS

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- The most prevalent chronic disease among children ages 6–19 is:
 - Allergy
 - Asthma
 - Autism
 - Dental caries
- What percentage of children under 12 have untreated caries in their primary teeth?
 - 5%
 - 8%
 - 15%
 - 18%
- What percentage of children ages 6–11 have tooth decay in their permanent teeth?
 - 5%
 - 8%
 - 15%
 - 18%
- A recent study published in *Pediatric Dentistry* found:
 - Diet is not central to a child's health.
 - Consumption of cereal bars by young children was associated with ECC.
 - There was not a strong association between fruit juice intake and posterior caries lesions.
 - There was not a strong association between fruit juice intake by young children and ECC.
- Poor eating behaviors in young children:
 - Increase the child's risk for both childhood obesity and ECC
 - Do not significantly increase the child's risk for ECC.
 - Do not significantly increase the child's risk for obesity.
 - Do not impact the child's growth and development.
- A child's diet plays a principal role in preventing:
 - Developmental defects
 - Oral mucosal disease
 - Periodontal disease
 - All of the above
- Which of the following nutrient deficiencies may be the cause of RAS?
 - Calcium and vitamin D
 - Dietary fiber
 - Iron, folic acid, and vitamin B₁₂
 - All of the above
- Protein-calorie malnutrition in childhood can lead to:
 - Delayed tooth eruption and decreased enamel solubility
 - Reduced tooth size and salivary gland dysfunction
 - Both A and B
 - None of the above
- A longitudinal study of 1,111 Chinese preschool children found a statistically significant negative relationship between:
 - Dental caries and the child's growth and development
 - Dental caries and the mother's diet
 - Dental caries and oral home care
 - None of the above
- What are the first 1,000 days of life?
 - The time period from the child's birth date until the child is 2 years, 9 months old
 - The time period from conception until the child is 2 years of age
 - The time period from when the child begins to eat solid food until 3 years of age
 - None of the above
- At what age do the child's teeth begin to form?
 - During the first trimester of pregnancy
 - During the second trimester of pregnancy
 - During the last trimester of pregnancy
 - When the infant is 3 months old
- According to data from the Norwegian Mother and Child Cohort Study, which of the following factors significantly increases a child's caries risk at age 5?
 - An obese mother
 - A mother consuming more sugar or fat than recommended during pregnancy
 - A mother with low education level
 - All of the above
- Which of the following is recommended for an infant at high risk of developing a peanut allergy?
 - Avoid peanuts until 18 months of age
 - Avoid peanuts until 3 years of age
 - Introduce infant-safe forms of peanuts at 4–6 months of age
 - Introduce infant-safe forms of peanuts at 12–18 months of age
- Which of these should never be given to infants?
 - Unpasteurized foods and beverages
 - Added sugars and foods high in sodium
 - Honey
 - All of the above
- Which of the following is part of the AAP's revised breastfeeding guidelines?
 - Breastfeeding time has been increased from 1 to 2 years of age.
 - Breastfeeding time has been increased from 1 to 3 years of age.
 - Breastfeeding time has been decreased from 1 year to 6 months.
 - Breastfeeding time has remained the same—1 year.
- The action of chewing solid food is an essential motor skill that helps the child:
 - Develop the ability to masticate food
 - Promote craniofacial growth
 - Promote oral muscle development
 - All of the above
- When should the dental professional refer the family to a registered dietitian?
 - When the child is at increased risk for malnutrition
 - When the child is at increased risk for dental caries or obesity
 - When the child is at increased risk for nutrition-related systemic disease
 - All of the above
- Nutrient needs for ages 2–18 vary based on:
 - Age, growth, development, and activity
 - Culture and tradition
 - Budget
 - Family size and income level
- Children and adolescents are encouraged to follow which dietary pattern?
 - A healthy vegan dietary pattern
 - A healthy dairy-free dietary pattern
 - A healthy US-style dietary pattern
 - A healthy low-carbohydrate dietary pattern

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PROVIDER INFORMATION

Dental Board of California: Provider RP5933. Course registration number CA code: 03-5933-22233. Expires 7/31/2024. "This course meets the Dental Board of California's requirements for three (3) units of continuing education."



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20. Which of the following foods are nutrient-dense?

- A. Fresh fruits and vegetables
- B. Canned fruits and vegetables
- C. Frozen fruits and vegetables
- D. All of the above

21. Which of the following should be limited as part of a healthy dietary pattern?

- A. All foods and beverages with added sugars, saturated fat, sodium
- B. Most foods with added sugars
- C. All foods and beverages not labeled "healthy" on the food label
- D. Most foods and beverages not labeled "healthy" on the food label

22. Which nutrients are underconsumed by adolescents?

- A. Proteins
- B. Calcium, vitamin D, potassium, and dietary fiber
- C. All vitamins
- D. Sodium and saturated fats

23. Approximately what percentage of children and adolescents in the US are overweight or obese?

- A. 10%
- B. 20%
- C. 40%
- D. 50%

24. What can oral health-care professionals do to promote weight control for children and adolescents?

- A. Recommend a weight-loss diet
- B. Recommend a weight-loss app
- C. Encourage healthy, nutrient-dense foods, along with increased physical activity
- D. None of the above

25. Which of these statements are not acknowledged by the American Academy of Pediatric Dentistry?

- A. Pediatric dentists have a role in promoting well-balanced, low-caries-risk, and nutrient-dense diets for infants, children, and adolescents.
- B. A healthy diet is essential to the prevention of caries.
- C. Food and flavor preferences are established when a child is young.
- D. A healthy diet for children is low in carbohydrates.

26. The Healthy Beverage Consumption in Early Childhood guidance does not recommend:

- A. Plain pasteurized milk and plain fluoridated water for children ages 1–5
- B. 1 cup 100% fruit juice per day for children ages 1–5
- C. Plant-based milks and toddler milks for children ages 1–5
- D. Both B and C

27. What is the recommended added sugar consumption level?

- A. < 4% of the total caloric intake
- B. < 10% of the total caloric intake
- C. < 4% of total carbohydrate intake
- D. < 10% total carbohydrate intake

28. The primary source of added sugar in a child's diet is:

- A. SSB
- B. Candy
- C. Breakfast cereals
- D. Snack bars

29. Which of the following contain added sugars and should be limited in a child's diet?

- A. Milk and dairy
- B. Fresh fruit
- C. Molasses and coconut sugar
- D. Whole grains

30. Which of the following does not contribute to a child's caries risk?

- A. Frequent juice consumption throughout the day
- B. Going to sleep with a bottle
- C. Snacking on cheese, yogurt, and cottage cheese
- D. Snacking on crackers and pretzels

How nutrition can support a child’s health

NAME:	TITLE:	SPECIALTY:	
ADDRESS:	EMAIL:	AGD MEMBER ID (IF APPLIES):	
CITY:	STATE:	ZIP:	COUNTRY:
TELEPHONE (PRIMARY):	TELEPHONE (OFFICE):		

REQUIREMENTS FOR OBTAINING CE CREDITS BY MAIL/FAX: 1) Read entire course. 2) Complete info above. 3) Complete test by marking one answer per question. 4) Complete course evaluation. 5) Complete credit card info or write check payable to Endeavor Business Media. 6) Mail/fax this page to DACE.

If you have any questions, please contact dace@endeavorb2b.com or call (800) 633-1681. A score of 70% or higher is required for CE credit.

COURSE CAN ALSO BE COMPLETED ONLINE AT A LOWER COST. Scan the QR code or go to dentalacademyofce.com to take advantage of the lower rate.



EDUCATIONAL OBJECTIVES

- Discuss the synergistic relationship between the child’s diet and oral health
- Formulate how to address the nutritional needs of the pediatric dental patient
- Explain the emerging body of science supporting the association of a healthy eating pattern to preventing oral disease in childhood
- Discuss the current evidence-based nutrition recommendations for children and adolescents that can be integrated into individualized, comprehensive oral health care messages

COURSE EVALUATION

- Were the individual course objectives met?

Objective #1: Yes No	Objective #3: Yes No
Objective #2: Yes No	Objective #4: Yes No

Please evaluate this course by responding to the following statements, using a scale of Excellent = 5 to Poor = 0.

- | | | | | | | |
|--|-----|----|---|---|---|---|
| 2. To what extent were the course objectives accomplished overall? | 5 | 4 | 3 | 2 | 1 | 0 |
| 3. Please rate your personal mastery of the course objectives. | 5 | 4 | 3 | 2 | 1 | 0 |
| 4. How would you rate the objectives and educational methods? | 5 | 4 | 3 | 2 | 1 | 0 |
| 5. How do you rate the author’s grasp of the topic? | 5 | 4 | 3 | 2 | 1 | 0 |
| 6. Please rate the author’s effectiveness. | 5 | 4 | 3 | 2 | 1 | 0 |
| 7. Was the overall administration of the course effective? | 5 | 4 | 3 | 2 | 1 | 0 |
| 8. Please rate the usefulness and clinical applicability of this course. | 5 | 4 | 3 | 2 | 1 | 0 |
| 9. Please rate the usefulness of the references. | 5 | 4 | 3 | 2 | 1 | 0 |
| 10. Do you feel that the references were adequate? | Yes | No | | | | |
| 11. Would you take a similar course on a different topic? | Yes | No | | | | |

12. If any of the continuing education questions were unclear or ambiguous, please list them.

13. Was there any subject matter you found confusing? Please describe.

14. How long did it take you to complete this course?

15. What additional dental continuing education topics would you like to see?

Mail/fax completed answer sheet to:

Endeavor Business Media

Attn: Dental Division; 7666 E. 61st St. Suite 230, Tulsa, OK 74133
Fax: (918) 831-9804

Payment of \$69 is enclosed (this course can be completed online for \$39. Scan the QR code or go to dentalacademyofce.com to take advantage of the lower rate).

Make check payable to Endeavor Business Media

If paying by credit card, please complete the following:

MC Visa AmEx Discover

Acct. number: _____

Exp. date: _____ CVC #: _____

Billing address: _____

Charges on your statement will show up as Endeavor.

- | | |
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| 1. (A) (B) (C) (D) | 16. (A) (B) (C) (D) |
| 2. (A) (B) (C) (D) | 17. (A) (B) (C) (D) |
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| 8. (A) (B) (C) (D) | 23. (A) (B) (C) (D) |
| 9. (A) (B) (C) (D) | 24. (A) (B) (C) (D) |
| 10. (A) (B) (C) (D) | 25. (A) (B) (C) (D) |
| 11. (A) (B) (C) (D) | 26. (A) (B) (C) (D) |
| 12. (A) (B) (C) (D) | 27. (A) (B) (C) (D) |
| 13. (A) (B) (C) (D) | 28. (A) (B) (C) (D) |
| 14. (A) (B) (C) (D) | 29. (A) (B) (C) (D) |
| 15. (A) (B) (C) (D) | 30. (A) (B) (C) (D) |

CUSTOMER SERVICE: (800) 633-1681

EXAM INSTRUCTIONS. All questions have only one answer. If mailed or faxed, grading of this examination is done manually. Participants will receive confirmation of passing by receipt of a Verification of Participation form. The form will be mailed within two weeks after receipt of an examination.

COURSE EVALUATION AND FEEDBACK. We encourage participant feedback. Complete the evaluation above and e-mail additional feedback to Rachel McIntyre (rmcintyre@endeavorb2b.com) and Laura Winfield-Roy (lwinfield@endeavorb2b.com).

COURSE CREDITS AND COST. All participants scoring 70% or higher on the examination will receive a verification form for three (3) continuing education (CE) credits. Participants are urged to contact their state dental boards for CE requirements. The cost for courses ranges from \$20 to \$110.

CANCELLATION AND REFUND POLICY. Participants who are not 100% satisfied can request a refund by contacting Endeavor Business Media in writing.

RECORD KEEPING. Endeavor Business Media maintains records of your successful completion of any exam for a minimum of six years. Please contact our offices for a copy of your CE credits report. This report, which will list all credits earned to date, will be generated and mailed to you within five business days of receipt.

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Dental Board of California: Provider RP9833. Course registration number CA code: . Expires 7/31/2024.

This course meets the Dental Board of California’s requirements for three (3) units of continuing education.

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