

Child and Adolescent Oral Health Issues



“**H**ealth and education go hand in hand:
one cannot exist without the other.

To believe any differently is to hamper progress. Just as our children have a right to receive the best education available, they have a right to be healthy. As parents, legislators, and educators, it is up to us to see that this becomes a reality.”

*Antonia Novello, M.D.
Former U.S. Surgeon General*

Dental Caries

Approximately 21 percent of children have untreated dental caries (tooth decay) in their primary teeth. Non-Hispanic black and Mexican-American children (27 percent and 31 percent, respectively) have a higher prevalence of untreated tooth decay than non-Hispanic white children (18 percent).¹

Children and adolescents from families with low incomes are more than twice as likely to have untreated tooth decay in their permanent teeth as those from families with higher incomes.^{2,3}

Prevention of tooth decay in children and adolescents involves a range of population- and individual-level strategies, such as community water fluoridation, topical fluorides (e.g., fluoride toothpaste, fluoride varnish, fluoride mouthrinse), dental sealants, education, and dietary interventions.⁴



Access to Care

The need for oral health care is the most prevalent unmet health care need among children and adolescents.⁵

One out of every 16 children in the United States—4.6 million—does not receive needed oral health care because the family cannot afford it.⁶

Children and adolescents without insurance are more than six times as likely to have unmet oral health needs as those with private health insurance and more than four times as likely as children with Medicaid or other public coverage.⁷

Thirty-three percent of children and adolescents without insurance have not had a dental visit for more than 2 years (including those who have not had a dental visit) compared with 12 percent of those with Medicaid coverage and 12 percent of those with private dental insurance.⁷

Non-Hispanic white children are more likely to have had a dental visit in the past 6 months (67 percent) than non-Hispanic black (55 percent) or Hispanic (57 percent) children.⁸

Less than 37 percent of children enrolled in Medicaid receive oral health services under that program, and several states have reported rates of 30 percent or less.⁸





For children and adolescents who rarely visit a dentist, non-oral-health professionals (physicians, nurse practitioners) may be in the best position to provide oral health screening and risk assessment, preventive measures, and education.²

In a poll of nearly 1,200 adolescents, respondents frequently mentioned that having access to affordable, convenient, and high-quality oral health care would make health services more helpful.⁹

States can reduce the number and cost of children's hospital visits for urgent oral health care and can improve children's oral health by making modest investments to improve access to preventive care. For example, by increasing the likelihood that more young children see a dentist, states can reduce costs from future decay or related problems.¹⁰

State-supported or state-operated mobile or portable programs have provided preventive oral health services in 22 states and restorative oral health services in 30 states.¹¹ Some programs provide screenings or examinations for school entry, triage for establishing priorities for onsite care or referrals to care in the community, or both.

Oral health services can be delivered in a school room with stationary or portable equipment or in a mobile van parked at the school.¹²



Children and Adolescents with Special Health Care Needs

Compared to all other health care services, oral health care is the most prevalent unmet health care need among children and adolescents with special health care needs. Unmet oral health care needs affect about twice as many children and adolescents as unmet mental health care needs.¹³

According to parents, children and adolescents with special health care needs without insurance and from families with low incomes are more likely not to receive the health care services they need. Those from families living below the federal poverty level (FPL) are three times more likely not to receive the services they need as their counterparts from families with incomes of 400 percent FPL or more (25 percent vs. 7 percent).¹⁴

More than half of dental schools provide students with less than 5 hours of classroom instruction, and less than 5 percent of clinical time, related to children and adolescents with special health care needs.¹⁵

Hands-on educational experiences in dental school significantly impact dentists' perceptions of barriers to care for children and adolescents with special health care needs.¹⁶



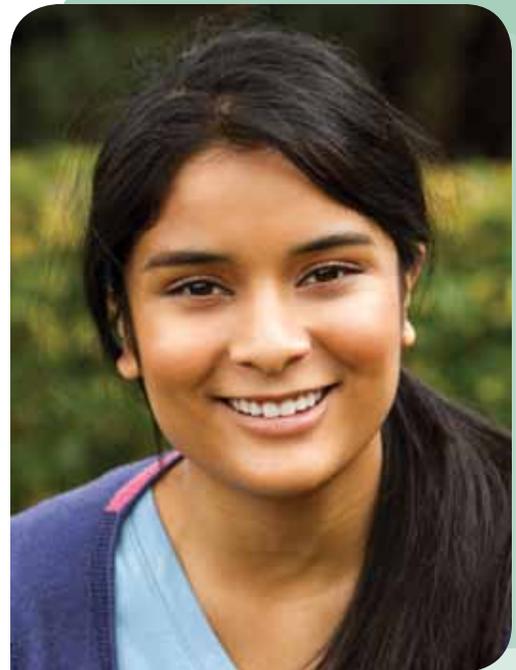
Dental Sealants

Dental sealants are an effective tool in both preventing tooth decay and stopping the progression of the disease. Placing dental sealants on the chewing surfaces of molars with early signs of decay significantly lowers the probability that decay will progress, compared with the progression for similar teeth that have not been sealed. This benefit may last as long as 5 years.^{4,17}

Although children from families with low incomes are almost twice as likely to have tooth decay as those from families with high incomes, those from families with low incomes are only half as likely to have dental sealants.¹⁸

Non-Hispanic black and Mexican-American children and adolescents have a significantly lower prevalence of dental sealants than non-Hispanic white children and adolescents.^{5,6}

School-based dental sealant programs are an important and effective public health approach that complements clinical care systems in promoting the oral health of children and adolescents.¹⁹



Fluorides

Fluoride prevents tooth decay, and the most cost-effective way to deliver the benefits of fluoride to all community residents is through water fluoridation.¹⁸

In communities with more than 20,000 residents, every \$1 invested in community water fluoridation yields about \$38 in savings each year from fewer cavities treated.¹⁸

Community water fluoridation decreases tooth decay by 29 percent to 51 percent in children and adolescents.²⁰

Brushing teeth twice daily with fluoridated toothpaste is effective in preventing tooth decay in children and adolescents.^{21,22}

Use of professionally applied fluoride should be based on a child's or adolescent's risk for caries and is most effective when applied to the teeth before tooth decay develops.²³

Children and adolescents who have high levels of tooth decay and live in communities with low fluoride levels in the water may experience substantial tooth-decay-preventive benefits from participating in school-based fluoride mouthrinse programs long term.²⁴



Nutrition

Sugar consumption, whether measured in frequency or amount, is a powerful indicator of caries risk among individuals without regular exposure to fluoride (e.g., via drinking water, toothpaste, varnish). Among most children and adolescents with good exposure to fluoride, sugar consumption is a mild to moderate caries risk factor. Hence, efforts to prevent excessive consumption of sugar is an important component of caries prevention.²⁵

2010 Dietary Guidelines for Americans recommends reducing intake of foods and drinks with added sugars (sweeteners added to processed and prepared foods); however, approximately 16 percent of children's and adolescents' daily caloric intake contains added sugar.²⁶

Children and adolescents with missing teeth may have chewing problems that limit their food choices and result in nutritionally inadequate diets.²⁷

Inadequate nutrition during childhood can have detrimental effects on children's cognitive development and on productivity in adulthood. Nutritional deficiencies also negatively affect children's school performance, their ability to concentrate and perform complex tasks, and their behavior.²⁸

Targeted marketing and easy access to foods and beverages high in sugar may increase children's and adolescents' risk for tooth decay and negatively impact their overall health.²⁹

More effort is needed to facilitate access to affordable, healthy foods for children from families with low incomes, particularly in urban and rural neighborhoods, and to effect positive changes in children's diets.³⁰



Injury and Violence

By age 16, 35 percent of children and adolescents will have sustained dental trauma at least once.³¹

Cranofacial, head, face, and neck injuries occur in more than half of the cases of child abuse.³¹

Physical or sexual abuse may result in oral or dental injuries or conditions.³¹

Used during sports, mouth guards offer a substantial degree of protection to the teeth and oral soft tissues and also protect children and adolescents from concussion.³²



Tobacco

Exposure to environmental tobacco smoke increases children's risk for tooth decay and for defective enamel formation.^{33,34}

Maternal tobacco use is associated with congenital disabilities such as cleft palate and cleft lips.³⁵

Although middle-school-age children's and adolescents' use of cigarettes and cigars has decreased, their use of smokeless tobacco and pipes has not.³⁶

References

- Beltrán-Aguilar ED, Barker LK, Canto MT, Dye BA, Gooch BF, Griffin SO, Hyman J, Jaramillo F, Kingman A, Nowjack-Raymer R, Selwitz RH, Wu T. 2005. Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel fluorosis—United States, 1988–1994 and 1999–2002. *Morbidity and Mortality Weekly Report: Surveillance Summaries* 54(3):1–44. <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5403a1.htm>.
- Griffin SO, Oong E, Kohn W, Vidakovic B, Gooch BF; CDC Dental Sealant Systematic Review Work Group, Bader J, Clarkson J, Fontana MR, Meyer DM, Rozier RG, Weintraub JA, Zero DT. 2008. The effectiveness of sealants in managing caries lesions. *Journal of Dental Research* 87(2):169–174. <http://www.ncbi.nlm.nih.gov/pubmed/18218845>.
- Dye BA, Tan S, Smith V, Lewis BG, Barker LK, Thornton-Evans G, Eke PI, Beltrán-Aguilar ED, Horowitz AM, Li CH. 2007. Trends in oral health status: United States, 1988–1994 and 1999–2004. *Vital and Health Statistics* 11(248):1–92.
- Tomar SL, Reeves AF. 2009. Changes in the oral health of U.S. children and adolescents and dental public health infrastructure since the release of the *Healthy People 2010* objectives. *Academic Pediatrics* 9(6):388–395. http://www.sandrakalilbussadori.com.br/adm/conteudo/public/meus_arquivos/165_Changes_in_the_Oral_Health.pdf.
- Newacheck PW, McManus M, Fox HB, Hung YY, Halfon N. 2000. Access to health care for children with special health care needs. *Pediatrics* 105(4):760–766.
- Institute of Medicine. 2011. *Improving Access to Oral Health Care for Vulnerable and Underserved Populations*. Washington, DC: Institute of Medicine. <http://www.iom.edu/~media/Files/Report%20Files/2011/Improving-Access-to-Oral-Health-Care-for-Vulnerable-and-Underserved-Populations/oralhealthaccess2011reportbrief.pdf>.
- Bloom B, Cohen RA, Freeman G. 2011. Summary health statistics for U.S. children: National Health Interview Survey, 2010—Data from the National Health Interview Survey. *Vital Health Statistics* 10(250):1–77. http://www.cdc.gov/nchs/data/series/sr_10/sr10_250.pdf.
- U.S. Government Accountability Office. 2010. *Oral Health: Efforts Under Way to Improve Children's Access to Dental Services, But Sustained Attention Needed to Address Ongoing Concerns*. Washington, DC: U.S. Government Accountability Office. <http://www.gao.gov/assets/320/312818.pdf>.
- Institute of Medicine. 2009. *Adolescent Health Services: Missing Opportunities*. Washington, DC: The National Academies Press. <http://www.nap.edu/openbook.php?isbn=0309114675>.
- Pew Center on the States. 2012. *A Costly Dental Destination: Hospital Care Means States Pay Dearly*. Washington, DC: Pew Center on the States. http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/State_policy/Pew_Report_A_Costly_Dental_Destination.pdf.
- Association of State and Territorial Dental Directors. 2011. *Summary Report: Synopses of State Dental Public Health Programs—Data for FY 2009–2010*. Jefferson City, MO: Association of State and Territorial Dental Directors. http://www.astdd.org/docs/State_Synopsis_Report_SUMMARY_2011.pdf.
- Association of State and Territorial Dental Directors. 2012. *School-Based or School-Linked Mobile or Portable Dental Services: Policy Statement*. Sparks, NV: Association of State and Territorial Dental Directors. http://www.astdd.org/docs/School-Based_or_School-Linked_Mobile_or_Portable_Dental_Services_Policy_Statement_February_28_2012.pdf.
- Lewis C. 2009. Dental caries and children with special health care needs: A population-based perspective. *Academic Pediatrics* 9(6):420–426. [http://www.academicpedsjnl.net/article/S1876-2859\(09\)00253-8/fulltext](http://www.academicpedsjnl.net/article/S1876-2859(09)00253-8/fulltext).
- Maternal and Child Health Bureau. 2008. *The National Survey of Children with Special Health Care Needs: A Chartbook 2005–2006*. Rockville, MD: Maternal and Child Health Bureau. <http://mchb.hrsa.gov/cshcn05>.
- Romer M, Dougherty N, Amores-Lafleur E. 1999. Predoctoral education in special care dentistry: Paving the way to better access? *Journal of Dentistry for Children* 66(2):132–135.
- Casamassimo PS, Seale S, Ruehns K. 2004. General dentists' perceptions of educational and treatment issues affecting access to care for children with special health care needs. *Journal of Dental Education* 68(1):23–28.
- Beauchamp BJ, Caufield PW, Crall JJ, Donly K, Feigal R, Gooch B, Ismail A, Kohn W, Siegal M, Simonsen R; American Dental Association, Council on Scientific Affairs. 2008. Evidence-based clinical recommendations for the use of pit-and-fissure sealants: A report of the American Dental Association, Council on Scientific Affairs. *Journal of the American Dental Association* 139(3):257–268. <http://jada.ada.org/cgi/content/abstract/139/3/257>.
- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Oral Health. 2011. *Oral Health: Preventing Cavities, Gum Disease, Tooth Loss, and Oral Cancers—At a Glance*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Oral Health. <http://www.cdc.gov/chronicdisease/resources/publications/AAG/doh.htm>.
- Gooch BF, Griffin SO, Gray SK, Kohn WG, Rozier RG, Siegal M, Fontana M, Brunson D, Carter N, Curtis DK, Donly KJ, Haering H, Hill LF, Pitts Hinson H, Kumar J, Lampiris L, Mallatt M, Meyer DM, Miller WR, Sanzi-Schaedel SM, Simonsen R, Truman BI, Zero DT. 2009. Preventing dental caries through school-based sealant programs: Updated recommendations and reviews of evidence. *Journal of the American Dental Association* 140(11):1356–1365. <http://jada.ada.org/content/140/11/1356.abstract>.
- Task Force on Community Preventive Services. 2002. *Guide to Community Preventive Services: Oral Health*. Atlanta, GA: Centers for Disease Control and Prevention, Community Guide Branch.
- Ramos-Gomez F, Crystal YO, Ng MW, Tinanoff N, Featherstone JD. 2010. Caries risk assessment, prevention, and management in pediatric dental care. *General Dentistry* 58(6):505–517. http://www.hdassoc.org/site/files/351/25562/384806/527293/Caries_Risk_Assessment.pdf.
- Wong MCH, Clarkson J, Glenny AM, Lo ECM, Marinho VSS, Tsang BWK, Walsh T, Worthington HV. 2011. Cochrane review on the benefits/risk of fluoride toothpastes. *Journal of Dental Research* 90(5):573–579.
- American Dental Association, Council on Scientific Affairs. 2006. Professionally applied topical fluoride: Evidence-based clinical recommendations. *Journal of the American Dental Association* 137(8):1151–1159.
- Divaris K, Rozier RG, King RS. 2012. Effectiveness of a school-based fluoride mouthrinse program. *Journal of Dental Research* 91(3):282–287.
- Burt BA, Pai S. 2001. Sugar consumption and caries risk: A systemic review. *Journal of Dental Education* 65(10):1017–1023.





26. Ervin RB, Kit BK, Carroll MD, Ogden CL. 2012. *Consumption of Added Sugar Among U.S. Children and Adolescents, 2005–2008*. Hyattsville, MD: National Center for Health Statistics. http://www.cdc.gov/nchs/data/data_briefs/db87.htm.
27. U.S. Department of Health and Human Services. 2000. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: National Institute of Dental and Craniofacial Research. <http://silk.nih.gov/public/hck1ocv/www.surgeon.fullrpt.pdf>.
28. Tufts University, Center on Hunger, Poverty and Nutrition Policy. 1994. *Statement on the Link Between Nutrition and Cognitive Development in Children*. Medford, MA: Tufts University, Center on Hunger, Poverty and Nutrition Policy. <http://www.eric.ed.gov/PDFS/ED374903.pdf>.
29. American Academy of Pediatric Dentistry, Council on Clinical Affairs. 2009. Policy on vending machines in schools. *Pediatric Dentistry* 30(7):49–50.
30. Mobley C, Marshall TA, Milgrom P, Coldwell SE. 2009. The contribution of dietary factors to dental caries and disparities in caries. *Academic Pediatric Association* 9(6):410–414.
31. Kellogg N; American Academy of Pediatrics, Committee on Child Abuse and Neglect; American Academy of Pediatric Dentistry, Ad Hoc Work Group on Child Abuse and Neglect. 2005. Oral and dental aspects of child abuse and neglect. *Pediatrics* 116(6):63–66. <http://pediatrics.aappublications.org/content/116/6/1565.full>.
32. Sullivan, JA, Anderson SJ, eds. 2000. *Care of the Young Athlete*. Rosemont, IL: American Academy of Pediatrics and American Academy of Orthopaedic Surgeons.
33. Aligne CA, Moss ME, Auinger P, Weitzman M. 2003. Association of pediatric dental caries with passive smoking. *The Journal of the American Medical Association* 289(10):1258–1264. <http://www.ncbi.nlm.nih.gov/pubmed?term=Aligne%20CA%2C%20Moss%20ME%2C%20Auinger%20P%2C%20Weitzman%20M.%20Associa-%20tion%20of%20pediatric%20dental%20caries%20with%20passive%20smoking>. http://www.aapd.org/media/Policies_Guidelines/P_TobaccoUse.pdf.
34. Ford D, Seow WK, Kazoullis S, Holcombe T, Newman B. 2009. A controlled study of risk factors for enamel hypoplasia in the permanent dentition. *Pediatric Dentistry* 31(5):382–388. <http://www.ncbi.nlm.nih.gov/pubmed/19947132>.
35. Little J, Cardy A, Munger RG. 2004. Tobacco smoking and oral clefts: A meta-analysis. *Bulletin of the World Health Organization* 82(30):213–218.
36. Centers for Disease Control and Prevention. 2011. *Smoking & Tobacco Use: Bidis and Kreteks* [web page]. <http://www.cdc.gov/tobacco/data%5Fstatistics/fact%5Fsheets/tobacco%5Findustry/bidis%5Fkreteks>.

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