The relationship between birthweight and length and the risk of dental caries at age 61 months was weak and cannot be considered causal.

**Background:** Traditionally, the development of dental caries has been considered separate from systemic diseases. This has caused a disregard for research showing important relationships and causal mechanisms. To date, only 5 in-depth studies have been published. However, these were found to have methodological flaws, were cross-sectional in nature, used post intervention comparisons, or failed to have adequate control populations. Therefore, it is important that a cohort study establish whether a relationship exists between caries and growth and to examine in greater depth the size, nature and direction of this association.

**Objective:** To examine the association between growth and the presence of dental caries.

**Design:** Longitudinal, population-based prospective cohort study.

**Participants:** 985 children, of whom almost a quarter had ≥1 carious lesion by age 5 years.

**Methods:** Data were used from the Avon Longitudinal Study of Parents and Children (ALSPAC) study. Pregnant women with an expected date of delivery between April 1, 1991, and December 31, 1992, who were residents in the former Avon health authority in South West England, were eligible for the study. In all, 14,541 pregnancies were enrolled. A 10% sample of these were dentally examined and measured at age 61 months (or 5 years). Birthweight was obtained from medical records, and birth length and birthweight were assessed by trained ALSPAC measurers. A number of social and lifestyle factors were treated as potential mediating factors.

**Results:** Of children, 242 (24.6%) had caries at 61 months of age. After adjustment, increased weight at birth was associated with a small increased risk of caries at 61 months (odds ratio [OR] 1.08 [95% CI, 1.03 to 1.13] per 100 g increase, *P*=0.002). A similar association was recorded with respect to increased length at birth. A child’s current weight and height did not appear to be associated with caries risk. Children who had caries at age 61 months had slower increases in weight and height between birth and 61 months than those without decay at 61 months.

**Conclusions:** This study found only weak associations between weight and length at birth and risk of caries at age 61 months; therefore, it cannot be considered causal. However, the relationship between the variables warrants further investigation.

**Reviewer’s Comments:** While the researchers of this study did not find more conclusive data in support of growth rates and caries risk in children, their study results and conclusions will provide a springboard into next series research that may help dental professionals more definitively assess early childhood caries risk. (Reviewer-Joel Berg, DDS).

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**Keywords:** Birthweight, Dental Caries, Growth

**Print Tag:** Refer to original journal article
A well-crafted and executed investigation with appropriate statistical analysis will produce questionable findings if the investigation model does not adequately mimic real-world clinical situations.

**Objective:** To review a randomized controlled trial that assessed the response of direct pulp caps on deeply decayed primary molars. **Discussion:** Nicola Innes, author of this commentary, wrote that it was helpful to encounter a randomized controlled trial of reasonable design in an area where evidence was lacking. However, a more careful review of the study paper by Innes revealed that, although the investigation had few flaws in execution or design, the model assessed compromised the validity of the study's findings. Garrocho-Rangel et al (Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009 May; 107(5):733-8) assessed the response of direct pulp caps on deeply decayed primary molars. At first glance this appeared to be a suitable model for assessing outcomes of direct pulp capping. However, perhaps to expedite collection of the sample, investigators removed all caries and then made a standardized, noncarious pulp exposure in each of the molars that was then covered with either enamel matrix derivative or calcium hydroxide and restored with a stainless steel crown. Follow-up at 1 year showed good results whether calcium hydroxide or enamel matrix derivative was used to cap the pulp exposure. However, it was significant that the investigators created standardized, noncarious exposures for each of the teeth as no pulp exposures occurred during treatment of the teeth. The lack of pulp exposures during the process of caries removal suggests that the molars in the sample were likely not in need of pulp therapy from the outset. The healthy state of the pulp at the time of exposure likely was responsible for the successful direct pulp caps with either enamel matrix derivative or calcium hydroxide.

**Reviewer's Comments:** The lesson that this paper provides is that in critiquing a paper, one should not only check that the experimental design and statistics employed are sound, but also that the clinical question is modeled in a way that reflects the real-life clinical situation. Designing a clinical trial is always a tug-of-war between competing values: mimicking the clinical situation as closely as possible and limiting experimental variability. Investigators of this experiment did not achieve the necessary balance between those values. Although their experimental model allowed rigorous and efficient collection of data, it bore little connection to the clinical situation that it intended to investigate. Clinicians don't prepare standardized pulp exposures in healthy dental pulps through noncarious dentin. Rather, carious or mechanical exposures often occur when the clinician is unsure of the pulp status and consequently, techniques such as pulpotomy are utilized to favor known and predictable outcomes. As a result, Innes rightly concluded that despite favorable statistical findings, clinicians should consider alternative techniques to the direct pulp cap for deep carious lesions in asymptomatic primary teeth. (Reviewer-Michael J. Casas, DDS).

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Keywords: Direct Pulp Cap, Enamel Matrix Derivative, Calcium Hydroxide

Print Tag: Refer to original journal article
Computer recognition systems are accurate and reliable in recognizing anatomic features on cephalograms of preadolescent children.

**Background:** Automatic computer recognition of scanned cephalometric radiographs will be a useful tool in decreasing the effort necessary to diagnose patient craniofacial relationships.

**Objective:** To assess a system designed to identify cephalometric landmarks and then compare its effectiveness to human tracings.

**Participants/Methods:** Cephalometric radiographs of 400 permanent and 459 mixed dentition patients were utilized. Of mixed dentition radiographs, 59 were for system assessment, while the other 800 were for system development. Utilizing a system previously reported for the permanent dentition and modified to better enable use in preadolescent patients, the study was conducted by having the areas of each anatomic structure surrounding the anatomic landmarks and positions were compared with the norms in the form of confidence ellipses. Success rates were then calculated.

**Results:** The permanent dentition system, mixed dentition system, and combined system determined landmark positions with mean success rates of 69% (range 38 to 98%), 82% (range 50 to 100%) and 82% (range 58 to 100%), respectively.

**Conclusions:** These systems were determined to successfully and accurately identify anatomic features in cephalograms of preadolescent children.

**Reviewer's Comments:** The main study conclusion is that, for recognition of anatomic features surrounding landmarks on preadolescent children's cephalograms, the system utilized in the present study achieved a success rate of 100%. It would be important to read the article and understand that 100% does not mean that they were absolutely positively accurate, but in comparison, utilizing the confidence ellipse that they set up between 10 experienced orthodontists and the system, they were equal in confidence. Therefore, that led the authors to suggest that it seems possible to develop an interface that would allow practitioners to visibly check and select a candidate point using auto-magnified images near the landmarks, and correct these candidate positions if necessary. (Reviewer-Jeffrey A. Dean, DDS).

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Keywords: Cephalograms, Preadolescent Children, Computer Recognition, Anatomic Landmarks

Print Tag: Refer to original journal article
Most Physically Abused Children Suffer Head, Face Injuries

Prevalence and Characteristics of Injuries to the Head and Orofacial Region in Physically Abused Children and Adolescents -- A Retrospective Study in a City of the Northeast of Brazil.

Cavalcanti A:

Dent Traumatol 2010; 26 (April): 149-153

Head and face injuries are very common in physically abused boys and girls; also, boys are only slightly more likely to be physically abused than girls.

Objective: To investigate the prevalence and type of injuries to the head, neck, and mouth suffered by physically abused children and adolescents.

Design: Retrospective data analysis of medical reports.

Methods: Reports from forensic medical exams of confirmed physically abused children over a 4-year period in Campina Grande, Brazil, were reviewed. The study sample included 1070 reports of male and female children from infancy through age 17 years. All children were examined by both an M.D. forensic pathologist and a forensic dentist. Extraoral injuries were categorized as abrasions, ecchymoses, edema, lacerations, burns, bites, and fractures. These were classified as occurring in the head, neck, or face. Intraoral injuries were characterized as tooth trauma or soft tissue.

Results/Conclusions: Children were most likely to be abused from age 13 to 17 years. Over half (56%) of abused children and adolescents had injuries to the head and neck region. Boys were only slightly more likely to be abused than girls (53% vs 47%) and this difference was most prominent in ages 9 to 12 years. Boys, however, were significantly more likely to suffer head and face injuries than girls (56% vs 44%). Of children, >12% sustained intraoral injuries with no gender predilection. The maxilla was involved in over half of intraoral injuries and the mandible in about one third. The most common mouth injuries were abrasions of the upper lip. Only about 5% of victims sustained tooth injuries and they were most commonly crown fractures of maxillary incisors.

Reviewer's Comments: The higher frequency of abused children aged 13 to 17 years differs from several studies in the United States that report the greatest prevalence in preschool children. This could be because the latter studies were conducted in children's hospitals where adolescents may be less likely to be treated. The higher prevalence of intraoral injuries reported in this study probably relates to the oral exams performed by forensic dentists. While these data only report occurrences in a single Brazilian city, they confirm reports from other parts of the world. Child abuse crosses all cultural, ethnic, religious, and professional strata and these findings are important to dentists everywhere. (Reviewer-Dennis J. McTigue, DDS, MS).

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Keywords: Child Abuse, Head Trauma, Dental Injuries

Print Tag: Refer to original journal article
If caries risk assessment is used to determine the risk status of patients, we can optimize the preventive use of fluoride.

**Background:** The use of fluoride in preventing dental disease is one of the most well-researched topics in modern times. Fluoridating community waters began in the 1940's and continues to be one of the least expensive public health measures even though it remains controversial by a vocal minority and periodically voted to be discontinued in some communities. Most, if not all, toothpastes now contain fluoride. Seldom are fluoride supplements prescribed anymore because of fluorosis and compliance concerns. Professionally applied fluoride product applications are based on risk factors of the child and not automatically every 6 months.

**Objective:** To describe what we know best about fluoride and what we know least about fluoride and is based on a 2009 National Institute of Dental Research (NIDR) conference. **Discussion:** The author lists topics that he feels we know a lot about and topics that we need to know more about: (1) Water fluoridation was designed to maximize the anticaries effects and minimize enamel fluorosis. (2) The difference in caries reduction between fluoridated and non-fluoridated communities is now minimal because of the 'diffusion effect'; nevertheless, optimally fluoridated communities consistently have lower caries rates. (3) Fluorosis is directly related to the fluoride level in drinking waters. (4) Unintentional swallowing of toothpastes by toddlers increases the prevalence of fluorosis. (5) When ingesting a single bolus of fluoride, fluoride levels in the blood peaks and increases fluorosis. (6) Fluoride action is both pre- and post-eruptive and continues to be controversial. (7) Fluoride should be used daily to optimize maximum caries prevention. (8) Outspoken and vocal minorities continue to oppose water fluoridation. (9) We are not sure on the effect of reducing fluoride levels and its impact on caries reduction. (10) Some studies found no changes in oral health when fluoride was discontinued and questions if other preventive measures like tooth brushing, diet, etc are sufficient. (11) Is fluorosis prevalence really increasing and it is an esthetic concern? (12) What amount of total ingested fluoride will cause enamel fluorosis? (13) Will reduced fluoride-level toothpastes cause less fluorosis? (14) Will increased use of bottled and filtered waters increase caries prevalence?

**Conclusions:** Because of the costs of conducting randomized double blind studies, we may never know the answers to the remaining fluoride questions. Some answers may be derived from retrospective recall studies but they cannot substitute for prospective investigations.

**Reviewer’s Comments:** I've had the good fortune to see the effects of fluoride in preventing oral disease through my career. The decrease in caries and the number of children no longer affected with cavities has been unbelievable. Nevertheless, 20 to 30 % of preschool children do not enjoy the preventive effects of fluoride. What is missing? What else needs to be done? Will we ever know as the author stated in his conclusions? (Reviewer-Arthur J. Nowak, DMD).

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Keywords: Metabolism, Caries, Fluorosis, Water Fluoridation, Dentifrices

Print Tag: Refer to original journal article
There is mounting evidence that genetics plays a significant role in susceptibility to dental caries.

**Background:** There is increasing evidence to support existence of inherent genetic factors that contribute to both susceptibility and resistance to dental caries. The beta defensin 1 (DEFB1) gene is expressed in the oral cavity and is thought to play an important role in oral health maintenance. These peptides act in the oral cavity to protect the host against infection and are good candidates for genetic caries risk assessment.

**Objective:** To identify useful markers to predict caries susceptibility, particularly in the DEFB1 gene.

**Participants:** 296 patients seen at the University of Pittsburgh School of Dental Medicine.

**Methods:** Dental exams for each participant were performed and scores for caries and periodontal status were recorded. Subjects ranged in age from 17 to 84 years. Decayed, missing, and filled teeth (DMFT) and decayed missing, and filled surface of a tooth (DMFS) scores were used to classify subjects as either high or low caries. Saliva samples were collected from all subjects and DNA was extracted using standard protocols. Periodontal diagnosis was based on probing depths, clinical attachment loss, and bleeding on probing index. For each subject, 3 polymorphisms in the promoter region of the DEFB1 gene were analyzed. Allele frequencies for each polymorphism were calculated and compared. Statistical analysis was done to compare frequencies of each allele for high and low caries and for presence or absence of periodontal disease. The association of each marker with either periodontal disease or caries was evaluated using multiple logistic regression models.

**Results/Conclusions:** There was no association between the DEFB1 polymorphisms and periodontal disease. However, the presence of one of the polymorphic variants was associated with a 5-fold increase in DMFT and DMFS and a second variant correlated with low DMFT scores.

**Reviewer's Comments:** This is the first study to demonstrate an association between alleles of the DEFB1 gene and dental caries. The authors recognize a number of limitations in this study that are important to consider when evaluating the meaning of this data. The authors were not able to gather information on the diet, oral hygiene habits, or bacterial colonization of subjects. There is also a well-established connection between socioeconomic status and caries risk that was somewhat controlled for by using patients that attend the University of Pittsburgh clinics and are considered to be a fairly homogeneous population. The ethnicity of the study population was 68% Caucasian and 27% African American. It is known that allele frequencies for genetic polymorphisms vary by race and ethnicity. When data were evaluated without adjusting for ethnicity, the association became even stronger. This is compelling data that are strengthened by a recent genome-wide association study that found positive loci for caries susceptibility on chromosome 8, in the general vicinity of the location for the DEFB1 gene. (Reviewer-Rebecca L. Slayton, DDS, MS, PhD).

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Keywords: Genetics, Periodontal Disease, Dental Caries, Polymorphism, Beta Defensin

Print Tag: Refer to original journal article
Infants, Young Children at Risk for Nicotine Poisoning

Unintentional Child Poisonings Through Ingestion of Conventional and Novel Tobacco Products.

Connolly GN, Richter P, et al:

Pediatrics 2010; 125 (May): 896-899

Due to their appealing form, resemblance to popular candies, and added flavorings, novel smokeless tobacco products may attract young children and their ingestion can result in systemic nicotine toxicity.

Background: The increase in product-related poisonings involving children, especially ingestion of tobacco products, emphasizes the ineffectiveness of existing child-resistant packaging and the need for additional child-poisoning prevention strategies.

Objective: To examine child poisonings nationwide due to ingestion of tobacco products, particularly smokeless tobacco products, and to assess the potential toxicity of novel smokeless tobacco products to young children.

Design/Participants: Retrospective study of 13,705 cases involving tobacco products.

Methods: Case data reported to the United States Poison Control Centers with age and gender-specific case frequencies were analyzed for all single-substance, accidental poisonings resulting from ingestion of tobacco products by children aged <6 years from 2006 to 2008. Logistic regression analyses were used to assess any age association with ingestion of smokeless tobacco compared to other tobacco products. Utilizing gas chromatography-mass spectrometry and pH analyses, a novel smokeless tobacco product was measured for nicotine content and proportion of nicotine in the unionized form was calculated using the Henderson-Hasselbalch equation and compared to values determined for moist snuff and cigarettes.

Results: From cases reported for all types of tobacco products, the majority (>70%) of ingestions were by infants <1 year of age. Smokeless tobacco products exhibited an increasing proportion of tobacco ingestions during each year from age 0 to 5 years (odds ratio 1.94; 95% CI, 1.86 to 2.03) with the year of ingestion not statistically significant. Following cigarettes, smokeless products were the second most common tobacco product ingested by children. The novel, dissolvable smokeless tobacco product resembling candy in appearance and with added flavorings, contained an average of 0.83 mg of nicotine per pellet, with an average pH of 7.9, resulting in an average of 42% of nicotine in the unionized form, which was significantly higher than those values for moist snuff (28 to 30%) and cigarettes (<10%). Unionized nicotine is more rapidly absorbed in the mouth and could enhance systemic toxicity.

Conclusions: With the novelty and potential harmful effects of these dissolvable nicotine products, federal and other public health authorities are advised to evaluate these products and determine appropriate regulations based on their potential to cause poisonings in young children and potentiate addiction among adolescents.

Reviewer's Comments: This is a very good and informative retrospective study with an excellent sample size of a specific age group with representation from across the country. Age and gender-specific frequencies regarding child and infant ingestions for each tobacco product including cigarettes and smokeless tobacco were obtained from the National Poison Data System and compared. Due to the minimal number of cases reported during the sample period and lack of specific information, it is difficult to discern the long-term impact of the novel smokeless tobacco products on the severity of nicotine poisoning in children and infants.

(Reviewer-Erwin G. Turner, DMD).

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Keywords: Unintentional Child Poisoning, Tobacco Products

Print Tag: Refer to original journal article
Poor oral hygiene in the critical care setting is associated with increased nosocomial infection.

**Background:** Poor oral hygiene in the critical care setting has been associated with a higher incidence of nosocomial infection, especially ventilator-associated pneumonia. However, some nurses have a perception that oral health is a low priority for hospitalized patients. In addition, their knowledge of oral hygiene assessment and therapy may be lacking.

**Objective:** To develop guidelines improve standards of oral health care for children in the pediatric intensive care unit (PICU).

**Participants:** 65 PICU nurses.

**Methods:** Nurses were invited to anonymously complete a 14-item questionnaire. Of subjects, 47 returned the questionnaire. The 1998 Iowa Model, an evidence-based practice process, was selected for implementation.

**Results:** The results confirmed that although most nurses consider oral hygiene to be important, there was a need for education and oral hygiene guidelines. A Cochrane Library search for information on oral hygiene and nursing was conducted and little information was found. The Iowa Model encourages the use of case reports, expert opinion, and theories. Using the best evidence available, 14 articles were identified as being pertinent to the topic of pediatric oral health care in the critical care setting; however, only 4 were specific to the pediatric population. The authors reviewed articles relative to oral assessment, mechanical interventions, and pharmacological interventions. Two guidelines were developed: (1) oral hygiene in the PICU for intubated children or those with a lowered Glasgow coma score and (2) oral hygiene in the PICU for children who are eating and drinking.

**Conclusions:** Oral hygiene assessment and therapeutics has the potential to contribute to improved oral and general health in the pediatric critical care setting.

**Reviewer's Comments:** This article resulted in a well-researched and evidence-based guideline for nurses involved with care of children in the PICU. This article is so well-done that I intent to use it in the training of both dentists and dental hygienists. (Reviewer-Paul O. Walker, DDS, MS).

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Keywords: Oral Hygiene, Pediatric Intensive Care Unit, Nurses

Print Tag: Refer to original journal article
Pediatric dental practitioners, faced with a choice between using two sets of scoring criteria to detect cavity severity and activity status, can rest assured that both the Nyvad and ICDAS-LAA systems work equally well.

**Background:** Since 2007, The International Caries Detection and Assessment System (ICDAS-II) presents an original, visual scoring system with the goal of standardizing caries detection for clinical research, clinical practice, epidemiology, and education. The appended set of criteria for the ICDAS-II is the Lesion Activity Assessment (LAA), based on the clinical parameters, aims to further evaluate lesion activity. A second viable system, providing an entirely different set of criteria for assessing the visual activity of noncavitated and cavitated caries lesions is called Nyvad (NY) criteria. This tested system shows construct and prediction validity for caries activity. **Objective:** To compare how well the systems detected and assessed caries activity of occlusal lesions on primary molar teeth in a clinical setting.

**Participants:** 763 primary molars of 139 children from the city of Araras, Brazil.

**Methods:** Specifically, this study assessed how the LAA and NY systems (1) detected and assessed occlusal caries severity in primary molars under in vivo conditions, and (2) assessed lesion activity under in vivo conditions; also, a microscopic examination of exfoliated and extracted primary molar teeth from the in vivo sample, sought to validate the systems with respect to the (1) estimation of lesion depth and (2) assessment of caries activity. Two calibrated examiners performed the examinations. A histological analysis was conducted on extracted molar subsamples using red methyl dye to validate lesion depth and activity. Next, the reproducibility of indices was calculated (kappa test) and ROC analysis was performed to assess their validity. Finally, related parameters were compared using McNemar’s test. The association between indices and histological examination was thoroughly evaluated.

**Results:** The visual criteria showed excellent reproducibility in 2 categories: severity and activity. NY and LAA showed good association in caries activity assessment. But in looking at only cavitated lesions, the association was not as significant ($P>0.05$). Concerning severity, both methods showed similar validity parameters. At D2 threshold, sensitivity was higher for NY (NY=0.87; ICDAS= 0.61, $P<0.05$). Regarding activity status, NY was more accurate.

**Conclusions:** Both sets of scoring criteria were found to be comparable, giving high reproducibility and validity to detect and estimate caries lesion depth in primary teeth. It should be noted that the ICDAS-LAA criteria seems to overestimate the caries activity assessment of cavitated lesions compared to the NY.

**Reviewer’s Comments:** These ongoing clinical performance results are critical for us to pay attention to as we practice and issue advice on best visual scoring criteria to use on our young patients. However, more confirmation for why the ICDAS-LAA overestimates caries activity assessments in cavitated lesions is still needed. (Reviewer-Joel Berg, DDS).

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Keywords: Caries detection, Epidemiology, Occlusal Surfaces, Visual Inspection

Print Tag: Refer to original journal article
Do Intraligamentary Injections Harm Developing Permanent Tooth Buds?

Effect of Computerized Delivery Intraligamental Injection in Primary Molars on Their Corresponding Permanent Tooth Buds.

Askkenazi M, Blumer S, Ilana E:


Computerized delivery of intraligamentary injections does not increase the risk of developmental defects on unerupted permanent teeth.

Background: Earlier reports have suggested that periodontal damage, developmental disturbances to developing permanent teeth, and reports of post-anesthesia discomfort may occur following intraligamentary injection delivered under high pressure. The development of a computer-controlled local anesthetic system marketed as the Wand delivers anesthetic solutions at lower pressure.

Objective: To evaluate the prevalence of developmental defects in unerupted permanent teeth following intraligamentary injection (ILI) delivered by a computer controlled local anesthetic delivery system (C-CLAD).

Design: Controlled clinical trial.

Participants: 78 children.

Methods: Participants were from a variety of socioeconomic levels and ranged in age from 4.1 to 12.8 years with a mean age of 8.8 years. Anesthesia of 166 primary molars was conducted using either computer-controlled local anesthesia, infiltration, mandibular block, or no anesthetic. Calibrated teeth were evaluated 5 to 8 year post-treatment for developmental defects.

Results: 5 children demonstrated developmental defects in the permanent teeth when erupted; 1 was the result of a dentoalveolar abscess, 2 were found in the control group, and 2 were found in the computer controlled local anesthetic delivery system group.

Conclusions: Computer-controlled local anesthesia delivery of intraligamentary injections did not increase the threat of developmental disturbances to the permanent dentition.

Reviewer's Comments: Since the publication a monkey study which showed a significant amount of damage to unerupted teeth, I have been reluctant to use intraligamentary injections on children with uncalcified bicuspids and was pleased to come upon this study. Although the purpose of the study was noteworthy, the study was limited by a small sample size, difficulty of evaluating teeth, and attributing a retrospective etiology of developmental defects to one form of anesthetic delivery versus another. (Reviewer-Paul O. Walker, DDS, MS).

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Keywords: Intraligamentary Injection, Computer Controlled Anesthetic Delivery, Developing Permanent Teeth

Print Tag: Refer to original journal article
Children's food choices are influenced by external forces such as cartoon characters.

**Background:** Promotions on television, radio, or in children's publications have accomplished their goals of informing kids of food products and beverages. Some of the information is good, especially drinking milk and eating cheese, fruits and vegetables. But those ads are few and possibly have little influence on kids. The use of well-known celebrities, sports figures, and movie stars has been used for many years to promote and endorse food and beverages. With the popularity in cartoons in the movie theater and now on TV, it was natural to extend their ‘selling power’ to foods that are popular with kids- fruit drinks, cereals, cookies, crackers, jams and jellies. Many groups have criticized the food industry, on using these powerful images when endorsing foods and beverages.

**Objective:** To determine if licensed cartoon characters appearing on food packages would influence children's taste preferences and choices.

**Design:** Cohort clinical study.

**Participants:** 40 children aged 4 to 6 years.

**Methods:** Children were recruited from child care centers. Letters were sent to parents to recruit their child in a 'food-tasting' project. For study purposes, 3 food groups were selected: graham crackers, gummy fruit candy, and baby carrots. All were packaged identically, except one package in each group had a cartoon character: Scooby Doo, Dora the Explorer, or Shrek. An interviewer asked the children what food they like and what food would taste the best. Responses were recorded and analyzed.

**Results:** 80 children were initially recruited, with 40 participating in the study. Children were aged 3.8 to 6.2 years, 66% were males, 50% were white, and 20% were black. The children, as a group, watched very little television (30% watched for 1 hour per day and 15% for 2 hours) and few movies; nevertheless, they recognized the cartoons. Children showed preferences for food packages that had the cartoon characters. When asked what food they would select, they selected food with characters. Amount of television and movie watching were reported to have no association with food selections and taste preferences.

**Conclusions:** Branding foods with cartoon characters influences young children’s taste preferences and snack selections. The authors recommend that use of licensed characters to advertise food/snacks should be restricted.

**Reviewer’s Comments:** The finding of this study did not surprise me. Most interesting to me was the ability of preschoolers to recognize cartoon characters with reported minimal television and movie watching. I'd like to see the food choices expanded to include cheeses, yogurt, fruits, and meat. We need to inform parents how industry uses cartoon characters to influence food selections during out dietary counseling and anticipatory guidance sessions. (Reviewer-Arthur J. Nowak, DMD).

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Keywords: Food Choices, Diet, Snacking, Promotions

Print Tag: Refer to original journal article
When a Child Doesn't Have Enough to Eat

Child Hunger, Food Insecurity, and Social Policy.

Casey PH, Ettinger de Cuba SA, et al:

Arch Pediatr Adolesc Med 2010; 164 (August): 774-775

Over 20% of all households with children suffered from food insecurity in 2008.

Objective: To discuss child hunger, food insecurity, and social policy in an editorial article. Discussion: Hunger is a normal physiologic response, which when ignored or not met on a regular basis, can have physiologic effects on the body. The accurate “scientific” measurement of hunger in children has proved challenging, so researchers have had to develop surrogate measures. The most often used gold-standard surrogate measurement for hunger in childhood is food security/insecurity, a measure which considers both quality and quantity of food in a child's diet. Food insecurity (FI) is defined as "the limited or uncertain availability of nutritionally adequate or safe foods, or limited or uncertain ability to acquire acceptable foods in a socially acceptable way." FI was first measured in 1995. Approximately 17 million households (14.6% of United States) were classified as food insecure in 2008, an increase of >11% from the previous year. These data represent all households; when data are broken down into households with children, 21% were FI. Over half of families with children who were at or below poverty level were classified as FI. In children, FI has been associated with increased behavioral problems, less secure attachments, increased developmental delays, and school-age academic problems. It is important to note that families may move in and out of FI, as they do poverty. The United States Senate has passed the Healthy, Hunger-Free Kids Act which targets the reauthorization of child nutrition programs such as The Special Supplemental Nutrition Program for Women, Infants, and Children, The Child and Adult Care Food Program, and regularly available school lunch programs. 

Reviewer's Comments: This is a fascinating, succinct read. Food insecurity affects delivery of dental services by affecting dietary choices families make and, ultimately, oral health as measured by caries incidence. Data presented in this paper are from 2008, and sadly, the number of food insecure households has increased since then. Where this also impacts daily dental practice is the communication of reasonable oral hygiene and dietary instructions. Literature in other areas suggest that diet is probably the variable that dentists can modify the least, and when a child is raised in a food insecure household, this has long-term health implications. 

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Keywords: Diet, Poverty, Public Heath

Print Tag: Refer to original journal article
Every year, approximately 4 million patients with special needs become age 21 years and lose access to dental care.

**Objective:** To discuss the ability of our dental health care system to provide services to an increasing number of young disabled adults. **Discussion:** Over 1 million people aged 16 to 20 years reported having ≥1 disability (cognitive, visual, or ambulatory) in 2008. This age group is of significant public health importance in that the end of this cohort represents a group that classically loses federal agency coverage (Medicaid). It is estimated that every year, >4 million people turn age 21 years and lose Medicaid eligibility. Current federal programs, such as the Children's Health Insurance Program (CHIP) provide critical health care services for children aged <19 years in most states. Recent health care reform in 2010, expanded the 'floor' for Medicaid coverage, but failed to authorize Medicaid dental coverage for adults. The 2006 National Survey of Children with Special Health Care Needs (CSHCN) presented data that >80% of CSHCN required preventive dental services in the previous year, with nearly one quarter needing additional dental care. Previous studies have demonstrated that >10% of children aged 13 to 17 years with SHCN had unmet dental needs. It is a well-established fact that dental needs are often 1 of the top 2 unmet health needs of CSHCN, and if surpassed, done so only by prescription medication. In conjunction with these needs is the public health shift from institutionalization of CSHCN into mainstreaming of these patients as members of established communities. Currently, 10% of general dentists report treating children with cerebral palsy (CP), intellectual disability, or medically compromising conditions, with 70% reporting never treating CP patients in their practices.

**Reviewer's Comments:** This commentary, by authors with considerable rubber-meets-the-road experience in treating CSHCN presents a dilemma of modern dental care. How can CSHCN be transitioned as regular members of dental practices in the community? Issues such as Medicaid coverage, stigma surrounding illness, and limited education on management of these patients all result in a significant portion of our population that does not have ready access to prevent oral disease, pain and infection. (Reviewer-S. Thikkurissy, DDS).

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Keywords: Dental Care, Access, Adults, Adolescents

Print Tag: Refer to original journal article
While thimerosal has been removed from most vaccinations, the prevalence of autism continues to rise.

**Objective:** To review current literature regarding the association of thimerosal and other mercury exposures with the risk for autism. **Discussion:** Autism is a developmental disorder characterized by social and communicative deficits. It is often diagnosed in early childhood. Autism is part of a continuum scale known as autism spectrum disorders (ASD) which includes Asperger syndrome and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) which, according to the Centers for Disease Control, affects approximately 1% of all children. There is no known etiology for autism. This lack of a distinct cause has led many researchers and advocacy groups to consider environmental causes. The most commonly considered environmental causes are lack of breastfeeding, use of infant formula without docosahexaenoic or arachidonic acid, early viral infections, and early childhood vaccinations. This last category has garnered much research, specifically in looking at a possible role of mercury, found in the preservative thimerosal (TH). Currently, TH has been removed or greatly reduced in all vaccines except the multi-dose influenza vaccine; yet, the prevalence of autism continues to rise. There have been approximately 10 studies examining the association between TH and autism; of these, only 2 have demonstrated an association. It is of interest, and the author notes, that these studies are from the same research group. Furthermore, some of the methodology of these 2 studies is suspect. Some of data originate from the Vaccine Adverse Events Reporting System (VAERS), which is a passive database that anyone can report to. It has been noted that in many instances, reports to this database have been associated with pending legal cases, which has thrown some doubt on the objectivity of reports. Furthermore in other studies, the actual TH exposure has been estimated. Finally, some studies have suggested an association between maternal dental amalgams and autism (as well as severity). This study did not adjust for maternal age when child was born, and number of amalgam restorations at that time, with some data being subject to recall bias on part of the mothers. **Reviewer’s Comments:** This topic has been controversial and continues to be the subject of much discussion with health care and advocacy groups. The author does a nice job of presenting all the data, and systematically dissecting the studies to illustrate strengths and weaknesses. The most compelling argument is that while the amount of TH has been removed (or dramatically reduced), the prevalence of autism continues to rise, suggesting the role of epigenetic factors (Reviewer-S. Thikkurissy, DDS).
Use of fluoride tablets in a population that uses fluoride salt does decrease caries risk, but also increases the risk of mild fluorosis.

**Background:** Fluoride as an anti-caries agent has been included in many forms: water, salt, drops, tablets, and lozenges. The concept of pre-eruptive fluoride is one that has been debated, particularly with the risk of fluorosis. Starting in the 1990’s, countries such as Germany (in which the water is largely non-fluoridated) began using fluoridated salt (250ppm) as a preventive measure. Currently, fluoridated salt occupies a market share of >60%.

**Objective:** To evaluate the benefits of fluoride tablet use in a population of children using fluoridated salt.

**Design:** Retrospective study involving 583 children in first through third grade.

**Methods:** Questionnaires collected data on sociodemographic status, age at which fluoride tablet use was stopped, use of fluoride salt and toothpaste, as well as brushing frequency, habits, and diet habits. The questionnaire was accompanied by a clinical dental examination by a single examiner. Fluorosis was assessed using the Tooth Surface Index of Dental Fluorosis (TSIF).

**Results:** Mean age of subjects was 7 years 7 months. More than half (58%) of children were classified as caries-free. Mild fluorosis was noted in 22% of children. The longer children used fluoride tablets, the lower the def scores, while the higher the incidence of fluorosis.

**Conclusions:** Use of fluoride tablets in a population that uses fluoride salt does decrease caries risk, but also increases the risk of mild fluorosis.

**Reviewer’s Comments:** This paper addresses a major public health debate; fluoride continues to prove itself as a wonderful anti-caries agent, but a potential outcome is fluorosis. In a population with non-fluoridated water such as in Germany, the use of fluoride tablets and salt impart a significant anti-caries effect. The issue at hand is which is preferable: absence of disease or mild esthetic disturbances. Dentists who treat children need to weigh this for their community, and realize that parents and physicians may consider this as well. (Reviewer-S. Thikkurissy, DDS).

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Keywords: Fluoride Tablets, Fluorosis, Children, Caries

Print Tag: Refer to original journal article
Use of Autotransplantation to Replace Missing Teeth Reportedly Successful

Autotransplantation of Teeth in 215 Patients: A Follow-Up Study.
Kvint S, Lindsten R, et al:

Angle Orthod 2010; 80 (May): 446-451

Poorer outcomes following autotransplantation are associated with surgery complications due to aberrant root anatomy, mandible as recipient jaw, and patients aged >20 years.

Background: The concept of autotransplantation (autogenous tooth transplantation) has been described in the literature since the early 1950's. It has been regularly reported with high success rates over the past 6 decades. When the root length of an autotransplanted premolar is 50 to 75% of normal root length, success rates have been as high as 80%. The primary complication from autotransplantation is replacement resorption/ankylosis.

Objective: To evaluate autotransplantation outcomes and potential factors associated with increased success.

Methods: Data presented were collected by a single surgeon over a 15-year period. The main reasons cited for use of autotransplantation are aplasia, displacement, caries/osteitis, and trauma. Following extraction of donor tooth, it was placed in a cloth saturated with physiologic saline before transfer. Patients were prescribed Penicillin V for 7 days and rinsed with chlorhexidine twice a day for the same period.

Results: Data were collected from 215 subjects with a median age of 15 years. Median period of follow-up was 4.8 years. Of teeth, >80% were classified as successful with 40 (19%) as unsuccessful. Most teeth (n=93) were transplanted from maxilla to mandible. From within the dataset, 31 maxillary canines were transplanted from an impacted position to normal position with a success rate of 84%. When premolars were the donor teeth, the success rate was 89%.

Conclusions: Factors that were significantly associated with poorer outcomes included surgery complications due to aberrant root anatomy, mandible as recipient jaw, and patients aged >20 years. Of interest, is that there was 100% success for teeth transplanted from mandible to maxilla.

Reviewer's Comments: Autotransplantation has been popular in Europe and Asia with fairly high degrees of reported success. This paper demonstrates that there are perioperative factors, as well as local host factors that may contribute to the surgery’s success or failure. (Reviewer-S. Thikkurissy, DDS).

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Keywords: Autotransplantation, Oral Surgery, Follow-Up

Print Tag: Refer to original journal article
When chlorhexidine varnish groups are compared to placebo varnish groups, results on caries prevention are inconclusive.

**Background:** Dental caries continues to be a major public health problem in both developing and industrialized countries, largely as a result of changing diets with increased sugar exposure and limited access to dental care. Topical fluorides have been conclusively shown to be effective anti-caries agents. There has been increasing research on the use of antimicrobials such as chlorhexidine (CHX) in conjunction with fluorides. CHX functions as an antimicrobial agent that reduces levels of *Mutans streptococci* (MS) in saliva and dental plaque. Much of its effectiveness has been attributed to its substantivity (prolonged period of therapeutic effectiveness).

**Objective:** To summarize evidence on the efficacy of CHX as an anticaries agent.

**Methods:** This review searched MEDLINE, EMBASE, Cochrane Database, and Central Register of Controlled Trials through December 2009. Search terms included “chlorhexidine varnish” and “dental caries.” Studies were limited to trials in humans, in English, and on subjects aged <18 years.

**Results:** From an initial 698 results, 22 studies were considered relevant. There were conflicting results studies comparing CHX varnish to placebo groups.

**Conclusions:** When CHX varnish was compared to fluoride varnish, there was a difference in DMFS, but was not reported as statistically significant. This was studied in only one paper.

**Reviewer's Comments:** As with many systematic reviews, this paper revealed that there really is paucity of evidence for what we do, and how we do it. The use of CHX varnish, popular in many third-world countries, not only has questionable efficacy when fluoride is available, but is questionable even when compared to a placebo. (Reviewer-S. Thikkurissy, DDS).

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Keywords: Chlorhexidine, Fluoride, Antimicrobials, Caries

Print Tag: Refer to original journal article
Adding solubilizers and absorption enhancers to intranasal versed can significantly reduce onset time to near IV-administration levels.

**Background:** Nasal-application midazolam (MDZ) is an attractive mode for possible delivery for several reasons including quick onset and easy delivery (particularly in emergency situations). One limitation is that there is a finite amount of fluid that can be retained in nasal complex before runoff occurs. It has been suggested that highly concentrated solutions must be used to achieve meaningful serum concentrations.

**Objective:** To develop a highly concentrated nasal MDZ formulation and assess pharmacokinetics and pharmacodynamics.

**Design:** Open-label sequential trial.

**Participants:** 8 subjects who were non-obese, healthy, non-smoking males aged 18 to 45 years.

**Methods:** MDZ was added to randomly methylated b-cyclodextrin (MDZ-RMB), hydroxypropyl-g-cyclodextrin (MDZ-HgC) and Chitosan (MDZ-C) which is an absorption enhancer. Both MDZ-RMB and MDZ-HgC are solubilizers. MDZ passage per minute was assessed. Patients had to be free from nasal anomalies (such as polyps) and any benzodiazepine intolerances. Subjects fasted for 10 hours prior to and 4 hours post administration.

**Results:** The formulation of MDZ+HgC+RMB+Chitosan was significantly quicker in achieving maximum serum levels than the additives by themselves, at 7.2 minutes. Control was 1mg MDZ IV which had a time to max serum level of 2.1 minutes.

**Conclusions:** While the trio plus MDZ did achieve faster time to maximum serum level, it had poorer total bioavailability compared to the other nasal formulations.

**Reviewer's Comments:** I have used intranasal versed with considerable success, but am limited in using essentially the IV formulation through an atomizer. This study was promising in that additives can significantly decrease absorption time, although in this case, bioavailability was compromised. (Reviewer-S. Thikkurissy, DDS).

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Keywords: Sedation, Versed, Midazolam

Print Tag: Refer to original journal article
Taking Care of Kids Whose Siblings Have Chronic Illness

A Systematic Review of Interventions to Support Siblings of Children With Chronic Illness or Disability.

Hartling L, Milne A, et al:

J Paediatr Child Health 2010; June 27 (): epub ahead of print

Siblings of children with chronic illness are 2 times as likely to have emotional and behavioral problems.

**Background:** A current feature of modern life is that children with chronic illnesses are living longer. Current estimates suggest that up to nearly 30% of children in American have a moderate to severe chronic illness or disability. The constant need for hospitalization and the potential for acute exacerbations in chronic conditions has impacted family functioning, specifically, resource allocation, and restructuring traditional family roles and to a lesser understood extent, affecting the psychosocial health of well siblings. Well siblings are 1.6 to 2.0 times more likely to develop emotional and behavioral problems compared to siblings of healthy children. Classic traits of these children can include withdrawal, aggression, depression, anxiety, and guilt.

**Objective:** To evaluate effectiveness of interventions designed to reduce behavioral/emotional morbidity in siblings of children with chronic illnesses.

**Methods:** Searches were conducted looking from 1985 to 2008 in MEDLINE, EMBASE, Healthstar, The Cochrane Library, PsychINFO, and CINAHL. Studies for inclusion had to be randomized or non-randomized controlled trial, the study population had to be siblings aged <18 years, and an intervention program assessed.

**Results:** 3357 initial results were returned; following screening for inclusion criteria, 14 articles were reviewed. A major flaw in many studies was a lack of a comparison group; furthermore, so many confounding factors were identified that it was difficult to attribute effectiveness directly to intervention program.

**Conclusions:** Consistently, there was no effect on sibling disease-related fear, or self-reported emotional symptoms. There was a general improvement in the siblings’ perceptions of their siblings’ illness. The most effective method seemed to be the use of medical camps which increased medical knowledge and aimed at improving intrapersonal perceptions of parent-mood.

**Reviewer’s Comments:** This is an interesting topic; namely, that chronic illness (and I am going to include early childhood caries here) impacts not just the patient, but the entire family unit. Siblings are often most vulnerable as they have their own set of insecurities and fears, often superimposed onto a backdrop of chronic illness in the family. Many assessed interventions were with cancer siblings, but there were some for siblings in households with neurobehavioral disorders such as autism. It is important to understand these siblings may have behavioral problems that impact the delivery of dental care in an outpatient setting (Reviewer-S. Thikkurissy, DDS).

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Keywords: Siblings, Chronic Illness, Support

Print Tag: Refer to original journal article
Can Bisphosphonates Prevent Osteonecrosis When It's Not in the Jaw?

*Short-Term Bisphosphonate Therapy Could Ameliorate Osteonecrosis: A Complication in Childhood Hematologic Malignancies.*

Greggio NA, Pillon M, et al:

Case Report Med 2010; June 10 (): epub ahead of print

Long-term steroid administration may make certain groups of pediatric patients particularly susceptible to osteonecrosis.

**Background:** Children diagnosed with hematologic malignancies are particularly susceptible to osteonecrosis (ON), particularly in the hips, knees, and ankles. ON is marked by suppression of bone formation and expansion of intramedullary bone. Initial presentation, while often related to limitations in movement and/or pain, may be asymptomatic. Demographically, ON is more common in whites and adolescents. Previous studies have demonstrated an association between ON and dexamethasone administration.

**Objective:** To discuss 2 cases in which pediatric patients on long-term steroid treatments associated with hematologic disease presented with ON. **Discussion:** Patients were treated with bisphosphonates with resolution. Traditional management of ON has included physical (alleviation of weight with crutches), nonsurgical electrical stimulation, and hyperbaric oxygen. Bisphosphonates (in this case alendronate) inhibit osteoclastic resorption in vivo. Their use has largely been in cases of osteoporosis and hypercalcemia of malignancy. While ON of the jaw has been reported in adult patients with bisphosphonates use, it has never been reported in pediatric patients in the active phase of growth.

**Reviewer's Comments:** Typically, in dentistry we have read about bisphosphonates and the risk of ON of the jaw following surgical procedures. This paper presents an interesting vantage where this class of medications can be used to prevent ON associated with long-term steroid use in other sites, such as the hip and femoral head. It is imperative that ALL dentists become familiar with bisphosphonates as a class of medications and be comfortable with consultations regarding therapies and the potential risk or curative effects of these meds. (Reviewer-S. Thikkurissy, DDS).

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Keywords: Chronic Illness, Bisphosphonates, Osteonecrosis

Print Tag: Refer to original journal article
Laughter May Be the Best Medicine for Children With Developmental Challenges


Semrud-Clikeman M, Glass K:

J Child Neurol 2010; June 17 (): epub ahead of print

Humor has been shown to assist in the growth of social skills in children with developmental disabilities.

**Background:** The role of humor in social interaction is varied. Humor has been shown to enhance relationships, increase group cohesion, express anger in a socially acceptable manner, and relieve tension. Humor has also been shown to assist in the growth of social skills in children with developmental disabilities (DD).

**Objective:** To examine how humor develops and how it may relate to patients with DD. **Discussion:** Humor has been shown to enhance immune functioning and reduce cardiovascular risk. Self-enhancing humor has actually been shown to improve illness-coping in adults, and more importantly, an absence of humor has been shown to result in worsening of symptoms and increased worry about illness. Children with DD typically may have some difficulty in distinguishing humorous from non-humorous materials and often watch how others respond as a ‘verbal cue’. Children with Down syndrome have been fairly well-studied and have demonstrated a propensity to clown around, enjoy laughing, and specifically enjoy physical humor. For autistic patients, humor is specifically much more centered on areas of interest or obsession rather than situational humor. Children with autism spectrum disorders enjoy cartoons often because there is stylized facial structure which aids an area autistic patients traditionally have difficulty with.

**Reviewer’s Comments:** I'll be honest, when I was searching for articles to review and came across this, I was skeptical; this seems like 'fluffy science' at its best. However, it was an incredibly interesting read that discussed different pathways for reaching children with developmental disabilities. Humor is poorly understood in a clinical setting, and this article highlights how a person’s DD influences how they relate to the world around them through humor. (Reviewer-S. Thikkurissy, DDS).

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Keywords: Behavior Guidance, Developmental Delay, Humor

Print Tag: Refer to original journal article