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## Step-by-Step Guide to Fluoride Varnish Application

### Equipment & Supplies

Basic tools are needed to apply fluoride varnish and perform an oral exam in a medical setting. The procedure requires a good light source (such as a pen light or headlamp), disposable gloves, a bib or paper towel, 2"x4" gauze sponges, and the fluoride varnish. A disposable mirror and tongue depressor are optional.

Fluoride varnish is typically sold in unit-dose containers, packaged with individual disposable brush applicators.



### Varnish Application

When implemented by healthcare providers, fluoride varnish has been shown to decrease the incidence of tooth decay by 38%.

Applying fluoride varnish is a simple procedure that can be safely performed on infants, children, and adolescents.

**STEP 1.** Dry the tooth using either gauze or another fluoride varnish applicator.

**STEP 2.** Using the disposable, manufacturer-supplied brush, apply the varnish to coat all surfaces of all anterior teeth.

**STEP 3.** Apply the varnish to coat all surfaces of all posterior teeth.

Fluoride varnish is typically applied to the teeth of children. Although children may eat and drink immediately following the application, parents and caregivers should be instructed to avoid eating and drinking for the remainder of the day. This helps to maximize the time the varnish is in contact with the teeth.

Source: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. <https://www.cdc.gov/fluoridation/fluoride-varnish/>



Grado 0	Normal	Control	
Grado 1	Mancha blanca o café en seco	Tratamiento preventivo, flúor y profilaxis	
Grado 2	Mancha blanca o café en húmedo	Tratamiento de control, flúor y profilaxis	
	Esmalte fracturado o	Tratamiento preventivo, control con flúor o	

@article{AlShahrani2019MicrobiologyOD, title={Microbiology of Dental Caries: A Literature Review}, authors={Mohammed Al-Shahrani}, journal={Annals of Medical and Health Sciences Research}, year={2019}, volume={9} } Aim: to review the current knowledge on dental caries microbiology and critically appraise the literature. Methodology: An electronic search of the available dental literature was done using different databases (PubMed, Google Scholar, Scopus). The following keywords were used: dental caries, cariogenic bacteria and oral biofilm. In addition, classic textbooks that related to dental caries and oral microbiology were searched. Findings: Oral bacteria can grow in two ways: in planktonic or... Investigation of the manufacturers' claim using some of the toothpaste products sold in Ado-Ekiti, Nigeria found that their products are active against oral microbiome capable of causing tooth decay. View 1 excerpt, cites background Socio-demographic factors, dietary and oral hygiene habits were associated with dental caries in children and there was a significant statistical difference according to sugar amount consumption and times of tooth brushing per day. H. Tuominen Biology, Medicine 2020 There is a relationship between the bacterial microbiota composition and HPV infection in the maternal and infant mouth, uterine cervix and placenta, and ionizing radiation reduced the depth and area of invasion of cervical carcinoma cells. SHOWING 1-10 OF 31 REFERENCES SORT BY Relevance Most Influenced Papers Recency. Kleinberg Biology Critical reviews in oral biology and medicine : an official publication of the American Association of Oral Biologists 2002 An understanding of mixed-bacterial metabolism, knowledge of how to manipulate and work with mixed bacteria, and the use of a bacterial metabolic vector approach have led to a more ecological focus for dealing with dental caries, and new means of developing and evaluating anti-caries agents directed toward microbial mixtures that counter excess acid accumulation and tooth demineralization. C. Badel, N. Thebaud Biology The open microbiology journal 2008 If a specific correlation can be found between few species of lactobacilli and caries a better understanding of their properties could allow the development of new tools for prevention. View 1 excerpt, references background Since the initial observations of oral bacteria within dental plaque by van Leeuwenhoek using his primitive microscopes in 1680, oral microbiological knowledge has burgeoned and the authors' ability to identify the resident organisms in dental plaque and decipher the interactions between key components has rapidly increased. P. Caufield, P. Saraiyah, Yihong Li, S. Argimón Biology 2015 It is postulated that the following requirements are necessary for colonization of lactobacilli in humans: 1) a stagnant, retentive niche that is mostly anaerobic; 2) a low pH milieu; and 3) ready access to carbohydrates. View 1 excerpt, references background The present state of knowledge suggests that the aetiologies of caries and periodontal diseases are mutually independent, and the elements of innate immunity that appear to contribute to resistance to both are somewhat coincidental. View 1 excerpt, references background P. Marsh Biology Microbiology 2003 Dental diseases are among the most prevalent and costly diseases affecting industrialized societies, and yet are highly preventable. The microflora of dental plaque biofilms from diseased sites... The relationship of acid-base metabolism to 16S rRNA gene-based species assignments appears to be complex, and metagenomic approaches that would allow functional profiling of entire genomes will be helpful in elucidating the microbial pathogenesis of caries. View 1 excerpt, references background The low pH potential likely varies considerably among oral streptococcal species and is least likely to be found among strains of S. oralis and S. mitis, and the concept and constitution of 'low pH Streptococci' may need to be re-evaluated. View 4 excerpts, references background J. Featherstone Medicine Journal of dental research 2004 Dental caries covers the continuum from the first atomic level of demineralization, through the initial enamel or root lesion, through dental involvement, to eventual cavitation, and the dynamic balance between demineralization and remineralization determines the end result. View 1 excerpt, references background The purposes were to utilize culture-independent molecular techniques to extend the knowledge on the breadth of bacterial diversity in the healthy human oral cavity, including not-yet-cultivated bacteria species, and to determine the site and subject specificity of bacterial colonization. Access through your institution Volume 23, Issue 2, February 2015, Pages 76-82 Rights and permissions The original formulation has been modified with the introduction of genetic techniques [1], the principles proposed by Koch have remained a cornerstone in the first RNA-based estimates of bacterial diversity in cavities are shown in Figure 1, putatively representing the microbial consortia that are actively contributing to the disease. This approach shows an average of eight active genera at a presence of over 1% in both enamel and dentin lesions. However, each lesion appears to harbor a different combination of bacteria. There was only one case in which the lesion was dominated by a single bacterial genus (marked as sample CA085, tooth 47 in the The fact that caries-associated bacterial consortia vary at different stages of disease progression and are dissimilar in different individuals suggests that the same functions may be performed by different sets of microorganisms. This appears to be a general trend in metagenomic studies of the human microbiome, where radically different taxonomic compositions give rise to surprisingly similar functional profiles [31]. Thus, even if determining the etiology of a microbe-mediated disease could be apart from dental caries, other oral diseases have also been clearly identified as polymicrobial, including gingivitis, halitosis, and root canal infections [47]. A well-studied case is periodontitis, where even the initial three-species cluster proposed to underlie disease development (the so-called 'red complex' of periodontal disease) has proved to be insufficient to explain its etiology [48]. An expanding list of polymicrobial diseases is emerging outside the oral cavity, ranging from J.D. Rudney. J. Chow et al. M. Austin G. B. Rogers M. M. Harriott et al. P. E. Petersen D. N. Fredericks et al. W. J. Loesch W. J. Loesche K. A. Plonka S. K. Islam C. Badel et al. M. Manziourani E. M. Bikj. A. Aasa C. Tanner A. Simon-Sorol E. Gross P. Belda-Ferre B. Nyvada. Benitez-Paez A. E. Duran-Pinedo A. Simon-Sorol L. Murray M. M. Ramsey W. D. Noordt The oral environment is an essential part of the human microbiome. The consumption of probiotic products may improve the oral microbiota and reduce the risk of diseases. This paper presents a bibliometric and critical review of randomized clinical trials (RCTs) that used probiotics to analyze oral parameters in humans. RCTs carried out with no age, gender, and ethnicity restrictions and published in the pre-COVID-19 period were included. Furthermore, the utilization of probiotic dairy products to improve oral health is discussed. The bibliometric review demonstrated that 'Microbiology,' 'Denture,' 'Sweden' and 'India' have the highest number of publications. The most prevalent outcomes were 'salivary parameters,' 'periodontal disease,' and 'dental caries.' The most used vehicles for probiotic administration were pharmaceutical formulas and dairy products. The administration of probiotic dairy products could modify the oral microbiota (reductions in S. mutans counts), influence the caries development and periodontal disease in children, adolescents, adults, and the elderly, and improve gingival health. The main probiotic dairy products investigated were milk, fermented milk, yogurt, kefir, curd, and cheese. Lactisacibacillus paracasei SD1 was the most used probiotic culture. The studies demonstrated that the probiotic effect lasted 2-4 weeks after discontinuing consumption. However, the results depended on the subject type, study design, probiotic strain and concentration, and dairy product type. In conclusion, probiotic dairy products are promising alternatives to improve oral health. To investigate the associations between treated and untreated dental caries and periodontitis in young adults. The study enrolled 1289 participants aged 18-45 years in Taiwan. Localized periodontitis was categorized into healthy and stage I/II (n = 936 and n = 353, respectively) based on the 2017 criteria of the World Workshop. Multivariable logistic regression analysis with adjustments for sex, age, tobacco smoking status, betel nut consumption status, metabolic syndrome, and total white blood cell count was used to determine the associations. Decayed tooth numbers were positively associated with localized stage I/II periodontitis [odds ratio (OR): 1.15 (95% confidence intervals (CI): 1.06-2.25)], while filled tooth numbers were inversely associated with localized stage I/II periodontitis in young adults [OR: 0.96 (95% CI: 0.92-0.99)]. Our study confirms the relationship between dental caries and periodontitis by direct evidence that the more decayed teeth there are, the higher the risk of periodontitis and by indirect evidence that the more treated decayed teeth there are, the lower the risk of periodontitis in young adults. The aim of the present study was to investigate the anti-inflammatory and antibiofilm effects of whey fermented by Enterococcus faecalis M157 (M157-W) against oral pathogenic bacteria. The M157-W significantly inhibited IL-1β, IL-6, and nitric oxide induced by the lipopolysaccharide of Porphyromonas gingivalis in RAW 264.7 cells. The M157-W also inhibited the production of IL-1β and IL-8 in human periodontal ligament cells. Treatment with M157-W suppressed the phosphorylation of mitogen-activated protein kinases as well as the activation of nuclear factor-κB in RAW 264.7 cells stimulated by P. gingivalis lipopolysaccharide. Furthermore, M157-W dose-dependently inhibited Streptococcus mutans biofilm, whereas unfarmed they did not inhibit the biofilm. Treatment with M157-W significantly suppressed gtfB, gtfC, and gtfD gene expression in S. mutans compared with the control (0 μg/mL), indicating that M157-W inhibits S. mutans biofilm formation by reducing the synthesis of extracellular polymeric substances. Collectively, these results suggest that M157-W has anti-inflammatory and antibiofilm activities against oral pathogenic bacteria. To evaluate the effect of potassium iodide (KI) addition on antimicrobial photodynamic therapy (aPDT) mediated by red laser (λ = 660 nm) and methylene blue in Streptococcus mutans biofilm model. S. mutans biofilms were cultured in 96-well plates containing BHI broth with 1% sucrose for 18 h, 10% CO2 and 37 °C and divided in groups (n = 3, in triplicate): C (NaCl 0.9%); CX (0.2% chlorhexidine); P (photosensitizer); KI (10, 25 and 50 mM); PKI (10, 25 and 50 mM); L (L1: 100 J/cm2, 9 J; L2: 200 J/cm2, 18 J); PL (photosensitizer + L1 or L2); KIL (KI at 10, 25 and 50 mM + L1 or L2); and PKIL (photosensitizer + 10, 25 and 50 mM KI + L1 or L2). Biofilms were submitted to three pre-irradiation (PI) times (5, 10, and 15 min). After the treatments, microbial counting's reduction was analyzed by Kruskal-Wallis and post-hoc Dunn's tests, respectively, and the interaction between light parameters and the PI times by two-way ANOVA (p < 0.05). The S. mutans viability significantly reduced in all aPDT groups, in the presence or absence of KI (p < 0.05). For all PI times, PKIL groups (10, 25, and 50 mM) significantly differed from PL groups (p < 0.05) with a reduction of 9.0 logs reached at 50 mM of KI with 15 min of PI, irradiated at 18 J. We found no significant interaction between PI time and irradiation (p > 0.05). The addition of KI to PDT mediated by methylene blue and red laser promoted an additional effect in reducing the microbial viability of S. mutans biofilm. Reconstructing plant-based healing treatments of past societies from a dental anthropological perspective is still challenging due to a wide range of plant species, many with both medicinal and nutritional properties, and limitations on plant-taxa identification. Starch grains and phytoliths retrieved in samples from dental calculus and sediment contained in the cavity of dental caries were examined to investigate the supply of a plant-based treatment in an individual buried in the Late Preceramic site of Huaca El Paraiso (2100-1500 BCE), whose osteological analysis reported the absence of any pathological condition at a bone tissue level. A variety of starch grains such as pumpkins, manioc, maize, and beans had an important role in the diet of the individual. The starch grains were embedded in their dental calculus, all of which, except for manioc, showed signs of cooking damage. Considering the context and characteristics of the crops, the nutritional properties of maize, pumpkins and beans are evident. However, parallel medicinal properties of manioc and maize could not be entirely denied. Phytoliths morphologically ascribed to the Asteraceae plant family, which suggest the consumption of medicinal plants of Andean vernacular use, were retrieved in the sediment of dental caries. Our results prove that the analysis of sediment obtained from dental caries is as valuable in tracing medicinal plant-based treatments as dental calculus in archaeological populations. There are still several limitations to approach this topic in dental anthropology, which are discussed in this report. The performance of both analyses -dental calculus and sediment of dental caries-, is highly recommendable. Pediatric dental caries is common among Arab children, however we are still searching for possible genes and molecular mechanisms that influence caries development. To identify genetic predispositions of dental caries among Saudi children with high DMFT (Decayed, Missing, and Filled Teeth). This case-control study analysed putative functional exonic variants (n = 243,345) to study the molecular genetics of pediatric caries with high dmft index, 8.75 ± 4.16 on Arab-ancestry subjects with primary dentition (n = 111; 76 cases, dmft ≥ 5 and 35 controls, dmft = 0). Pediatric caries is significantly associated with single nucleotide polymorphisms (SNP) in the GRIN2B-rs4764039C (p-value = 2.03 × 10<sup>-08</sup>) and CFH-rs1065489G (p-value = 8.26 × 10<sup>-08</sup>) genes, even after Bonferroni correction. Irregular tooth brushing habits (p = 0.0404) and irregular dental visits (p = 0.0050) are significantly associated with caries. Functional enrichment analysis of significant genes is associated with calcium-activated chloride channel, Staphylococcus aureus infection, and N-linked glycosylation. Genetic predispositions are found to be significantly associated with the high prevalence of pediatric caries, which is a disorder of multigene-environment interaction. The significant functional exonic variants identified can be biomarkers for the early diagnosis of pediatric dental caries in Arabs. View all citing articles on Scopus The purpose of this investigation was to identify evidence-based scientific methodologies to aid dental clinicians in establishing the indications for prescribing antibiotics for endodontic infection or pain. The authors prepared and registered a protocol on PROSPERO. They conducted electronic searches in MEDLINE, Scopus, Cochrane Library, and ClinicalTrials.gov. In addition, the authors hand searched the bibliographies of all relevant articles, the gray literature, and textbooks for randomized controlled clinical studies. The authors independently selected the relevant articles. The overall quality of the studies was fair with a low risk of bias, but 2 studies had a moderate risk of bias. The best available clinical evidence signals no indications for prescribing antibiotics preoperatively or postoperatively to prevent endodontic infection or pain unless the spread of infection is systemic, the patient is febrile, or both. Generally, an accurate diagnosis coupled with effective endodontic treatment will decrease microbial flora enough for healing to occur. To help decrease the number of drug-resistant microbes, oral health care providers should not prescribe antibiotics when they are not indicated. Allegations of serious failures in infection control practice were made against a dentist practicing in the South West of England. The dentist (who tested negative for Blood Borne Viruses (BBVs)) was immediately suspended. Because inadequate infection control presents a potential risk of transmitting BBVs between patients, a notification exercise was undertaken. Of 7625 patients contacted, 2780 (37%) were tested. Nine cases of Hepatitis B (HBV) and four cases of Hepatitis C (HCV) were identified, of which seven were previously diagnosed. None of these were children. All of the six newly diagnosed cases had recognized risk factors for BBVs. The costs of the notification exercise were estimated at £311,500 of which £165,000 was staff costs, (£51,916 per newly diagnosed case). This study did not demonstrate any patient-to-patient transmission of blood-borne viruses but the response rate was relatively low. There are significant costs associated with undertaking notification exercises. These findings should inform future recommendations and practice in this area. Dental caries is the main problem oral health and it is not well established in the literature if the enamel defects are a risk factor for its development. Studies have reported a potential association between developmental defects enamel (DDE) and dental caries occurrence. We investigated the association between DDE and caries in permanent dentition of children and teenagers. A systematic review was carried out using four databases (PubMed, Web of Science, Embase, and Science Direct), which were searched from their earliest records until December 31, 2014. Population-based studies assessing differences in dental caries experience according to the presence of enamel defects (and their types) were included. PRISMA guidelines for reporting systematic reviews were followed. Meta-analysis was performed to assess the pooled effect, and meta-regression was carried out to identify heterogeneity sources. From the 2558 initially identified papers, nine studies fulfilled all inclusion criteria after checking the titles, abstracts, references, and complete reading. Seven of them were included in the meta-analysis with random model. A positive association between enamel defects and dental caries was identified; meta-analysis showed that individuals with DDE had higher pooled odds of having dental caries experience [OR 2.21 (95% CI 1.3; 3.54)]. Meta-regression analysis demonstrated that adjustment for sociodemographic factors, countries' socioeconomic status, and bias (quality of studies) explained the high heterogeneity observed. A higher chance of dental caries should be expected among individuals with enamel defects. This publication describes the history of minimal intervention dentistry (MID) for managing dental caries and presents evidence for various carious lesion detection devices, for preventive measures, for restorative and non-restorative therapies as well as for repairing rather than replacing defective restorations. It is a follow-up to the FDI World Dental Federation publication on MID, of 2000. The dental profession currently is faced with an enormous task of how to manage the high burden of consequences of the caries process amongst the world population. If it is to manage carious lesion development and its progression, it should move away from the 'surgical' care approach and fully embrace the MID approach. The chance for MID to be successful is thought to be increased tremendously if dental caries is not considered an infectious but instead a behavioural disease with a bacterial component. Controlling the two main carious lesion development related behaviours, i.e. intake and frequency of fermentable sugars, to not more than five times daily and removing/disturbing dental plaque from all tooth surfaces using an effective fluoridated toothpaste twice daily, are the ingredients for reducing the burden of dental caries in many communities in the world. FDI's policy of reducing the need for restorative therapy by placing an even greater emphasis on caries prevention than is currently done, is therefore, worth pursuing. The microbial and dietary factors that drive caries have been studied scientifically for 120 years. Frequent and/or excessive sugar (especially sucrose) consumption has been ascribed a central role in caries causation, while Streptococcus mutans even appeared to play the key role in metabolising sucrose to produce lactic acid, which can demineralise enamel. Many authors described caries as a transmissible infectious disease. However, more recent data have shifted these paradigms. Streptococcus mutans does not fulfil Koch's postulates - presence of the organism leading to disease, and absence of the organism precluding disease. Furthermore, molecular microbiological methods have shown that, even with a sugar-rich diet, a much broader spectrum of acidogenic microbes is found in dental plaque. While

simple sugars can be cariogenic, cooked starches, especially because such starches, while not 'sticky in the hand', can be highly retentive in the mouth. Metabolism of starch particles can yield a prolonged acidic challenge, especially at retentive, caries-prone sites. These changes in the paradigms of caries aetiology have important implications for caries control strategies. Preventing the transmission of S. mutans will likely be inadequate to prevent caries if a sufficiently carbohydrate-rich diet continues. Similarly, restriction of sucrose intake, although welcome, would be unlikely to be a panacea for caries, especially if frequent starch intake persisted. Instead, approaches to optimise fluoride delivery, to target plaque acidogenicity or acidogenic microbes, to promote plaque alkali generation, to increase salivary flow or replace fermentable carbohydrates with non-fermentable alternatives may be more promising.View full text

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