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Search Strategy:
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1 exp "Dental Caries/" (30589)
2 (caries or carious).ti. (23352)
3 1 or 2 (34628)
4 limit 3 to english language (24895)
5 review.ti. and 4 (634)
6 limit 4 to "review articles" (2074)
7 limit 4 to systematic reviews (796)
8 5 or 6 or 7 (2482)
9 limit 8 to yr="2018 -Current" (91)
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Dental caries and developmental defects of enamel in individuals with chronic kidney disease: systematic review and meta-analysis. [Review]
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Local Messages
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Abstract
OBJECTIVE: To evaluate studies assessing the prevalence of dental caries and developmental defects of enamel (DDE) in individuals with chronic kidney disease (CKD) in comparison with individuals without CKD.

MATERIALS AND METHODS: Electronic searches were performed in Pubmed, Web of Science. Scopus, Medline via Ovid and ProQuest databases from their inception date until February 2018. Two review authors independently selected the studies, extracted data, and assessed the methodological quality. Meta-analysis was performed.

RESULTS: Twenty-seven studies were included in this study. For permanent teeth, 14 studies found that individuals without CKD had higher dental caries scores than those with CKD. However, only five studies presented results with a statistically significant difference between groups. Among the studies evaluating primary teeth, five showed that individuals without CKD had higher dental caries scores than those with CKD. Five studies showed that individuals with CKD had a significantly higher prevalence of DDE than individuals without CKD. The meta-analyses showed that individuals without CKD had significantly higher scores of dental caries teeth and surfaces than individuals with CKD. For DDE, no statistical difference between groups was observed.

CONCLUSIONS: Individuals with CKD present lower dental caries scores and a higher prevalence of DDE in comparison with individuals without CKD. This article is protected by copyright. All rights reserved.

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Unique Identifier
Caries reporting in studies that used the International Caries Detection and Assessment System: A scoping review.

OBJECTIVE: To explore how caries was reported in studies that employed the International Caries Detection and Assessment System (ICDAS).

METHODS: A systematic database search up to August 2017 was carried out using PubMed, Ovid MEDLINE, Cochrane library and ISI Web of Science electronic databases. Only studies that used the ICDAS for dental caries examinations were included. Studies were excluded if the examination was done only for the validation or the calibration of the ICDAS and/or if the examination was not done for the whole dentition. Measures used to report caries were considered.

RESULTS: A total of 126 papers met the inclusion criteria. Forty-four different synthesis measures were used to report caries. Most of the studies used a combination of multiple measures to report patient's caries level. These reporting measures cluster into four main groups: the number of individual ICDAS scores (ie, total counts of every score); the number of decayed surfaces/teeth (ie, total counts of combined caries scores for surfaces or teeth); measures of caries experience (ie, total counts of combined caries scores, filled and/or missing surfaces or teeth); and measures of central tendency and dispersion. The number of decayed surfaces and individual ICDAS scores were the most commonly used measures. Three studies used mean ICDAS score (ie, total ICDAS scores divided by the number of teeth), two used mean ICDAS score of carious teeth (ie, total ICDAS scores divided by the number of carious teeth) and two used the maximum ICDAS score (ie, highest ICDAS score recorded). The total ICDAS score was used only once. Many studies synthesized from the ICDAS the number of decayed, missing and filled teeth/surfaces (dmft/DMFT, dmfs/DMFS) as a measure of caries experience.

CONCLUSIONS: There are variations among studies in the utilization of the system to summarize caries. Most studies presented caries data using the categorical characteristics of the ICDAS.

The role of asthma in caries occurrence - meta-analysis and meta-regression.

OBJECTIVE: To explore how caries was reported in studies that employed the International Caries Detection and Assessment System (ICDAS).

METHODS: A systematic database search up to August 2017 was carried out using PubMed, Ovid MEDLINE, Cochrane library and ISI Web of Science electronic databases. Only studies that used the ICDAS for dental caries examinations were included. Studies were excluded if the examination was done only for the validation or the calibration of the ICDAS and/or if the examination was not done for the whole dentition. Measures used to report caries were considered.

RESULTS: A total of 126 papers met the inclusion criteria. Forty-four different synthesis measures were used to report caries. Most of the studies used a combination of multiple measures to report patient's caries level. These reporting measures cluster into four main groups: the number of individual ICDAS scores (ie, total counts of every score); the number of decayed surfaces/teeth (ie, total counts of combined caries scores for surfaces or teeth); measures of caries experience (ie, total counts of combined caries scores, filled and/or missing surfaces or teeth); and measures of central tendency and dispersion. The number of decayed surfaces and individual ICDAS scores were the most commonly used measures. Three studies used mean ICDAS score (ie, total ICDAS scores divided by the number of teeth), two used mean ICDAS score of carious teeth (ie, total ICDAS scores divided by the number of carious teeth) and two used the maximum ICDAS score (ie, highest ICDAS score recorded). The total ICDAS score was used only once. Many studies synthesized from the ICDAS the number of decayed, missing and filled teeth/surfaces (dmft/DMFT, dmfs/DMFS) as a measure of caries experience.

CONCLUSIONS: There are variations among studies in the utilization of the system to summarize caries. Most studies presented caries data using the categorical characteristics of the ICDAS.
OBJECTIVE: We aimed to conduct a systematic review of the literature regarding the association between asthma and caries, assess the effect of asthma on the occurrence of caries in primary and permanent dentitions, and determine factors that could affect the estimates of this association.

DATA SOURCE: We used the following databases: PubMed, Web of Science, SCOPUS, and LILACS/BVS, for the literature review.

STUDY SELECTION: We included observational studies that investigated the association between asthma and dental caries, excluding studies with syndromic patients, literature reviews, case reports, and in vitro and in situ studies. A meta-analysis was performed to estimate a pooled effect, and meta-regression was conducted to determine study factors that could affect the estimates.

RESULTS: From 674 studies initially identified, 40 fulfilled the inclusion criteria, and 36 of these were used in the meta-analysis. Odds ratio (OR) for the pooled effect was 1.45 (95% confidence interval (CI): 1.22-1.72; I²: 71.8%; p < 0.001) and 1.52 (95% CI: 1.34-1.73; I²: 83.1%; p < 0.001) for primary and permanent dentitions, respectively. In addition, a small proportion of the heterogeneity was attributed to included factors in the meta-regression (primary dentition, 10.7%; and permanent dentition, 3.1%).

CONCLUSIONS: This study provides reliable and robust evidence that emphasizes the impact of asthma on the occurrence of dental caries in both, primary and permanent dentitions. The findings provide useful data for recommending that dentists and physicians collaborate to establish the control for both diseases in a multidisciplinary manner.

Abstract

To identify and map the caries risk management protocols with multiple strategies, which were used in Australia and New Zealand and reported in the existing literature, a scoping review was carried out by electronically searching PubMed, Web of Science, Scopus, Embase and Dentistry and Oral Science. Studies on caries risk management protocols, written in English, limited to Australia and New Zealand and published up to March 2018 were included in the review. There was no restriction on participants' age. Of 257 studies identified, seven were included in the review. These seven studies were reported in Australia and all but six were based on the caries management system (CMS). There were two descriptive studies, one 3-year multicentre cluster randomized controlled trial (RCT), one 2 to 4-year post-RCT follow-up and two cost-effective evaluations based on Markov decision analytic models. While concentrating on assessing individual behavioural risk factors for dental caries, studies indicated that the CMS would be more cost-effective if its protocol was properly adhered to. Future studies on caries risk management protocols are suggested to consider both the individual characteristics and the social context of different population groups in view of enhancing the effectiveness of oral care.

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Abstract
The goal of nonrestorative or non- and microinvasive caries treatment (fluoride- and nonfluoride-based interventions) is to manage the caries disease process at a lesion level and minimize the loss of sound tooth structure. The purpose of this systematic review and network meta-analysis was to summarize the available evidence on nonrestorative treatments for the outcomes of 1) arrest or reversal of noncavitated and cavitated carious lesions on primary and permanent teeth and 2) adverse events. We included parallel and split-mouth randomized controlled trials where patients were followed for any length of time. Studies were identified with MEDLINE and Embase via Ovid, Cochrane CENTRAL, and Cochrane Database of Systematic Reviews. Pairs of reviewers independently conducted the selection of studies, data extraction, risk-of-bias assessments, and assessment of the certainty in the evidence with the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. Data were synthesized with a random effects model and a frequentist approach. Forty-four trials (48 reports) were eligible, which included 7,376 participants and assessed the effect of 22 interventions in arresting or reversing noncavitated or cavitated carious lesions. Four network meta-analyses suggested that sealants + 5% sodium fluoride (NaF) varnish, resin infiltration + 5% NaF varnish, and 5,000-ppm F (1.1% NaF) toothpaste or gel were the most effective for arresting or reversing noncavitated occlusal, approximal, and noncavitated and cavitated root carious lesions on primary and/or permanent teeth, respectively (low- to moderate-certainty evidence). Study-level data indicated that 5% NaF varnish was the most effective for arresting or reversing noncavitated facial/lingual carious lesions (low certainty) and that 38% silver diamine fluoride solution applied biannually was the most effective for arresting advanced cavitated carious lesions on any coronal surface (moderate to high certainty). Preventing the onset of caries is the ultimate goal of a caries management plan. However, if the disease is present, there is a variety of effective interventions to treat carious lesions nonrestoratively.
Early Childhood Caries (ECC) is a serious public health problem in developed as well as developing nations, with high prevalence among children around the world. This systematic review of the national literature was undertaken to document the prevalence of Early Childhood Caries (ECC) in India. Studies evaluating the prevalence of ECC in the Indian population were investigated. The method under evaluation was the use of a caries experience index to calculate the prevalence of ECC. An extensive literature search was done in the following databases: PubMed, IndMED and Cochrane upto June 2016. A modified version of the Newcastle-Ottawa Scale for cross-sectional studies was used for assessment of the quality of the studies. A systematic literature search yielded 503 publications from the various databases searched. Based on the inclusion and exclusion criteria, the final number of included studies were 54. Among the included studies, 19 studies were carried out in the state of Karnataka. Analysis of all the included studies revealed the overall prevalence of ECC in India to be 49.6%. Andhra Pradesh was found to have the highest prevalence of ECC at 63%, and the lowest prevalence was reported in Sikkim (41.92%). This review has reported a high prevalence of ECC in India. None of the states reported prevalence below 40%. The government should identify ECC as a national priority which requires significant attention.

Targeted therapy as well as reduced adverse effects are the advantages of local drug delivery in dental caries. The application of nanotechnology in this context has gained increasing momentum during last years. A literature search here has provided a brief overview to present the recent developments in using nanoparticles for local treatment of dental caries. Nanoparticles as delivery systems, can entrap substances/drugs and use the advantages of small size and better penetration. They can also profit from
biomimetic approaches to provide more effective treatment. Thoroughly, nanotechnology-based treatment of dental caries in situ, may introduce a novel aid in the field of dentistry.

Micro-invasive interventions for managing non-cavitated proximal caries of different depths: a systematic review and meta-analysis. [Review]

OBJECTIVES: The aim of this study was to further evaluate the caries-arresting effectiveness of micro-invasive interventions for non-cavitated proximal caries and analyze their efficacy for caries lesions of different depths.

MATERIALS AND METHODS: Randomized clinical trials (RCTs) of micro-invasive interventions for non-cavitated proximal caries were included in this study. We searched the Cochrane Library, PubMed, Embase, and Web of Science on May 25, 2017, without restrictions. After duplicate study selection, data extraction, and risk of bias assessment, a meta-analysis of the odds ratios (OR) with 95% confidence intervals (95% CIs) and a publication bias analysis were conducted using Stata 12.0.

RESULTS: After 2195 citations were screened, 8 citations of seven studies with follow-up periods from 12 to 36 months were included. The subgroup analysis showed that resin infiltration and resin sealant, but not glass ionomer cement (GIC), could reduce the caries progression rate (resin infiltration: OR = 0.15, 95% CI 0.09 to 0.24; resin sealant: OR = 0.33, 95% CI 0.19 to 0.58; GIC: OR = 0.13, 95% CI 0.01 to 2.65). Further analysis of their efficacies for caries lesions of different depths indicated that resin infiltration could arrest progression of enamel caries and caries around the enamel-dentin junction (EDJ) (enamel: OR = 0.05, 95% CI 0.01 to 0.35; EDJ: OR = 0.07, 95% CI 0.01 to 0.70). However, when the outer third of the dentin was involved, resin infiltration yielded significantly different results compared with the control group (OR = 0.42, 95% CI 0.16 to 1.10). Resin sealant seemed to be ineffective regardless of the caries depth (enamel: OR = 0.62, 95% CI 0.13 to 3.00; EDJ: OR = 0.44, 95% CI 0.09 to 2.15; dentin: OR = 0.43, 95% CI 0.07 to 2.63).

CONCLUSIONS: Resin infiltration is effective in arresting the progression of non-cavitated proximal caries involved in EDJ, while the therapeutic effects of resin sealant for different caries depths still needs to be further confirmed.

CLINICAL RELEVANCE: Based on existing evidence, dentists should carefully select appropriate micro-invasive interventions according to the different depths of non-cavitated proximal caries.
This review assesses the development of oral health habits and status in European adults (35-44 years old) and senior citizens (65-74 years old) over the period of 1996-2016. There seem to be good opportunities for improving oral health habits by brushing twice daily with fluoride toothpaste among adults, as only 33-85% reported doing so. Caries experience was extensive among adults (>=82%). In adults of 23 countries, the mean DMFT score ranged from 6.6 to 17.6 (median 12.1). In senior citizens of 21 countries, the mean DMFT score varied from 14.7 to 25.5 (median 22.0). Repeated cross-sectional studies on caries trends in adults revealed a reduction of the DMFT value by 20%, referring to country-wide data. Among senior citizens, the corresponding reduction was 13%, with a shift in the DMFT components, i.e., with lower MT and higher FT scores. Edentulousness in the age group of 35-44-year-olds started disappearing in Europe from the year 2000, and had been markedly reduced in some countries during the last decade. However, the eradication of edentulousness among 65-74-year-olds has not yet been reported. Further epidemiological surveys should apply caries diagnostic criteria that, besides representing our contemporary understanding of oral health care, allow comparisons with previous surveys using the WHO criteria. In conclusion, in the last two decades, a decline in caries was observed among European adults, and to a lesser extent among senior citizens. It is expected that the decline in caries will contribute to better oral health of individuals.
OBJECTIVE: To assess the role of factors posited to affect population caries levels across England.


MAIN OUTCOME MEASURES: Decayed, missing and filled teeth, with decay measured at the dentinal level, (d3mft), presented as prevalence (dmft>0) and extent of decay among children who have any (d3mft if d3mft>0).

INDEPENDENT VARIABLES: Parental reported ethnicity from school records, index of multiple deprivation (IMD) scores, region and exposure to water fluoridation calculated utilising home postcodes.

RESULTS: The data support wider literature displaying associations between caries and deprivation across a social gradient. The important, new findings are deprivation, some ethnic groups and lack of exposure to water fluoridation are all associated with increased prevalence and severity of caries when considered together and independently. New evidence supports the impact of water fluoridation on health inequalities in that the greatest impact of exposure to fluoridated water was seen in the most deprived children and those from an Asian / Asian British ethnic group.

CONCLUSIONS: Five-year-old children who were from the most deprived areas, not exposed to fluoridated water, of an Eastern European ethnic group and living in the North West demonstrated the highest prevalence and severity of caries in the survey under scrutiny. This is of public health importance, providing evidence for population groups to target with health improvement activities.
The objective of this review was to investigate rates of caries lesion progression, arrest, and regression in approximal surfaces of deciduous teeth following secondary preventive interventions in order to inform caries management protocols. Studies published in English and other languages from 1960 till February 2017 were searched in electronic databases. Inclusion criteria were: randomized controlled clinical trials and longitudinal studies that involved non-invasive preventive treatment. We excluded: in vivo studies and incidence studies. 805 potential articles were located, of 38 full text reviews, 10 were included. Two types of studies were found; those reporting the mean percentage of lesion progression as progression estimate and those reporting the survival rate of lesions presented as the mean or median survival time in months as survival estimate. Weak evidence suggests it would appear that the most effective secondary preventive intervention was one involving a combination of silver fluoride and stannous fluoride, but this has not been substantiated. To inform treatment protocols better, it is recommended (i) that new well-designed RCTs are conducted to test the effectiveness of different forms of fluoride to arrest lesion progression in deciduous teeth and (ii) to continue ongoing research into the caries preventive effects of approximal surface sealants.
Evaluation of occlusal caries detection and assessment by visual inspection, digital bitewing radiography and near-infrared light transillumination. [Review]

PARTICIPANTS AND METHODS: This study included 203 patients (mean age 23.0 years). All individuals received a meticulous VI. Additionally, BWR and NIR-LT images were collected. All BWR and NIR-LT images were blindly evaluated for the presence of enamel caries lesions (ECLs) and dentin caries lesions (DCLs). The descriptive statistical analyses included calculation of frequencies, cross tabulations, and pairwise comparisons using Pearson chi-square tests.

RESULTS: The majority of ECLs/DCLs were detected by VI in this low-risk adult population. The additional diagnostic outcomes in terms of ECLs/DCLs amounted to 5.0% (BWR) and 6.8% (NIR-LT). The combined usage of VI/NIR-LT or VI/BWR identified 95.7 and 94.4% of all ECLs/DCLs on occlusal surfaces, respectively.

CONCLUSION: This comparative diagnostic study showed that VI detected the majority of occlusal caries lesions. Both additional methods showed limited benefits. Due to the valuable features of NIR-LT, i.e., X-ray freeness and clinical practicability, this method might be preferred over X-ray-based methods. Nevertheless, BWRs should be prescribed in clinical situations where insufficient fillings or multiple (deep) caries lesions are diagnosed or where there is a need to assess the caries extension in relation to the pulp.

CLINICAL RELEVANCE: VI has to be understood as caries detection method of choice on occlusal surfaces in low-risk adult population which may help to avoid multiple diagnostic testing, overdiagnosis, and overtreatment.
The aim of this meta-analysis was to systematically evaluate the applications of Er:YAG lasers for the removal of caries and cavity preparation in children. The meta-analysis was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and was conducted with data extracted from seven relevant randomized controlled trials (RCTs) published from 1997 to July 2017. The data heterogeneity of each study was assessed by a Q test. We used the heterogeneity results to calculate the standard mean difference (SMD) or relative risk (RR) and 95% confidence interval (95%CI) using STATA version 10.0. The publication bias was evaluated using Begger's test. There were seven randomized controlled trials included in this study. The analysis results indicate that compared to the conventional mechanical method, more time was needed for Er:YAG laser treatment (SMD 1.945, 95%CI 0.942 to 2.948). However, the pain reported by patients was reduced with Er:YAG laser treatment (SMD 1.945, 95%CI 0.942 to 2.948). The findings were robust to sensitivity analyses, including consideration of the results of nonrandomised studies.
There were no significant differences in the complete retention rate, marginal discoloration, and marginal adaptation between the two groups.

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Title
Protective psychosocial factors and dental caries in children and adolescents: a systematic review and meta-analysis. [Review]
Source

AIM: This review analysed the evidence on the relationship between protective psychosocial factors and dental caries in children and adolescents.

DESIGN: Primary studies involving children and adolescents were searched in the following electronic databases: Medline, SCOPUS, LILACS, SciELO, and Web of Science. The reference lists were also screened. Protective psychosocial factor descriptors were in accordance with the salutogenic theory. The outcome was clinical measure of dental caries. Quality assessments were performed using the Newcastle-Ottawa scale.

RESULTS: The final search resulted in 35 studies, including 7 cohort, one case-control, and 27 cross-sectional studies. Most studies were of moderate quality. Meta-analyses revealed that low parental internal locus of control (cohort studies: OR = 1.42, 95% CI: 1.20-1.64; cross-sectional studies: OR = 1.30, 95% CI: 1.19-1.41), high parental external chance (OR = 1.20, 95% CI: 1.10-1.29), and high maternal sense of coherence (OR = 0.77, 95% CI: 0.62-0.93) were associated with dental caries in children. High social support (OR = 0.81, 95% CI: 0.68-0.93) and greater self-efficacy (OR = 1.50, 95% CI: 1.12-1.22) were also associated with dental caries in adolescents.

CONCLUSIONS: The current evidence suggests that some salutogenic factors are important protective factors of dental caries during childhood and adolescence.

BACKGROUND: Psychosocial protective factors include dispositional and family attributes that may reduce the occurrence of dental caries.

AIM: This review analysed the evidence on the relationship between protective psychosocial factors and dental caries in children and adolescents.

DESIGN: Primary studies involving children and adolescents were searched in the following electronic databases: Medline, SCOPUS, LILACS, SciELO, and Web of Science. The reference lists were also screened. Protective psychosocial factor descriptors were in accordance with the salutogenic theory. The outcome was clinical measure of dental caries. Quality assessments were performed using the Newcastle-Ottawa scale.

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CONCLUSIONS: The current evidence suggests that some salutogenic factors are important protective factors of dental caries during childhood and adolescence.
Abstract

Chronic oxidative stress and reactive oxygen species (ROS) in oral cavity as well as acidic pH on dental enamel surface due to the metabolic activities of bacterial plaque are the major contributors in the development and progression of dental caries. Along with other factors, deposition or dissolution of Ca and Mg mostly determines the re- or demineralization of dental enamel. Zn plays an important role for both Ca and Mg bioavailability in oral cavity. Metallothionein (MT), a group of small molecular weight, cysteine-rich proteins (~7 kDa), is commonly induced by ROS, bacterial infection, and Zn. In the current review, we evaluated MT at the junction between the progression of dental caries and its etiologies that are common in MT biosynthesis.

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Secondary Caries in situ Models: A Systematic Review.
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Local Messages

MATERIALS AND METHODS: Three databases (Medline, Embase, and Cochrane) were searched for relevant literature. Bias risk was assessed and model parameters and caries-related outcomes were extracted by 2 independent researchers. Where possible, caries-related outcomes were normalized by estimating lesion progression per day by dividing lesion depth extracted from microradiographic or microhardness data by the number of days the study lasted.

RESULTS: The literature search identified 335 articles. After eliminating duplicates and selection, 31 articles were included. The models differed greatly on factors such as sample location, presence of fluoride in the model, and analysis methods. Three main groups could be identified by sample placement; 68% of models placed samples palatally in the upper jaw, and the lower jaw model could be divided into the buccal (26%) and approximal (6%) areas. Average lesion progression in enamel next to composite was 4.3 +/- 2.8 micro m (range1.1-8.8 micro m/day).

DISCUSSION: Studies conducted with palatal models showed caries progression rates 2-5 times higher than the estimated clinical progression rates. Lesion progression per day could be a useful tool for future comparison of models and establishing a standardized model.

**Source**

**Authors**
Seiffert A; Zaror C; Atala-Acevedo C; Ormeno A; Martinez-Zapata MJ; Alonso-Coello P.

**Abstract**
OBJECTIVES: To evaluate the quality of clinical practice guidelines (CPGs) for dental caries prevention in children and adolescents. MATERIALS AND METHODS: We performed a systematic search of CPGs on caries preventive measures between 2005 and 2016. We searched MEDLINE, EMBASE, LILACS, TripDatabase, websites of CPG developers, compilers of CPGs, scientific societies and ministries of health. We included CPGs with recommendations on sealants, fluorides and oral hygiene. Three reviewers independently assessed the included CPGs using the AGREE II instrument. We calculated the standardised scores for the six domains and made a final recommendation about each CPG. Also, we calculated the overall agreement among calibrated reviewers with the intraclass correlation coefficient (ICC).

RESULTS: Twenty-two CPGs published were selected from a total of 637 references. Thirteen were in English and nine in Spanish. The overall agreement between reviewers was very good (ICC=0.90; 95%CI 0.89-0.92). The mean score for each domain was the following: Scope and purpose 89.6+/−12%; Stakeholder involvement 55.0+/−15.6%; Rigour of development 64.9+/−21.2%; Clarity of presentation 84.8+/−14.1%; Applicability 30.6+/−31.5% and Editorial independence 30.6+/−31.5%. Thirteen CPGs (59.1%) were assessed as "recommended", eight (36.4%) "recommended with modifications" and one (4.5%) "not recommended".

CONCLUSIONS: The overall quality of CPGs in caries prevention was moderate. The domains with greater deficiencies were Applicability, Stakeholder involvement and Editorial independence.

**Clinical Relevance:** Clinicians should use the best available CPGs in dental caries prevention to provide optimal oral health care to patients.

**Title**
Bonding to Sound and Caries-Affected Dentin: A Systematic Review and Meta-Analysis.

**Abstract**
PURPOSE: This study systematically reviewed the literature to compare the bonding ability of dental adhesives applied to sound dentin (SoD) vs caries-affected dentin (CAD).
MATERIALS AND METHODS: Three international databases (Medline/PubMed, Scopus, and Web of Science) were searched. Eligible studies which evaluated the bond strength to both SoD and CAD were included. Random effects meta-analyses were conducted to calculate pooled mean difference between substrates, separately for etch-and-rinse and self-etch adhesives. Subgroup analyses were carried out to explore heterogeneity considering the methods used for removal of infected carious dentin. A comparison between etch-and-rinse and self-etch adhesives restricted to CAD was also performed. Statistical heterogeneity was considered using the I2 test. The risk of bias of all included studies was assessed.

RESULTS: In total, 2260 articles were found, 65 were selected for full-text reading, and 40 studies were included. The meta-analyses favored SoD over CAD for both etch-and-rinse (effect size: -10.04; 95% confidence interval [CI]: -11.94, -8.14; I² = 95%) and self-etch adhesives (effect size: -6.76; 95% CI: -8.23, -5.30; I² = 89%). In the subgroup analyses, SoD was favored irrespective of the method used for caries removal (effect size <= -4.86; I² >= 28%): excavation (manual or with burs), grinding with abrasive papers, combination of more than one method, and when the method was not mentioned. The meta-analysis restricted to CAD favored etch-and-rinse over self-etch adhesives (effect size: 3.13; 95% CI: 1.82, 4.44; I² = 72%). Most included studies were judged as having an unclear risk of bias.

CONCLUSION: Bonding to SoD yields better results compared to CAD. Etch-and-rinse adhesives performed better than self-etch adhesives when applied to CAD.
The effect of resin infiltration on proximal caries lesions in primary and permanent teeth. A systematic review and meta-analysis of clinical trials. [Review]

Chatzimarkou, Sofia; Koletsi, Despina; Kavvadia, Katerina.

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INTRODUCTION/OBJECTIVES: This systematic review aimed to critically appraise the evidence on resin infiltration for the clinical management of proximal caries lesions in primary and permanent teeth.

DATA: Search terms included resin infiltration, micro-invasive and proximal caries. Potentially eligible studies involved proximal caries lesions treated with resin infiltration. Risk of bias assessment was performed using the Cochrane risk of bias tool and the quality of evidence was assessed with GRADE.

SOURCES: Electronic Database search of published and unpublished literature was performed in April 22, 2018 within the following databases: MEDLINE via Pubmed, Cochrane Central Register of Controlled Trials, LILACS via BIREME, Open Grey, Clinical Trials.gov and National Research Register.
Root caries incidence and increment in the population - A systematic review, meta-analysis and meta-regression of longitudinal studies. [Review]

<table>
<thead>
<tr>
<th>Title</th>
<th>Root caries incidence and increment in the population - A systematic review, meta-analysis and meta-regression of longitudinal studies. [Review]</th>
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</thead>
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<tr>
<td>Source</td>
<td>Journal of Dentistry. 77:1-7, 2018 Oct. VI 1</td>
</tr>
<tr>
<td>Status</td>
<td>In-Data-Review</td>
</tr>
<tr>
<td>Authors</td>
<td>Hariyani N; Setyowati D; Spencer AJ; Luzzi L; Do LG.</td>
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<tr>
<td>Authors Full Name</td>
<td>Hariyani, Ninuk; Setyowati, Dini; Spencer, A John; Luzzi, Liana; Do, Loc Giang.</td>
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<td>Abstract</td>
<td>OBJECTIVES: Previous meta-analyses of root caries incidence and increment studies reported different estimates due to the limited number of studies, heterogeneity and variations in studies included. Currently, new publications and approaches to handle heterogeneity are available. This research aims to systematically review and meta-analyse root caries incidence and increment, and use meta-regression to analyse heterogeneity. SOURCES: PUBMED and EMBASE databases were searched systematically.</td>
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<tr>
<td>STUDY SELECTION: Longitudinal studies on root caries incidence and increment, published in English language prior to 2017, were independently checked by two authors. A pooled incidence and increment of decayed/filled root surfaces (DFS) was estimated and meta-regression analysis was performed by length of follow-up (&lt;2 years; 2years; 3-4years and &gt;=5years) and study type (observational population-based and clinical trial).</td>
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<tr>
<td>DATA: Of 737 articles, 20 were included for meta-analysis. The annualised root caries incidence and increment were 18.25%(CI=13.22%-23.28%) and 0.45(CI=0.37-0.53) root DFS respectively. Length of follow-up influenced the estimates, but not the study type. The annual root DFS incidence and increment from studies &lt;2years were 32.95%(CI=29.13%-36.77%) and 0.64(CI=0.38-0.89) root surfaces respectively. Studies with 5+years follow-up, the annualised root caries incidence and increment were 9.4%(CI=3.32%-15.48%) and 0.43(CI=0.21-0.64) root surfaces respectively.</td>
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<td>CONCLUSIONS: Length of follow-up influenced root caries estimates due to a bias towards relatively healthier older adults retained in the study. Root caries increased over time even among the healthier older adults. CLINICAL SIGNIFICANCE: The increase in root caries, even among the healthier older adults, should be considered by both clinicians and healthcare planners/policy makers in their provision of services.</td>
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</table>

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BDA LIBRARY MEDLINE SEARCH
RECENT REVIEWS RELATED TO DENTAL CARIES

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2018

<26>
Unique Identifier
30213356
Title
The Burden and Management of Dental Caries in Older Children. [Review]
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Abstract
Dental caries is endemic in children and adolescents and has significant morbidity. This complex and chronic disease has both genetic and environmental etiologic factors. In children the preponderance of caries affects tooth surfaces with pits and fissures despite these representing only a small portion of the tooth surfaces that are at risk. Pit and fissure sealants are effective in preventing and managing noncavitated caries lesions in these surfaces. A variety of materials are clinically effective, and health care guidelines recommend the use of pit and fissure sealants as part of a comprehensive dental caries prevention program.

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<27>
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Early Childhood Caries. [Review]
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Abstract
Early childhood caries (ECC) is a common childhood disease with highest prevalence found in poor, socially disadvantaged, and minority groups. The main risk factors for ECC are frequent sugar consumption, lack of tooth brushing, and enamel hypoplasia. Contributory factors include environmental and psychosocial stresses that modify caregiver behaviors. Strategies for prevention include preventing mutans streptococci transmission, restricting dietary sugars, tooth brushing, topical fluoride applications, and early dental examinations. This article provides an overview of ECC based on current understanding of its cause, prevention, and management.

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Title
Sugars and beyond. The role of sugars and the other nutrients and their potential impact on caries. [Review]
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VI 1
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Authors
Socioeconomic Factors and Caries in People between 19 and 60 Years of Age: An Update of a Systematic Review and Meta-Analysis of Observational Studies. [Review]


This study is aimed to perform an update of a systematic review and meta-regression to evaluate the effect modification of the socioeconomic indicators on caries in adults. We included studies that associated social determinants with caries, with no restriction of year and language. The Newcastle-Ottawa Scale was used to evaluate the risk of bias. With regard to the meta-analysis, statistical heterogeneity was evaluated by I^2, and the random effect model was used when it was high. A subgroup analysis was conducted for socioeconomic indicators, and a meta-regression was performed. Publication bias was assessed through Egger's test. Sixty-one studies were included in the systematic review and 25 were included in the meta-analysis. All of the studies were published between 1975 and 2016. The most frequent socioeconomic indicators were schooling, income, and socioeconomic status (SES). In the quantitative analysis, the DMFT (decayed, missing, filled teeth) variation was attributed to the studied heterogeneity. The increase of 10.35 units in the proportion of people with lower SES was associated with an increase of one unit in DMFT, p = 0.050. The findings provide evidence that populations with the highest proportions of people with low SES are associated with a greater severity of caries. The results suggest the need for actions to reduce the inequalities in oral health (PROSPERO [CRD42017074434]).
OBJECTIVES: To evaluate the effectiveness and degree of acceptance by children and adolescents of the use of oscillating tips compared with rotating drills.

DESIGN: Systematic review.

DATA SOURCES: PubMed, the Cochrane Central Register of Controlled Trials (CENTRAL), the Cochrane Library and Web of Science (October 2017).

ELIGIBILITY CRITERIA: Controlled randomised or non-randomised trials that evaluated sonic and ultrasonic oscillating devices versus rotating drill.

DATA EXTRACTION: Eligible studies were selected and data extracted independently by two reviewers. Risk of bias was assessed using the Cochrane Method.

RESULTS: Two controlled clinical trials comprising 123 children aged 2-12 years old were identified. Both trials were at high risk of selection bias and unclear risk of detection bias. In one trial, pain due to the use of oscillating drill resulted lower than employing rotating drill (Verbal Hochman Scale: RR 0.64 (95% CI 0.41 to 1.00); Visual Facial Expression Scale: RR 0.64 (95% CI 0.44 to 0.94)). In another study, compared with traditional drill ultrasonic tip was associated with a lower level of patient's discomfort (RR 0.40 (95% CI 0.20 to 0.79)) but not with dental anxiety (RR 1.29 (95% CI 0.97 to 1.71)). The effectiveness of the removal of caries as well as fillings durability were only considered in one study, but no statistically significant differences were found between the two interventions.

CONCLUSIONS: The evidence based on two low-quality studies was insufficient to conclude that the use of oscillating tips for the management of pain and dental fear in children or adolescents compared with rotating drills was more effective.
PURPOSE: To determine the efficacy of high-fluoride toothpastes (>= 2500 ppm) as compared to standard fluoride toothpastes (<= 1500 ppm) in preventing dental caries.

MATERIALS AND METHODS: Randomised controlled trials (RCTs) and cluster-randomised trials comparing high-fluoride dentifrices (>= 2500 ppm) with lower-concentration fluoride dentifrices (<= 1500 ppm) with a follow-up period of at least 6 months were included. A random effects model was used to assess the mean differences in caries increment between the two types of dentifrices. A fixed effects model was used to determine the preventive effect of high-concentration fluoride toothpastes compared with low-fluoride toothpastes. Subgroup and sensitivity analyses were conducted when results indicated heterogeneity. Statistical significance was set at p < 0.05.

RESULTS: Eight studies met the inclusion criteria. High-fluoride toothpaste use was statistically significantly associated with lower caries increment scores (pooled mean difference: -0.52 [95% CI, -0.67, -0.37], p = 0.00001). Subgroup analysis for the included studies reflected a significant reduction in I2 values from 99% to 18%. High-fluoride toothpastes were also associated with a greater preventive effect compared with low-fluoride toothpastes (pooled odds: 52.76 [95% CI, 19.74, 141.04], p = 0.95). Heterogeneity between studies was assessed using I2.

CONCLUSION: This meta-analysis suggests that high-fluoride toothpastes are superior to low-fluoride toothpastes in reducing caries. The results of this work when used judiciously should encourage the use of high-fluoride toothpaste, specifically among the vulnerable populations, to maximise preventive benefits.

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Title
Relation between Socioeconomic Indicators and Children Dental Caries in Iran: A Systematic Review and Meta-analysis.

Source

Status
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Abstract
The relationship between households' socioeconomic situation (SES) and children dental caries has been assessed in many Iranian studies to evaluate the effect of public dental care programs supporting the poor. Hence, this study through systematic review and meta-analysis has presented a conclusion in this regard. Domestic and foreign databases were searched using keywords designed by concept map. Time limit to search the databases included articles published from 1994 to 2017. Twenty-five articles were entered to the final step of the study, in which 49 relationships between SES and dental caries were assessed. Heterogeneity between studies was assessed using I2. Publication bias has been assessed using funnel plot and Egger's test. The data were assessed by STATA 13.1. Odds ratio and mean difference of children dental caries in high SES households in comparison with low SES households were 0.41 (confidence interval [CI]: 0.30, 0.52) and -0.49 (CI: -0.85, -0.13), respectively. The CI in both cases did not include “null or no effect line,” so there was a significant inverse relation between SES and dental caries. Despite the emphasis on upstream documents on equity in access to dental health services, there was high difference between SES groups in this regard. It is necessary to revise dental health programs at the country level to decrease these differences.

Publication Type
Journal Article. Review.

Year of Publication
2018

Unique Identifier
30114212

Title
Association between passive tobacco exposure and caries in children and adolescents. A systematic review and meta-analysis.
In a high economic and biological cost, the traditional therapeutic approach to carious lesion management is still largely restorative. Minimally invasive (MI) treatment offers an attractive alternative to managing carious lesions in a more conservative and effective manner, resulting in enhanced preservation of tooth structure. The aim of this review was to summarize the evidence behind several MI alternatives for carious lesion management, including the use of sealants, infiltration, atraumatic restorative treatment (ART), and selective carious tissue removal (e.g., indirect pulp capping, stepwise removal, or selective removal to soft dentin). Relevant literature was screened, and articles reporting randomized controlled trials or systematic reviews of strategies to manage non-cavitated or cavitated carious lesions in adults and children were included. Fifty-six articles met the inclusion criteria. For non-cavitated lesions, the use of sealants is supported by strong evidence, while the evidence for infiltration of proximal lesions is moderate. For deep cavitated lesions, selective removal to soft dentin and/or stepwise excavation is supported by strong evidence. The use of the ART technique to restore cavitated lesions is also supported by strong evidence as a suitable strategy that has been used extensively in the literature concerning non-dental settings. Preservation of tooth structure through the use of MI treatment for both non-cavitated and cavitated lesions is supported by moderate-strong evidence, which supports the paradigm shift towards routine use of more conservative strategies in the treatment of carious lesions.
**Title**: Body Mass Index and Dental Caries: A Systematic Review. [Review]


**Authors**: Shivakumar S; Srivastava A; C Shivakumar G.

**Abstract**

Introduction: This review was undertaken to analyze the relationship between body mass index (BMI) and dental caries with the available literature evidence.

Materials and methods: The articles were searched from Medline/PubMed and Journal of Web published between 2005 and 2016.

Results: Out of the 146 references obtained, 16 articles in English language were read in full, which fulfilled the inclusion criteria after assessing by Down and Black criteria.

Conclusion: No consensus was reached in the relationship between BMI and dental caries in the present review due to varied associations.

**How to cite this article:** Shivakumar S, Srivastava A, Shivakumar GC. Body Mass Index and Dental Caries: A Systematic Review. Int J Clin Pediatr Dent 2018;11(3):228-232.
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Abstract

Prior studies suggest dental caries traits in children and adolescents are partially heritable, but there has been no large-scale consortium genome-wide association study (GWAS) to date. We therefore performed GWAS for caries in participants aged 2.5-18.0 years from nine contributing centres. Phenotype definitions were created for the presence or absence of treated or untreated caries, stratified by primary and permanent dentition. All studies tested for association between caries and genotype dosage and the results were combined using fixed-effects meta-analysis. Analysis included up to 19,003 individuals (7,530 affected) for primary teeth and 13,353 individuals (5,875 affected) for permanent teeth. Evidence for association with caries status was observed at rs1594318-C for primary teeth [intronic within ALLC, odds ratio (OR) 0.85, effect allele frequency (EAF) 0.60, P = 4.13e-8] and rs7798861-A (intronic within NEDD9, OR 1.28, EAF 0.85, P = 1.63e-8) for permanent teeth. Consortium-wide estimated heritability of caries was low [h2 of 1% (95% CI: 0%-7%) and 6% (95% CI 0%-13%) for primary and permanent dentitions, respectively] compared with corresponding within-study estimates [h2 of 28% (95% CI: 9%-48%) and 17% (95% CI: 2%-31%)] or previously published estimates. This study was designed to identify common genetic variants with modest effects which are consistent across different populations. We found few single variants associated with caries status under these assumptions. Phenotypic heterogeneity between cohorts and limited statistical power will have contributed; these findings could also reflect complexity not captured by our study design, such as genetic effects which are conditional on environmental exposure.

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Title

Revitalising Silver Nitrate for Caries Management. [Review]

Source


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Status

In-Process

Authors

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Abstract

Silver nitrate has been adopted for medical use as a disinfectant for eye disease and burned wounds. In dentistry, it is an active ingredient of Howe's solution used to prevent and arrest dental caries. While medical use of silver nitrate as a disinfectant became subsidiary with the discovery of antibiotics, its use in caries treatment also diminished with the use of fluoride in caries prevention. Since then, fluoride agents, particularly sodium fluoride, have gained popularity in caries prevention. However, caries is an infection caused by cariogenic bacteria, which demineralise enamel and dentine. Caries can progress and cause pulpal infection, but its progression can be halted through remineralisation. Sodium fluoride promotes remineralisation and silver nitrate has a profound antimicrobial effect. Hence, silver nitrate solution has been reintroduced for use with sodium fluoride varnish to arrest caries as a medical model strategy of caries management. Although the treatment permanently stains caries lesions black, this treatment protocol is simple, painless, non-invasive, and low-cost. It is well accepted by many clinicians and patients and therefore appears to be a promising strategy for caries control, particularly for young children, the elderly, and patients with severe caries risk or special needs.

Publication Type


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2018

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Title

The International Caries Detection and Assessment System - ICDAS: A Systematic Review.

Source

The aims of this study were: (1) to evaluate the overall reproducibility and accuracy of the International Caries Detection and Assessment System (ICDAS) for assessing coronal caries lesions, and (2) to investigate the use of systems associated with the ICDAS for activity assessment of coronal caries lesions. Specific search strategies were adopted to identify studies published up to 2016. For the first objective, we selected studies that assessed primary coronal caries lesions using the ICDAS as a reference standard. A total of 54 studies were included. Meta-analyses summarized the results concerning reproducibility and accuracy (correlation with histology, summary ROC curves [SROC], and diagnostic odds ratio [DOR]). The latter 2 were expressed at D1/D3 levels. The heterogeneity of the studies was also assessed. Reproducibility values (pooled) were > 0.65. The ICDAS mostly presented a good overall performance as most areas under SROC were > 0.75 at D1 and > 0.90 at D3; DOR >=6. For the second objective, we selected studies investigating activity assessment associated with the ICDAS. The meta-analyses pooled results based on the same methodology and parameters as above. Longitudinal findings regarding caries progression were described to estimate the validity of these systems. On average, the systems for activity assessment of caries lesions showed moderate values concerning reproducibility and overall performance. Active caries lesions were more prone to progress than inactive ones after 2 years. In conclusion, the ICDAS presented a substantial level of reproducibility and accuracy for assessing primary coronal caries lesions, Additional systems associated with the ICDAS that classify caries lesion activity can be useful as they are moderately reproducible and accurate.
high-quality evidence as assessed by meta-evaluation of meta-analysis: 10 appraisal questions for biologists. Eight reviews addressed the intervention: casein phosphopeptide-amorphous calcium phosphate (CPP-ACP)/casein phosphopeptide-amorphous calcium fluoride phosphate (CPP-ACFP). Two reviews were performed on arginine-containing formulations. Majority of the high-quality systematic reviews were inconclusive over the effects of CPP-ACP/CPP-ACFP.

CONCLUSION: This meta-evaluation suggests that CPP-ACP/CPP-ACFP can be considered as an adjunct to fluorides but not as an alternative until long-term well-designed clinical trials assessed by systematic reviews and meta-analysis are available. Arginine-containing dentifrice with an insoluble calcium base and fluoride seem to be a promising agent, but more well-designed non-industry-supported clinical trials can provide better insights in future.

CONCLUDING REMARKS: The long-term benefits of using CPP-ACP/CPP-ACFP as an adjunct to fluorides need to be more systematically evaluated. Arginine-containing dentifrice with an insoluble calcium base and fluoride seem to be a promising agent, but more well-designed non-industry-supported clinical trials can provide better insights in future.
OBJECTIVE: Accuracy studies should associate the diagnostic criteria and outcomes collected to the treatment decision for patients to be considered clinically relevant. This systematic review performed a critical evaluation of the clinical relevance of accuracy studies on the visual and radiographic methods for secondary caries detection, and other aspects.

SOURCE: The search was conducted in PubMed, SCOPUS and ISI Web of knowledge databases.

STUDY SELECTION: Accuracy studies assessing clinical and/or radiographic method for evaluation of secondary caries were included. The systematization of the diagnostic criteria, lesion activity assessment and differential diagnosis of secondary caries from factors that can lead to misinterpretations were assessed. Clinical relevance was evaluated by the report of aspects related to: link to treatment decision, evaluation of patient-centered outcomes, establishment of thresholds for non-operative and operative treatment, lesion activity assessment, and reference method. Risk of bias was also assessed. A descriptive analysis was performed.

DATA: Following eligibility criteria, 19 articles of the 3089 searched were reviewed. Different diagnostic criteria were reported, mainly for the visual inspection. The use of a standardized diagnostic system, lesion activity assessment and differential diagnosis were described by a limited number of studies. Approximately half of the studies reported association of diagnosis and treatment. Enamel lesions were evaluated radiographically in 28.6% of studies, and visually in 69.2%. Visual diagnosis was more relevant in relation to the operative treatment decision. Patient-centered outcomes were not investigated.

CONCLUSION: The majority of studies fails to present clinical relevance and report of patient-centered outcomes.
BACKGROUND: Assessing caries risk is an essential element in the planning of preventive and therapeutic strategies. Different caries risk assessment (CRA) models have been proposed for the identification of individuals running a risk of future caries. The scientific evidence relating to standardized CRA models is still limited; even if Cariogram was tested in children and adults in few studies of good quality, no sufficient evidence is available to affirm the method is effective in assessing caries risk and prediction. New options of diagnosis, prognosis and therapy are now available to dentists but the validity of standardized CRA models still remains limited.

METHODS: Randomized clinical trials, cross-sectional studies, cohort studies, comparative studies, validation studies and evaluation studies, reporting caries risk assessment using standardized models (Cariogram, CAMBRA, PreViser, NUS-CRA and CAT) in patients of any age related to caries data recorded by DMFT/S or ICDAS indices, were included. A search string was developed. All the papers meeting the inclusion criteria were subjected to a quality assessment.

RESULTS: One thousand three hundred ninety-two papers were identified and 32 were included. In all but one, the Cariogram was used both as sole model or in conjunction with other models. All the papers on children (n=16) and adults (n=12) found a statistically significant association between the risk levels and the actual caries status and/or the future caries increment. Nineteen papers, all using the Cariogram except one, were classified as being of good quality. Three of four papers comprising children and adults found a positive association. For seven of the included papers, Cariogram sensitivity and specificity were calculated; sensitivity ranged from low (41.0) to fairly low (75.0), while specificity was higher, ranging from 65.8 to 88.0. Wide 95% confidence intervals for both parameters were found, indicating that the reliability of the model differed in different caries risk levels.

CONCLUSIONS: The scientific evidence related to standardized CRA models is still limited; even if Cariogram was tested in children and adults in few studies of good quality, no sufficient evidence is available to affirm the method is effective in caries risk assessment and prediction. New options of diagnosis, prognosis and therapy are now available to dentists but the validity of standardized CRA models still remains limited.
Visual and radiographic caries detection: a tailored meta-analysis for two different settings, Egypt and Germany.

**Source**

BACKGROUND: Diagnostic meta-analyses on caries detection methods should assist practitioners in their daily practice. However, conventional meta-analysis estimates may be inapplicable due to differences in test conduct, applied thresholds and assessed population between settings. Our aim was to demonstrate the impact of tailored meta-analysis of visual and radiographic caries detection to different settings using setting-specific routine data.

METHODS: Published systematic reviews and meta-analyses on the accuracy of visual and radiographic caries detection were used. In two settings (a private practice in Germany and a public health clinic in Egypt), routine data of a total of 100 (n=50/practice) consecutive 12-14 year-olds were collected. Test-positive rates of visual and radiographic detection for initial and advanced carious lesions on occlusal or proximal surfaces of molars were used to tailor meta-analyses. If prevalence data were available, these were also used for tailoring.

RESULTS: From the original reviews, 210 and 100 heterogeneous studies on visual and radiographic caries detection were included in our meta-analyses. For radiographic detection, sensitivity and specificity estimates derived from conventional and tailored meta-analysis were similar. For visual detection of advanced occlusal carious lesions, the conventional meta-analysis yielded a sensitivity and specificity (95% CI) of 64.6% (57-71) and 90.9% (88-93), whereas the tailored estimates for Egypt were 75.1% (70-81) and 84.9% (82-89), respectively, and 43.7% (37-51) and 96.5% (95-97) for Germany, respectively.

CONCLUSION: Conventional test accuracy meta-analyses may yield aggregate estimates which are inapplicable to specific settings. Routine data may be used to produce a meta-analysis estimate which is tailored to the setting and thereby improving its applicability.

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STUDY SELECTION: Randomized controlled trials comparing micro-invasive strategies against each other, NI or placebo for managing proximal carious lesions were included. The primary outcome was radiographically assessed lesion progression. Pairwise and Bayesian network meta-analyses as well as TSA were used for synthesis.

DATA: Thirteen split-mouth studies (486 participants, mean age 15 years) were included. Mean follow-up was 25 months (min/max 12/36 months). Firm evidence on the superior efficacy of sealing/infiltration over NI (OR: 95% CI: 0.25; 0.18-0.32) was reached. Firm evidence was also reached on the superior efficacy of sealing (OR: 95% CI: 0.29; 0.18-0.46, 7 studies) and infiltration (OR: 95% CI: 0.22; 0.15-0.33, 7 studies) over NI. One study compared infiltration versus sealing and found no significant difference (0.70; 0.34-1.47). Based on Bayesian NMA, infiltration was ranked first in 80% of the simulations (sealing 20%, NI 0%). The surface-under-the-cumulative-ranking (SUCRA) values were 0.90 for infiltration, 0.60 for sealing and 0.00 for NI. We did not detect significant inconsistency (p=0.89, node-split).

CONCLUSIONS: Sealing or infiltration are likely to be more efficacious for arresting early (non-cavitated) proximal lesions than NI.

CLINICAL SIGNIFICANCE: Practitioners should strive to perform micro-invasive treatment instead of NI for early proximal lesions. The decision between sealing or infiltration should be guided by practical concerns beyond efficacy.
The presence of endogenous acids from bacteria acting on a suitable substrate combined with sources of exogenous biocorrosives such as exogenous acids and proteolytic enzymes in areas of stress concentration are hypothesized to lead to the development and progression of cervical and root caries (RC). Quantifying the effects of each of the mechanisms (stress and biocorrosion) is a daunting task to investigate since so many factors are involved at various times in the etiology of noncarious cervical lesions (NCCLs), cervical caries (CC), and RC. Frictional action of the tongue has a cleansing effect and lingual serous saliva, which has a high flow rate buffering capacity from bicarbonates seem to account for the paucity of lingual NCCLs, cervical, and RC in these areas of teeth. Future studies are indicated to determine the effects of stress and biocorrosion and their factors in the etiology of CC and RC.

CLINICAL SIGNIFICANCE: This manuscript presents hypothetical and literary information that the combined effects of stress concentration and biocorrosion contribute to the formation as well as progression of cervical and root caries.
Silver Fluoride as a Treatment for Dental Caries.

Source
Advances in Dental Research. 29(1):135-140, 2018 02.

Year of Publication
2018

Unique Identifier
29355428

Title
Silver Fluoride as a Treatment for Dental Caries.

Source
Advances in Dental Research. 29(1):135-140, 2018 02.

Year of Publication
2018

Unique Identifier
29930359

Title
Systematic review finds that silver diamine fluoride is effective for both root caries prevention and arrest in older adults.

Source

Year of Publication
2018

Abstract
Medical management of caries is a distinct treatment philosophy that employs topical minimally invasive therapies that treat the disease and is not merely prevention. This strategy is justified as an alternative or supplement to traditional care by significant disease recurrence rates following comprehensive operative treatment under general anesthesia. Silver diamine fluoride (SDF) is one agent to enable effective noninvasive treatment. The announcement of breakthrough therapy designation by the Food and Drug Administration (FDA) suggests that SDF may become the first FDA-approved drug for treating caries. Since our systematic review performed in April 2015, 4 clinical trials have been completed, which inform an update to the application protocol and frequency regimen. Suggestions from these studies are to skip the rinsing step due to demonstration of safety in young children, start patients with high disease severity on an intensive regimen of multiple applications over the first few weeks, and continue with semiannual maintenance doses as previously suggested. Breakthroughs in elucidating the impact of SDF on the dental plaque microbiome inform potential opportunities for understanding caries arrest. SDF can be added to the set of evidence-based noninvasive methods to treat caries lesions in primary teeth, such as the Hall crown technique and sealing lesions with accessible margins.

Publication Type

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Effects of Papacarie on children with dental caries in primary teeth: a systematic review and meta-analysis. [Review]

Source

AIM: This review is aiming at comparing the Papacarie and traditional method in caries removal in primary dental caries with children.

DESIGN: Comprehensive literature searching at PubMed, Embase, Cochrane Central Register of Controlled Trials, and Web of Science to January 2018.

RESULTS: Six randomized controlled trials (RCTs) and four prospective controlled clinical trials (CCTs) were included. The microbiota in caries dentine was significantly reduced using the Papacarie treatment (MD = 0.57, 95% CI 0.04 to 1.09, P = 0.03), and the anxiety feeling declined more in the Papacarie group (MD = -1.01, 95% CI -1.72 to -0.30, P < 0.005). There was a greater 200.79 (MD = 200.79, 95%CI 152.50 to 249.09, P < 0.00001) increase in time taken for the Papacarie treatment compared with the conventional method.

CONCLUSION: Papacarie exerts a positive effect in reducing the bacteria and decreases the pain during caries removal in primary teeth although it costed a longer treatment time compared with the conventional method.

Is Silver Diamine Fluoride Effective in Preventing and Arresting Caries in Elderly Adults? A Systematic Review. [Review]

Source

AIM: This review is aiming at comparing the Papacarie and traditional method in caries removal in primary dental caries with children.

RESULTS: Six randomized controlled trials (RCTs) and four prospective controlled clinical trials (CCTs) were included. The microbiota in caries dentine was significantly reduced using the Papacarie treatment (MD = 0.57, 95% CI 0.04 to 1.09, P = 0.03), and the anxiety feeling declined more in the Papacarie group (MD = -1.01, 95% CI -1.72 to -0.30, P < 0.005). There was a greater 200.79 (MD = 200.79, 95%CI 152.50 to 249.09, P < 0.00001) increase in time taken for the Papacarie treatment compared with the conventional method.

CONCLUSION: Papacarie exerts a positive effect in reducing the bacteria and decreases the pain during caries removal in primary teeth although it costed a longer treatment time compared with the conventional method.

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Abstract
Aim: Silver diamine fluoride (SDF) has invoked interest in recent times due to its remineralization capacity and non-invasive application procedure. The aim of this systematic review was to report the findings concerning the effectiveness of SDF in managing caries in the elderly adults.

Materials and Methods: A systematic search of publications was conducted using four databases: PubMed, MEDLINE, Embase, and CENTRAL. The key MeSH term combinations used were (silver diamine fluoride) AND (caries) AND (elderly).

Results: The review found only three well-conducted randomized controlled trials evaluating the effectiveness of SDF on root caries in community-dwelling elders. None of the studies addressed coronal caries. The effectiveness improved when combined with structured oral health education.

Conclusion: The available limited evidence on SDF shows that it is effective in arresting and preventing root caries in the elderly. More high-quality studies need to be done to verify the effectiveness on coronal caries and long-term effects of SDF in the elderly with varying levels of dependency.

Publication Type
Journal Article. Review.
Year of Publication
2018

Unique Identifier
29768975
Title
Arresting Dentine Caries with Silver Diamine Fluoride: What's Behind It?.
Source

Abstract
Unlike other fluoride-based caries preventive agents, silver diamine fluoride (SDF) can simultaneously prevent and arrest coronal and root dentine caries. The profound clinical success of SDF has drawn many clinicians and researchers to study the mechanism of SDF in arresting dentine caries. This critical review discusses how silver and fluoride contribute to caries arrest, in terms of their effects on bacteria as well as on the mineral and organic content of dentine. Silver interacts with bacterial cell membrane and bacterial enzymes, which can inhibit bacterial growth. Silver can also dope into hydroxyapatite and have an antibacterial effect on silver-doped hydroxyapatite. Furthermore, silver is also a strong inhibitor of cathepsins and inhibits dentine collagen degradation. Early studies proposed that silver hardened caries lesions by forming silver phosphate. However, recent studies found that little silver phosphate remained on the arrested dentine lesion. The principal silver precipitate was silver chloride, which could not contribute to the significant hardening of the arrested lesions. On the other hand, fluoride enhances mineral formation by forming fluorohydroxyapatite with reduced solubility. A significant increase in microhardness occurs with an elevated level of calcium and phosphorus but not silver on the surface layer of the arrested dentine caries lesion following SDF treatment. Fluoride also inhibits matrix metalloproteinases activities and therefore inhibits dentine collagen degradation. The combination of silver and fluoride in an alkaline solution has a synergistic effect in arresting dentine caries. The alkaline property of SDF provides an unfavorable environment for collagen enzyme activation. Understanding the mechanisms of SDF in arresting dentine caries helps clinicians to develop appropriate protocols for the use of SDF in clinical care.

Publication Type
Journal Article.
Year of Publication
2018

Unique Identifier
29900916
Title
Trends in dental caries in Indian children for the past 25 years.
Source
Background: The economic liberalization which was started 25 years back in India has led to a rising gross domestic product and per capita income and a decline in poverty. There has been an improvement in various health status indicators in the Indian population. As oral health is an integral part of general health, a retrospective study was designed to assess the effect of economic liberalization on dental caries experience in Indian children.

Materials and Methods: A systematic literature search was conducted to find studies done on dental caries prevalence in children in India from the year 1992-2016. Mesh and free text terms “child,” “dental caries,” and “India” were searched in databases - PubMed and PubMed Central. A total of 1468 titles were screened, out of which 191 articles were shortlisted for further inspection. Finally, 69 studies were found suitable for final analysis.

Results: The pooled caries prevalence was between 50.84% and 62.41% at 5-year interval. There was a decline in caries prevalence in 2-5 and 11-15 years of age group. The overall weighed mean of 2.4, 2.7, and 1.9 was observed in three different age groups. Significant caries index (SIC) of more than 3 was observed in all the age groups.

Conclusion: The present review suggests that more than half of Indian children have been affected by dental caries. High SIC index score suggests a skewed distribution of caries among Indian children. This data may aid in planning further exploratory research and oral health care services for children by the stakeholders.

SOURCE OF FUNDING: This study was partially supported by the National Council for Scientific and Technological Development of Brazil under grants 304105/2013-9 and 305588/2014-1 TYPE OF STUDY/DESIGN: Systematic review with meta-analysis.
Research on the association between dental caries and body mass index (BMI) in children has shown contradictory results; thus we aimed to examine the association between dental caries and the full range of BMI classes among children. We comprehensively searched PubMed, Embase, and the Cochrane Library for studies published prior to March 2017. Articles comparing dental caries among the full range of BMI classes for children below 18 years of both genders were included. Fourteen studies were eligible for this study. Basic information - i.e., first author, published year, study design, country, sample size, age, type of dental caries index and BMI, main results and conclusions, and means and standard deviations of the dental caries indexes used - was pooled. The weighted mean differences and corresponding 95% confidence intervals for dental caries between normal weight group and those with normal weight were analyzed. Generally, no significant differences in caries were found among the overweight and obese children in both primary and permanent teeth. Sensitivity analyses showed that the obese group had more caries than the normal-weight group in their primary teeth. Significantly more caries was found among the overweight and obese children in both primary and permanent teeth in high-income countries, but not in low- and middle-income countries. We recommend that further studies use suitable sample sizes, unify the criteria for BMI categorization and the dental caries index, and investigate the confounding factors that might influence dental caries and BMI.
Purpose: The aim of this meta-analysis was to determine which characteristics of mandibular third molars (MTMs) are more often associated with an increase in the prevalence/incidence of caries on the distal surface of mandibular second molars (MSMs).

Methods: Three electronic databases were analyzed: PubMed; OVID and the Virtual Health Library. Observational studies were included, and the risk of bias was assessed using The Newcastle-Ottawa Scale. The Comprehensive Meta-Analysis software program was used for meta-analysis.

Results: Fifteen studies were included in this systematic review, and five were included in the meta-analysis. The distal surface of MSMs were more likely to exhibit caries in the following scenarios: when MTMs were found in the A position, rather than the C position (OR: 3.45, 95% CI: 2.28-5.22, p<0.001); when the horizontal position was compared with the vertical (OR: 8.12, 95% CI: 3.75-17.58, p<0.001) and distoangular (OR: 9.75, 95% CI: 3.49 - 27.25, p<0.001) positions; and when the mesioangular position was compared with the vertical (OR: 7.25, 95% CI: 3.48-15.10, p<0.001) and distoangular (OR: 9.54, 95% CI: 3.47 - 26.21, p<0.001) positions.

Conclusion: The results of this study suggest that the presence of MTMs increases the incidence of caries on the distal surface of MSMs. Furthermore, caries on the distal surface of MSMs is more commonly associated with position A and horizontal and mesioangular mandibular molars.

Publication Type: Journal Article. Review.
Year of Publication: 2018
Abstract

Methods: Studies conducted in developing nations, published between 2005 and 2017 in English, that included children younger than 6 years and examined ECC were included. The outcome of interest were parental risk factors, which included parental knowledge, behavior, attitudes, sense of coherence (SOC), stress, socioeconomic status (SES), education, and breastfeeding duration. The studies were retrieved from MEDLINE, Ovid Medline, and PubMed.

Results: The search yielded 325 studies, of which 18 were considered eligible for inclusion in this review. Ten studies found maternal education, and seven studies found parental education to be significantly associated with ECC. SES was significantly associated with ECC in 13 studies in the form of annual household income and occupation level. Four studies observed the significant association between oral health knowledge and attitudes with ECC, whereas only two studies found maternal attitude to be associated with ECC. Breastfeeding duration was a significant risk factor in four studies. One study each found significant associations of SOC, parental distress, and secondary smoke with ECC.

Conclusion: To date, most of the researches done in developing countries have reported distal parental factors such as income and education being significant risk factors in caries development compared to proximal risk factors in low-income groups. Only a few studies analyzed the psychosocial and behavioral factors. Interventions could be designed to improve parental oral health knowledge and behaviors in these nations.

VI 1

Authors Full Name
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Abstract
The latest national survey found that 70% of 5-year-old children in China had dental caries. The prevalence of early childhood caries (ECC) may not only be attributed to poor oral hygiene and unhealthy diet, but also to limited access to and availability of dental care. The prevailing preventive measures adopted by industrialised countries for ECC management are neither practical nor affordable in China. Hence, an alternative approach to ECC management is necessary. Atraumatic restorative treatment (ART) has been advocated because the simple and short operative time renders ART affordable. However, the success rate of ART in restoring anterior primary teeth is unfavourable. Although there is no water fluoridation in China, topical fluorides may be used to manage ECC. Tooth brushing with fluoride toothpaste is effective for caries control, but not all toothpastes in China are fluoridated. Professionally applied fluorides such as sodium fluoride varnish can be a cost-effective treatment for managing the high prevalence of ECC in China. Silver diamine fluoride (SDF) at 38% is suggested to be effective in arresting ECC in China. It can be a simple, non-invasive and low-cost treatment. However, it stains caries black. Children and their parents must be well informed before SDF treatment.
Abstract

OBJECTIVE: To review the evidence regarding the mechanisms of silver diamine fluoride (SDF) for arresting caries.

METHODS: A literature search was conducted using the keywords silver diamine fluoride, and its alternative names, in seven databases: PubMed, Embase and Scopus (English); China National Knowledge Infrastructure (Chinese); Biblioteca Virtual em Saude (Portuguese); Biblioteca Virtual en Salud Espana (Spanish); and Ichushi-Web (Japanese). The titles and abstracts were screened. Full texts were retrieved for publications that studied mechanisms of actions of SDF, including its effects on remineralisation of carious lesions and on cariogenic bacteria.

RESULTS: A total of 1,123 publications were identified. Twenty-nine articles were included and they investigated the effect of SDF on cariogenic bacteria and dental hard tissues. Eleven studies investigated the antibacterial properties of SDF. They found that SDF was bactericidal to cariogenic bacteria, mainly Streptococcus mutans. It inhibited the growth of cariogenic biofilms on teeth. Twenty studies reported the remineralisation of demineralised enamel or dentine by SDF. They found that mineral loss of demineralised enamel and dentine was reduced after SDF treatment. A highly mineralised surface rich in calcium and phosphate was formed on arrested carious lesions. Four studies examined the effect of SDF on dentine collagen. They found that SDF inhibited collagenases (matrix metalloproteinases and cysteine cathepsins) and protected dentine collagen from destruction.

CONCLUSION: SDF is a bactericidal agent and reduces the growth of cariogenic bacteria. It inhibits demineralisation and promotes the remineralisation of demineralised enamel and dentine. It also hampers degradation of the dentine collagen.
The aim of this literature review is to explore the treatment methods for root caries in laboratory and clinical research in the last decade. A systematic search of publications in PubMed and Web of Science databases was performed. The timespan was limited to the last 10 years and English language. Further retrieval was conducted using the search terms of specific therapies or treatments. Eighty-two articles were included in this systematic review and full texts were retrieved. Types of studies included laboratory studies and clinical trials. Therapeutic approaches for root caries without risk of pulp exposure can be categorized into non-invasive and restorative treatment. Non-invasive treatments which targeted different causative factors of root caries have been developed in the last decade. Accordingly, several artificial caries model systems have been proposed for the study of root caries in the laboratory. Carious tissue excavation techniques and restorative materials and procedures have been modified to improve the prognosis of invasive treatment. It is of importance to determine the most appropriate therapy for root caries and further clinical trials are needed to draw firm conclusions concerning the efficacy and consistency of the various treatment methods proposed.

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Abstract

Oral Candida albicans has been detected in children with early childhood caries (ECC) and has demonstrated cariogenic traits in animal models of the disease. Conversely, other studies found no positive correlation between C. albicans and caries experience in children, while suggesting it may have protective effects as a commensal organism. Thus, this study aimed to examine whether oral C. albicans is associated with ECC. Seven electronic databases were searched. The data from eligible studies were
extracted, and the risk of bias was evaluated. A fixed effects model (Mantel-Haenszel estimate) was used for meta-analysis, and the summary effect measure was calculated by odds ratio (OR) and 95% confidence interval (CI). Fifteen cross-sectional studies were included for the qualitative assessment and 9 studies for meta-analysis. Twelve studies revealed higher oral C. albicans prevalence in ECC children than in caries-free children, while 2 studies indicated an equivalent prevalence. A pooled estimate, with OR = 6.51 and 95% CI = 4.94-8.57, indicated a significantly higher ECC experience in children with oral C. albicans than those without C. albicans (p < 0.01). The odds of experiencing ECC in children with C. albicans versus children without C. albicans were 5.26 for salivary, 6.69 for plaque, and 6.3 for oral swab samples. This systematic review indicates that children with oral C. albicans have >5 times higher odds of having ECC compared to those without C. albicans. Further prospective cohort studies are needed to determine whether C. albicans could be a risk factor for ECC, and whether it is dependent on different sample sources (saliva/plaque).
OBJECTIVES: The objective of this study was to evaluate the effectiveness of oral health educational actions in the school context in improving oral hygiene and dental caries in schoolchildren through systematic review and meta-analysis.

METHODS: Clinical trials with schoolchildren between 5 and 18 years old were included. Eligible studies were those which had as outcomes caries, plaque accumulation, gingivitis, toothache or tooth loss and which had been published from 1995 to 2015, in any language. The risk of bias was assessed in specific domains according to the Cochrane Handbook. A meta-analysis was carried out using fixed-effects models.

RESULTS: A total of 4417 references were found, from which 93 full texts were evaluated and 12 included in this meta-analysis. Five studies showed a reduction in plaque levels, and two studies with gingivitis as the outcome found no effect. There was not enough evidence on the effectiveness of the interventions in reducing dental caries.

CONCLUSIONS: Traditional oral health educational actions were effective in reducing plaque, but not gingivitis. There is no long-term evidence in respect of the effectiveness of these interventions in preventing plaque accumulation, gingivitis and dental caries in the school environment.

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**RECENT REVIEWS RELATED TO DENTAL CARIES**

<69>
Unique Identifier
29192351
Title
The implication of probiotics in the prevention of dental caries. [Review]
Source
VI 1
Status
In-Process
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Abstract
The current oral health crisis, whose causes are varied and complex, necessitates timely oral evaluation and early detection and treatment of oral health problems. Dramatic changes in eating habits and lifestyles are associated with the recent decline in oral health. Probiotics are "good" bacteria that support digestion and a healthy immune system and offer various health benefits to the host. Traditionally, probiotics have been used to improve gut health; the most common uses have historically been as a treatment or prevention of gastrointestinal infections and disease. During the last decade, studies have additionally suggested the intake of probiotics for oral health purposes. Probiotic use provides an effective strategy to combat oral disease, including the development of dental caries and periodontal infection. The aim of this review is to describe the beneficial roles of probiotic bacteria in the oral cavity and the potential mechanisms by which these bacteria exert their effects on oral health.
Publication Type
Journal Article. Review.
Year of Publication
2018

<70>
Unique Identifier
28944499
Title
Fluoride mouthrinses for preventing dental caries in children and adolescents. [Review]
Source
VI 1
Status
In-Data-Review
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Abstract
The Mission of the Cochrane Nursing Care Field (CNCF) is to improve health outcomes through increasing the use of the Cochrane Library and supporting Cochrane's role by providing an evidence base for nurses and related health care professionals involved in delivering, leading, or researching nursing care. The CNCF produces "Cochrane Corner" columns (summaries of recent nursing-care-relevant Cochrane Reviews) that are regularly published in collaborating nursing-care-related journals. Information on the processes this Field has developed can be accessed at: http://cnmf.cochrane.org/evidence-transfer-program-reviewsummaries.
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Publication Type
Journal Article. Review.
Year of Publication
2018

<71>
Unique Identifier
29534715
Title
Investigating the association between stress, saliva and dental caries: a scoping review. [Review]
Source
**BACKGROUND:** This scoping review addressed the question ‘what do we know about stress-related changes in saliva and dental caries in general population?’

**METHODS:** The review was conducted using electronic searches via Embase, MEDLINE, PsycINFO, CINAHL and WoS. All published human studies with both observational and experimental designs were included. Two reviewers independently reviewed eligible articles and extracted the data. The studies’ quality was assessed using the Effective Public Health Practice Project Quality Assessment Tool.

**RESULTS:** Our search identified 232 reports, of which six were included in this review. All six studies were conducted in children and used salivary cortisol as stress marker. The studies varied by design, types of stressors, children’s caries experience, methods of saliva collection. Four studies reported a positive association between saliva cortisol levels and caries (p < 0.05) while the other two reported no association (p > 0.05). The quality of the included studies was weak to moderate.

**CONCLUSIONS:** There is lack of evidence about an association between stress-related changes in saliva and caries. Well-designed longitudinal studies with rigorous measurement technics for stress, saliva and dental caries are necessary. This will help to generate new insights into the multifactorial etiology of caries and provide evidence for a rational method for its control.

**Abstract**

**OBJECTIVE:** The aim of this review is to conduct a systematic review and meta-analysis comparing the effectiveness of in-home or in-office treatments for dentin hypersensitivity.

**MATERIALS AND METHODS:** An electronic search without restriction on dates or languages was performed in four electronic databases until March 2017. In addition, hand-searches in regular journals and in the gray literature were also conducted. To develop the search strategy, clinical questions were formulated using the PICO(S) method. Eligibility criteria included randomized clinical trials (RCTs) that compared the effectiveness of different agents for the treatment of dentin hypersensitivity through...
chemical occlusion, physical occlusion, nerve desensitization, or photobiomodulation (low-level light therapy). This systematic review was registered in PROSPERO under number CRD42016039394.

RESULTS: Twenty-five RCTs (16 parallel; 9 split-mouth), published from 1992 to 2016, were included. The results of the meta-analysis showed that in-office subgroups treated with chemical or physical occlusion of dentin tubules and nerve desensitization had a statistically significant difference from placebo, with $P < 0.00001$, $P < 0.00001$, and $P = 0.02$, respectively. For in-home treatments, the results of the meta-analysis showed that only those subgroups treated with chemical occlusion of dentin tubules and nerve desensitization exhibited a statistically significant difference from placebo, with $P < 0.00001$ and $P = 0.03$, respectively.

CONCLUSIONS: The results of pairwise meta-analysis suggest that among in-office treatments, dentinal tubule occlusion (whether chemical or physical) and nerve desensitization provide the best outcomes for treatment of dentin hypersensitivity. For in-home treatments, only chemical occlusion of dentin tubules and nerve desensitization showed a greater treatment efficacy than placebo and the difference was statistically significant.
Title

Source

Purpose
PURPOSE: To elucidate the efficacy of strategies for preventing dental caries in Japanese children by examining trends over time in the prevalence of dental caries, the number of decayed, missing, or filled teeth (the DMFT index), and their association with factors affecting oral hygiene.

Materials and Methods
MATERIALS AND METHODS: Several national surveys performed between 1955 and 2015 were reviewed. The prevalence of dental caries in children aged 5-15 years, the DMFT index in children aged 9 or 14 years, individual consumption of added sugars and snacks, the number of dentists in Japan, and the percentage of children who received fluoride varnish were analysed. Additionally, the relative poverty rate among Japanese children was assessed.

Results
RESULTS: The prevalence of caries and the DMFT index in Japanese children reflected the trend of individual added-sugar consumption from 1955 to 2015, and also seemed to decrease inversely with the number of dentists and the percentage of children who had received fluoride varnish since 1969. However, there seemed to be no relation to the relative poverty rate.

Conclusion
CONCLUSION: The main preventive strategies for caries in Japan are to reduce sugar intake and educate school children and their caregivers about oral hygiene.

Publication Type
Journal Article. Review.

Year of Publication
2018

Title
Dental caries and preterm birth: a systematic review and meta-analysis. [Review]

Source
BMJ Open. 8(3):e018556, 2018 03 02.

Purpose
OBJECTIVES: The primary objective of this systematic review was to evaluate the association between dental caries and preterm birth (PTB). The secondary objective was ascertaining the difference between women with dental caries who experienced PTB and those who did not with regard to decayed, missing and filled teeth (DMFT), and decayed, missing and filled surfaces (DMFS) indices.
METHODS: MEDLINE, Embase, CINAHL and Cochrane databases were searched initially in November 2015 and repeated in December 2016. We included observational cohort and case-control studies. Only studies reporting the risk of PTB in women affected compared with those not affected by dental caries in pregnancy were included. Random-effect meta-analyses were used to compute the summary OR of PTB among women with caries versus women without caries, and the mean difference in either DMFT or DMFS indices between women experiencing PTB and those without PTB.

RESULTS: Nine observational studies (4826 pregnancies) were included. Women affected by dental caries during pregnancy did not show a significantly higher risk of PTB (OR: 1.16, 95% CI 0.90 to 1.49, P=0.25, I²=35%). Also, the women with PTB did not show significantly higher DMFT or DMFS indices (summary mean differences: 1.56, P=0.10; I²=92% and -0.15, P=0.9, I²=89%, respectively).

CONCLUSION: Dental caries does not appear to be a substantial risk factor for PTB.

TRIAL REGISTRATION NUMBER: NCT01675180; Pre-results.
Dental caries prevention strategies among children and adolescents with immigrant or low socioeconomic backgrounds: do they work? A systematic review.

**Source**

**VI 1**
**Status**
MEDLINE

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**Abstract**
BACKGROUND: This systematic review was designed to uncover the most reliable evidence about the effects of caries preventive strategies in children and adolescents of immigrant or low socioeconomic backgrounds.

METHODS: According to pre-determined inclusion and exclusion criteria, relevant articles focusing on underprivileged groups were electronically selected between January 1995 and October 2015. The literature search was conducted in five databases; PubMed, Embase, CINAHL, SweMed+ and Cochrane Library. Accepted languages for included articles were English, German and Scandinavian languages. Abstracts and selected articles in full text were read and assessed independently by two review authors. Systematic reviews and meta-analyses were not included. Also articles with topics of water fluoridation and fluoride toothpaste were excluded, this due to all existing evidence of anti-caries effect for disadvantaged groups. The key data about the main characteristics of the study were compiled in tables and a quality grading was performed.

RESULTS: Thirty-seven articles were selected for further evaluation. Supervised toothbrushing for 5-year-old school children was found to be an effective prevention technique for use in underprivileged groups. Also a child/mother approach, targeting nutrition and broad oral health education of mothers showed effectiveness. For older children, a slow-release fluoride device and application of acidulated phosphate fluoride (APF) gel showed to be effective.

CONCLUSION: On the basis of this review, we maintain that in addition to studies of water fluoridation and fluoride toothpaste, there are other preventive intervention studies providing scientific evidence for caries reduction among children and adolescents with immigrant or low socioeconomic backgrounds.

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Abstract
OBJECTIVE: Introduction: According to the 2003 WHO report, dental caries affects from 60% to 90% of school-age children and adults that makes it one of the most common diseases worldwide. The aim was to systematize data about the modern conception of plaque formation and role of microorganisms in its development.

PATIENTS AND METHODS: Materials and methods: Biblosemantic, 50 medical literature sources were systematically reviewed as the material for the research.

RESULTS: Review: According to Miller's theory, oral microorganisms can decompose dietary carbohydrates into acids, which in turn dissolve the calcium phosphates found in the enamel, causing it demineralisation. Along with Streptococcus mutans, nowadays some other bacteria as Streptococcus sorbinus, Lactobacillus spp. and Actinomyces spp. have been well studied as caries contributors. However, the disease is related to plaque-mediated, because a much larger number of normal oral microflora representatives are involved in creating favourable preconditions for its development. There are a lot of original research papers about a role of bacteria in caries decay but compositions and characters of oral microflora are changing nowadays. Therefore, authors show the main cariogenic bacteria and their factors of pathogenicity which create special conditions for caries lesions. Modern concepts of dental plaque formation and pathogenesis of plaque-associative diseases are presented according to the new actual dental research. A lot of attention is paid to the biochemical properties of cariogenic bacteria and chemical process in biofilm. Role of acid and alkali production by oral bacteria in caries decay are shown in this article. Moreover, mechanisms of bacterial acid-fast and acid-tolerance are presented.

CONCLUSION: Conclusions: Analysis of literature demonstrates a lot of bacterial pathogenicity factors which play key role in caries development.

Abstract
OBJECTIVE: Selective and non-selective methods for caries removal were controversial so far, thus we aimed to compare the efficacy of selective and non-selective caries removal by conducting meta-analysis of randomized controlled trials (RCTs).

MATERIALS AND METHODS: Eligible RCTs studies comparing selective caries removal with non-selective caries removal were retrieved by searching PubMed, EMBASE and Cochrane Library till 15 July 2017. The pooled odds ratios (ORs) with 95% confidence intervals (CIs) were calculated for outcome indicators, including pulpal exposure, pulpal symptoms and failure using Inverse variance-random effects or Mantel-Haenszel-fixed effects models.

RESULTS: Totally, seven studies were eligible for the meta-analysis. Compared with the non-selective caries removal group, the risk of pulpal exposure was significantly reduced in the selective caries removal group (OR = 0.11, 95% CI: 0.04-0.30). No significant difference was observed in pulpal symptoms (OR = 0.79, 95% CI: 0.30-2.12) and failure (OR = 1.40, 95% CI: 0.69-2.84) between the groups.

CONCLUSIONS: The efficacy of selective caries removal appears comparable to that of non-selective caries removal in children, with similar pulpal symptoms and failure, but selective caries removal may result in a low incidence of pulpal exposure. However, larger-scale RCTs with long-term follow-up are required to confirm this conclusion.

Abstract

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2018
Efficacy of fluorides and CPP-ACP vs fluorides monotherapy on early caries lesions: A systematic review and meta-analysis.

[Review]

Source

VI 1

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Abstract
The study aimed to evaluate the efficacy of the combination of CPP-ACP and fluorides compared with fluorides monotherapy on patients with early caries lesions. The Medline, Embase and Cochrane databases up to August 2017 were scanned, with no restrictions. Studies satisfied the guideline of randomised controlled trials (RCTs), the patients with early caries lesions and data considering the efficacy of fluorides and CPP-ACP versus fluorides alone were selected. There was no language restriction during the literature search process, however, only papers in English or Chinese were included during the selection process. Outcome variables include laser fluorescence, quantitative light-induced fluorescence, lesion area and visual inspection scores. Mean differences were calculated during the data extraction process. Ten studies including 559 patients were selected in the meta-analysis. Fluorides combined with CPP-ACP achieved the same efficacy for early caries lesions on smooth surfaces compared with fluorides monotherapy (mean difference: -13.90, 95% confidence interval: [-39.25, 11.46], P = 0.28), and the combination treatment showed significantly better efficacy than fluorides monotherapy for occlusal early caries lesions (mean difference: -21.02, 95% confidence interval: [-27.94, -14.10], P<0.01). However, further well-designed studies are still needed.

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Abstract
Following debate and discussion prompted by a focussed, day long pre-ORCA Symposium in July 2015, the Alliance for a Cavity-Free Future Pan-European Chapter, the Platform for Better Oral Health in Europe, and the European Association of Dental Public Health have agreed this statement on the future needs for caries epidemiology and surveillance in Europe. Each organisation agreed to support the planned publication of the Statement, and will make it available on their Organisation's websites and strive to implement its recommendations.

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Publication Type
BACKGROUND: In children, dental caries (tooth decay) is among the most prevalent chronic diseases worldwide. Pulp interventions are indicated for extensive tooth decay. Depending on the severity of the disease, three pulp treatment techniques are available: direct pulp capping, pulpotomy and pulpectomy. After treatment, the cavity is filled with a medicament. Materials commonly used include mineral trioxide aggregate (MTA), calcium hydroxide, formocresol or ferric sulphate. This is an update of a Cochrane Review published in 2014 when insufficient evidence was found to clearly identify one superior pulpotomy medicament and technique.

OBJECTIVES: To assess the effects of different pulp treatment techniques and associated medicaments for the treatment of extensive decay in primary teeth.

SEARCH METHODS: Cochrane Oral Health's Information Specialist searched the Cochrane Oral Health Group's Trials Register (to 10 August 2017), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2017, Issue 7), MEDLINE Ovid (1946 to 10 August 2017), Embase Ovid (1980 to 10 August 2017) and the Web of Science (1945 to 10 August 2017). OpenGrey was searched for grey literature. The US National Institutes of Health Trials Registry (ClinicalTrials.gov) and the World Health Organization International Clinical Trials Registry Platform were searched for ongoing trials. No restrictions were placed on the language or date of publication when searching the electronic databases.

SELECTION CRITERIA: We included randomised controlled trials (RCTs) comparing interventions that combined a pulp treatment technique with a medicament or device in children with extensive decay in the dental pulp of their primary teeth.

DATA COLLECTION AND ANALYSIS: Two review authors independently extracted data and assessed 'Risk of bias'. We contacted authors of RCTs for additional information when necessary. The primary outcomes were clinical failure and radiological failure, as defined in trials, at six, 12 and 24 months. We performed data synthesis with pair-wise meta-analyses using fixed-effect models. We assessed statistical heterogeneity by using I² coefficients.

MAIN RESULTS: We included 40 new trials bringing the total to 87 included trials (7140 randomised teeth) for this update. All were small, single-centre trials (median number of randomised teeth = 68). All trials were assessed at unclear or high risk of bias. The 87 trials examined 125 different comparisons: 75 comparisons of different medicaments or techniques for pulpotomy; 25 comparisons of different medicaments for pulpectomy; four comparisons of pulpotomy and pulpectomy; and 21 comparisons of different medicaments for direct pulp capping. The proportion of clinical failures and radiological failures was low in all trials. In many trials, there were either no clinical failures or no radiographic failures in either study arm. For pulpotomy, we assessed three comparisons as providing moderate-quality evidence. Compared with formocresol, MTA reduced both clinical and radiological failures, with statistically significant differences for clinical failure at 12 and 24 months. MTA also appeared to reduce radiological failure at six, 12 and 24 months (four trials, 150 participants) (low-quality evidence). When comparing calcium hydroxide with formocresol, there was a statistically significant difference in favour of formocresol for clinical failure at six and 12 months and radiological failure at six, 12 and 24 months (six trials (one with no failures), 332 participants). Regarding pulpectomy, we found moderate-quality evidence for two comparisons. The comparison between Metapex and zinc oxide and eugenol (ZOE) paste was inconclusive, with no clear evidence of a difference between the interventions for failure at 6 or 12 months (two trials, 62 participants). Similarly inconclusive, there was no clear evidence of a difference in failure between Endoflas and ZOE (outcomes measured at 6 months; two trials, 80 participants). There was low-quality evidence of a difference in failure at 12 months that suggested ZOE paste may be better than Vitapex (calcium hydroxide/iodoform) paste (two trials, 161 participants). Regarding direct pulp capping, the small number of studies undertaking the same comparison limits any interpretation. We assessed the quality of the evidence as low or very low for all comparisons. One trial appeared to favour formocresol over calcium hydroxide; however, there are safety concerns about formocresol.

AUTHORS' CONCLUSIONS: Pulp treatment for extensive decay in primary teeth is generally successful. Many included trials had no clinical or radiological failures in either trial arm, and the overall proportion of failures was low. Any future trials in this area would require a very large sample size and follow up of a minimum of one year. The evidence suggests MTA may be the most efficacious medicament to heal the root pulp after pulpotomy of a deciduous tooth. As MTA is relatively expensive, future research...
could be undertaken to confirm if Biodentine, enamel matrix derivative, laser treatment or Ankaferd Blood Stopper are acceptable second choices, and whether, where none of these treatments can be used, application of sodium hypochlorite is the safest option. Formocresol, though effective, has known concerns about toxicity. Regarding pulpectomy, there is no conclusive evidence that one medicament or technique is superior to another, and so the choice of medicament remains at the clinician's discretion. Research could be undertaken to confirm if ZOE paste is more effective than Vitapex and to evaluate other alternatives. Regarding direct pulp capping, the small number of studies and low quality of the evidence limited interpretation. Formocresol may be more successful than calcium hydroxide; however, given its toxicity, any future research should focus on alternatives.

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Title
Educational interventions in health services and oral health: systematic review. [Review] [Portuguese, English]
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Abstract
OBJECTIVE To analyze the effectiveness of educational interventions performed in health services in the improvement of clinical behaviors and outcomes in oral health. METHODS We have carried out a systematic review of the literature searching the PubMed, Lilacs, and SciELO databases. We have included studies that have investigated interventions performed by health professionals working in health services and who have used educational actions as main approach to improve behavioral and clinical outcomes in oral health. RESULTS The search amounted to 832 articles and 14 of them met all the inclusion criteria. Five studies have only exclusively evaluated the effectiveness of interventions on caries reduction, three have exceptionally evaluated oral health behaviors, and the other articles have evaluated the effectiveness of interventions for both clinical outcomes (dental caries and periodontal conditions) and behaviors in oral health. Most of the studies (n = 9) were based on randomized controlled trials; the other ones have evaluated before and after the intervention. Five studies have reported a significant reduction of dental caries, and five of the six studies evaluating behavioral outcomes have found some positive change. CONCLUSIONS Most studies evaluating behavioral and periodontal outcomes have shown significant improvements in favor of interventions. All studies evaluating caries have shown a reduction in new lesions or cases of the disease in the groups receiving the interventions, although only five of the eleven articles have found a statistically significant difference. Educational interventions carried out by health professionals in the context of their practice have the potential to promote oral health in the population.

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Oral health considerations for pediatric patients with sickle cell disease. [Review]
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Publication Type
Journal Article. Review.
Beneficial effects of supervised toothbrushing on caries incidence in children and adolescents are questioned.

Data sourcesThe Cochrane Central Register of Controlled Trials, Medline via PubMed, Web of Science, Embase, LILACS and BBO. Sources of grey literature included Open Grey, EThOS and Banco de Teses CAPES. Two international registers of ongoing trials were also searched (Current Controlled Trials and ClinicalTrials.gov). There were no language or date restrictions. Study selectionNo information is given in the manuscript or the published protocol on how the study selection was carried out, although the authors state that they followed PRISMA guidelines. Data extraction and synthesisData extraction and risk of bias assessment were carried out independently by two reviewers. ResultsFour studies were included; in all trials, supervised toothbrushing took place in schools. However, they differed in participant ages and caries risk as well as toothpaste fluoride concentration. Outcomes and outcome measures also varied. Two trials reported statistically significant differences in favour of supervised toothbrushing but lacked data on effect size and precision. No meta-analyses were carried out because of the high degree of heterogeneity between the studies. ConclusionsThe lack of high quality evidence meant that this systematic review was unable to reach a definitive conclusion on the effectiveness of supervised toothbrushing programmes on caries incidence in children and adolescents.

The use of cost-utility analysis for the evaluation of caries prevention: an exploratory case study of two community-based public health interventions in a high-risk population in the UK. [Review]

BACKGROUND: Economic evaluations are important tools for decision makers to determine the best allocation of resources in a healthcare system. This study explored the use of economic evaluation in oral health promotion.

METHODS: A literature review identified oral health promotion programmes that measured both the health impact and costs of oral health interventions. A decision analysis model was constructed to examine the cost utility of preventing dental caries in 5 and 12-year-old children via tooth brushing schemes and fluoride varnish programmes. The costs per child that would be justified according to the National Institute for Health and Care Excellence's threshold of 20,000 per QALY were calculated.

RESULTS: The analysis showed that NICE would consider that the expenditure of 55 per child on supervised tooth brushing, or 100 per child on fluoride varnish application would give sufficient health benefits to be justified according to their threshold.
CONCLUSIONS: Greater attention needs to be paid to the collection of robust data on costs for oral health promotion. Dental researchers also urgently need to collect outcome data in a form that can be translated into a Quality of Life measure, so that the true cost effectiveness and value for money achieved through the prevention of dental disease can be recognised and compared to other allocations of resource.

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OBJECTIVES: To evaluate the effectiveness and safety of different types of slow-release fluoride devices on preventing, arresting, or reversing the progression of carious lesions on all surface types of primary (deciduous) and permanent teeth.

SEARCH METHODS: Cochrane Oral Health's Information Specialist searched the following electronic databases: Cochrane Oral Health's Trials Register (to 23 January 2018); the Cochrane Central Register of Controlled Trials (CENTRAL; 2017, Issue 12) in the Cochrane Library (searched 23 January 2018); MEDLINE Ovid (1946 to 23 January 2018); and Embase Ovid (1980 to 23 January 2018). The US National Institutes of Health Ongoing Trials Register ClinicalTrials.gov, and the World Health Organization International Clinical Trials Registry Platform were searched for ongoing trials (23 January 2018). We placed no restrictions on the language or date of publication when searching the electronic databases.

SELECTION CRITERIA: Parallel randomised controlled trials (RCTs) comparing slow-release fluoride devices with an alternative fluoride treatment, placebo, or no intervention in all age groups. The main outcome measures sought were changes in numbers of decayed, missing, and filled teeth or surfaces (DMFT/DMFS in permanent teeth or dmft/dmfs in primary teeth), and progression of carious lesions through enamel and into dentine.

DATA COLLECTION AND ANALYSIS: We conducted data collection and analysis using standard Cochrane review methods. At least two review authors independently performed all the key steps in the review such as screening of abstracts, application of inclusion criteria, data extraction, and risk of bias assessment. We resolved discrepancies through discussions or arbitration by a third or fourth review author.

MAIN RESULTS: We found no evidence comparing slow-release fluoride devices against other types of fluoride therapy. We found only one double-blind RCT involving 174 children comparing a slow-release fluoride device (glass beads with fluoride were attached to buccal surfaces of right maxillary first permanent molar teeth) against control (glass beads without fluoride were attached to buccal surfaces of right maxillary first permanent molar teeth). This study was assessed to be at high risk of bias. The study recruited children from seven schools in an area of deprivation that had low levels of fluoride in the water. The mean age at the beginning of the study was 8.8 years and at the termination was 10.9 years. DMFT in permanent teeth or dmft in primary teeth was greater than one at the start of the study and greater than one million colony-forming units of Streptococcus mutans per millilitre of saliva. Although 132 children were still included in the trial at the two-year completion point, examination and statistical analysis was performed only on the 63 children (31 in intervention group, 32 in control group) who had retained the beads (retention rate was 47.7% at 2 years). Among these 63 children, caries increment was reported to be statistically significantly lower in the intervention group than in the control group (DMFT: mean difference -0.72, 95% confidence interval (CI) -1.23 to -0.21; DMFS: mean difference -1.52, 95% CI -2.68 to -0.36 (very low-quality evidence)). Although this difference was clinically significant, it only holds true for those children who maintain the fluoride beads; over 50% of children did not retain the beads. Harms were not reported within the trial report. Evidence for other outcomes sought in this review (progression to of caries lesion, dental pain, healthcare utilisation data) were also not reported.

AUTHORS’ CONCLUSIONS: There is insufficient evidence to determine the caries-inhibiting effect of slow-release fluoride glass beads. The body of evidence available is of very low quality and there is a potential overestimation of benefit to the average child. The applicability of the findings to the wider population is unclear; the study had included children from a deprived area that had low levels of fluoride in drinking water, and were considered at high risk of caries. In addition, the evidence was only obtained from children who still had the bead attached at 2 years (48% of all available children); children who had lost their slow-release fluoride devices earlier might not have benefited as much from the devices.
OBJECTIVES: Obesity is one of the most prevalent chronic pathologies in the world and has become a public health problem. At the present time, bariatric surgery (BS) is considered the best option and the only effective method of treatment, but it can occasionally result in a series of alterations at the oral level. This study aims to review the current literature to establish the possible association of patients who have undergone BS and a greater risk of dental caries.

STUDY DESIGN: This study is a systematic review of the literature.

METHODS: A search was made in the database of Medline (via PubMed), over the last 10 years, using the keywords 'bariatric surgery' OR 'gastrectomy' OR 'obesity surgery,' combined independently with the terms 'saliva' and 'dental caries' by means of the connector 'AND.' The criteria used were those described in the PRISMA Declaration for performing systematic reviews. Inclusion criteria and study selection: (a) studies done with humans; (b) articles published in English and Spanish; (c) series of cases; and (d) clinical trials. The risk of bias was assessed independently by two authors. In both data extraction and risk of bias assessment, disagreements were resolved through discussion with a third author.

RESULTS: Two independent reviewers read the titles and summaries of the 79 articles found. Finally, nine of them were included in the study. In the various articles, the parameters that had clinical relevance to the risk of dental caries were evaluated.

CONCLUSIONS: Within the limitations of this study, it is plausible to think that patients who have undergone BS have a greater risk of dental caries. The oral complications associated with BS could be prevented or minimized by including in the multidisciplinary treatment of these patients a team of odontologists who would be responsible for prevention and oral assessment.
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RECENT REVIEWS RELATED TO DENTAL CARIES

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Abstract
INTRODUCTION: Dental caries is the most prevalent non-communicative disease worldwide. Although the etiological factors are well known for years, reducing the number of decayed and missing teeth in children still remains as a barrier. Preventive and curative options are numerous but little is known about their economical advantages. Selecting the intervention that offers the best balance of effectiveness and financial resources becomes crucial in the current situation of budget restrictions worldwide. Areas covered: This expert review summarizes available evidence on cost-effectiveness analyses of preventive and curative measures to manage dental caries in children. Expert commentary: Preventive measures have been more extensively studied than dental caries treatment. Only water fluoridation and tooth brushing are well-established as cost-effective preventive approaches. Despite the increasing number of cost analysis treatment studies in the literature, most of them focus on the cost description, with no correlation to the intervention effectiveness. There is a current need of well-designed and well-reported cost-effectiveness regarding dental caries management.

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Abstract
Odontogenic infections represent a common clinical problem in patients of all ages. The presence of teeth enables the direct spread of inflammatory products from dental caries, trauma, and/or periodontal disease into the maxilla and mandible. The radiographic changes seen depend on the type and duration of the inflammatory process and host body response. Imaging plays a central role in identifying the source of infection and the extent of the disease spread and in detecting any complications. Many different imaging modalities can be used. The radiographic features associated with acute and chronic inflammatory processes are discussed.

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Open Up and Let Us In: An Interprofessional Approach to Oral Health. [Review]
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Dental caries is the single most common chronic disease of childhood in the United States. Access to dental care is one of the barriers to improved oral health for children. Primary care providers who routinely treat children have an established role in prevention and early identification of health problems; thus, they are ideal front-line providers who can detect oral health discrepancies and begin the process of care and prevention.