OBJECTIVE: This systematic review assesses the efficacy of infrared laser therapy used alone or as an adjunct to nonsurgical or surgical periodontal therapy, on clinical and patient-centered outcomes in patients with periodontitis.

METHODS: Randomized clinical trials (RCTs) with a follow-up duration >= 3 months that evaluated root surface debridement (i.e., scaling and root debridement with or without surgical access) to laser therapy alone or laser therapy plus root surface debridement for the treatment of adult patients (>=18 years old) with moderate to severe aggressive or chronic periodontitis were considered eligible for inclusion. The MEDLINE, EMBASE and CENTRAL databases were searched for articles published up to and including March 2016. Random effects meta-analyses were used throughout the review using continuous data (i.e., mean changes from baseline), and pooled estimates were expressed as weighted mean differences (MDs) with their associated 95% confidence intervals (CIs). Additionally, summaries are presented of the included RCTs, critical remarks of the literature and evidence quality rating/strength of recommendation of laser procedures.

RESULTS: Of the 475 potentially eligible articles, 28 were included in the review. Individual study outcomes and seven sets of meta-analysis (1 for the nonsurgical treatment of AgP and 9 for nonsurgical and surgical treatment of CP) showed a benefit of laser therapy in improving clinical attachment level (CAL) and probing depth (PD). However, the comparative differences in clinical outcomes were modest (< 1 mm) and the level of certainty for different therapies was considered low-to-moderate (i.e., more information would be necessary to allow for a reliable and definitive estimation of effect/magnitude of therapies on health outcomes). Overall, most of the Strength of Clinical Recommendations of laser therapies were considered weak or based on expert opinion.

CONCLUSIONS: In patients with moderate to severe periodontitis, the nonsurgical treatment of AgP and CP by SRP plus infrared diode laser, and the surgical treatment of CP by Er:YAG laser therapy alone may promote statistically significant improvements in PD and/or CAL. However, these gains are relatively small (< 1 mm) and provide modest clinical relevance compared to SRP alone. This article is protected by copyright. All rights reserved.
Association between periodontitis and chronic kidney disease: Systematic review and meta-analysis. [Review]

Source
Oral Diseases. 2018 Jan 27.

Abstract
A systematic review and meta-analysis were conducted to evaluate the association between periodontitis (PD) and chronic kidney disease (CKD) and to explore the potential influence of periodontal treatment in patients with CKD. Databases (PubMed, Web of Science, Science direct, Cochrane Database) were screened for relevant articles, focusing on the periodontal status of patients with CKD, published until December 2017. Five hundred and fifty-three articles were identified, and 37 fulfilled the inclusion criteria and were considered in this systematic review. Seventeen articles were included in the meta-analysis and 7 in the review focusing on the impact of periodontal treatment. Most of the identified studies indicated an increased incidence of PD in patients with CKD. Meta-analysis showed an association between CKD and PD, and strength of this association was increased when severe PD was considered (OR = 2.39 (1.70-3.36)). The association could be observed even after adjustment for major CKD risk factors or use of precise diagnosis criteria (OR = 2.26 for severe PD (1.69-3.01)). Analysis of cohort studies indicated an incident rate ratio (IRR) of 1.73. Periodontitis is associated with CKD after multivariable adjustment. Further studies are necessary to determine whether prevention or treatment of PD can reduce the incidence and/or severity of CKD.
Abstract

CONTEXT: The study systematically reviewed articles on the association between tobacco smoking and periodontitis, as it has been hypothesized that smoking affects the course of periodontitis through impairment of immunological and vascular mechanisms.

EVIDENCE ACQUISITION: Searches of articles indexed in PubMed, Scopus, and Embase were performed up to and including May 2017. Search strategy included MeSH and free terms: periodontitis, periodontal diseases, smoking, tobacco use, tobacco, tobacco products, cigarette, pipe, and cigar. Only original prospective longitudinal studies that investigated the association between smoking and periodontitis incidence or progression were included. Results were shown as combined risk ratio. Meta-regression and subgroup analyses were used to explore potential sources of heterogeneity. Analyses were conducted in August 2017.

EVIDENCE SYNTHESIS: Twenty-eight studies were included in the review; of these, only 14 presented data that could be included in the meta-analysis. Pooled adjusted risk ratios estimate that smoking increases the risk of periodontitis by 85% (risk ratio=1.85, 95% CI=1.5, 2.2). Meta-regression demonstrated that age explained 54.2% of the variability between studies, time of follow-up explained 13.5%, loss to follow-up 10.7%, criteria used to assess the periodontal status explained 2.1%, and severity of periodontitis explained 16.9%.

CONCLUSIONS: Smoking has a detrimental effect on the incidence and progression of periodontitis. Tobacco smoking, therefore, is important information that should be assessed along with other risk factors for periodontitis.

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Title
Systematic review and meta-analysis of double-blind, placebo-controlled, randomized clinical trials using probiotics in chronic periodontitis.
Source
Abstract
AIM: The aim of the present study was to evaluate the efficacy of probiotics as an adjunct to scaling and root planning (SRP) in the treatment of chronic periodontitis (CP).

METHODS: The focused question of the study was: Does adjunctive use of probiotics yield better clinical periodontal outcomes compared to placebo/no treatment group in the treatment of CP? Electronic and manual literature searches were conducted up to December 2017 using the following databases: MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, and Cochrane Oral Health Group Trials Register. Forest plots were computed reporting weighted mean difference (WMD) of outcomes and 95% confidence intervals (CI).

RESULTS: Seven clinical studies were included. Four studies showed additional benefits in reducing periodontal probing depth (PPD) and gaining clinical attachment level (CAL), whereas, three studies showed comparable clinical periodontal outcomes between probiotics and SRP/placebo. Significant heterogeneity was observed for PPD reduction and CAL gain. The overall mean difference for CAL gain between probiotics and placebo/SRP was significant (WMD = 1.41, 95% CI = 0.15-2.67, P = .028) at follow up.

CONCLUSION: Adjunctive probiotics could result in additional benefits in CAL gain in CP. Nevertheless, further high-quality randomized clinical trials with microbiological outcomes are warranted to obtain strong conclusions in this regard.

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Abstract

BACKGROUND AND OBJECTIVES: Long noncoding RNAs (lncRNAs) play critical and complex roles in regulating various biological processes of periodontitis. This bioinformatic study aims to construct a putative competing endogenous RNA (ceRNA) network by integrating lncRNA, miRNA and mRNA expression, based on high-throughput RNA sequencing and microarray data about periodontitis.

MATERIAL AND METHODS: Data from 1 miRNA and 3 mRNA expression profiles were obtained to construct the lncRNA-associated ceRNA network. The Search Tool for the retrieval of Interacting Genes/Proteins and Kyoto Encyclopedia of Genes and Genomes were used to analyze transcription factors (TFs) of differentially expressed genes. Gene Ontology enrichment analysis and pathway analysis were performed using the Gene Ontology database and microarray data.

RESULTS: Through constructing the dysregulated ceRNA network, 6 genes (HSPA4L, PANK3, YOD1, CTNNBIP1, EVI2B, ITGAL) and 3 miRNAs (miR-125a-3p, miR-200a, miR-142-3p) were detected. Three lncRNAs (MALAT1, TUG1, FGD5-AS1) were identified to be overlapping results with the previous bioinformatics studies in periodontitis. Moreover, 2 TFs including FOS and EGR were identified to be involved in the regulatory network of the differentially expressed genes-TFs in periodontitis.

CONCLUSION: These findings suggest that 6 miRNAs (HSPA4L, PANK3, YOD1, CTNNBIP1, EVI2B, ITGAL), 3 miRNAs (hsa-miR-125a-3p, hsa-miR-200a, hsa-miR-142-3p) and 3 lncRNAs (MALAT1, TUG1, FGD5-AS1) might be involved in the lncRNA-associated ceRNA network of periodontitis. This study sought to illuminate further the genetic and epigenetic mechanisms of periodontitis through constructing an lncRNA-associated ceRNA network.

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RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

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Title
Does diabetes increase the risk of periodontitis? A systematic review and meta-regression analysis of longitudinal prospective studies.
Source
Acta Diabetologica. 2018 Mar 03.
Abstract
AIM: Even though the association between diabetes and periodontitis is taken for granted, results on this association are conflicting within the literature. This systematic review assessed whether poorly controlled diabetes was associated with periodontitis onset or progression.
METHODS: Electronic searches were performed in PubMed, Scopus and Embase databases. Hand search was carried out in the reference list of all articles included. Gray literature was investigated with a Google Scholar search. Prospective longitudinal studies on the association between diabetes and periodontitis were considered for this review. Studies should have presented at least two measurements of periodontal conditions over time. Data on study design, crude and adjusted estimates were collected. We used meta-analysis to estimate the pooled effect of hyperglycemia in people with diabetes on periodontitis onset or progression. Meta-regression and subgroup analyses were employed to investigate potential sources of heterogeneity between studies.
RESULTS: Thirteen studies matched the inclusion criteria, comprising 49,262 individuals, including 3197 diagnosed with diabetes. Meta-analyses of adjusted estimates showed that diabetes increased the risk of incidence or progression of periodontitis by 86% (RR 1.86 [95% CI 1.3-2.8]). However, there is scarce information on the association between diabetes and periodontal destruction.
CONCLUSIONS: This study provides evidence that diabetes is associated with increased risk of periodontitis onset and progression in adults. Upcoming prospective longitudinal studies ought to overcome methodological caveats identified in this review.
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Title
Vitamin D levels and risk for periodontal disease: A systematic review. [Review]
Source
Abstract
OBJECTIVE: To evaluate the existing evidence supporting or refuting the following questions: (i) Do patients with lower vitamin D levels have higher risk for periodontal disease? (ii) Are periodontal treatment outcomes improved by the adjuvant supplementation of vitamin D or by elevated serum vitamin D levels?
BDA LIBRARY MEDLINE SEARCH

RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

MATERIAL AND METHODS: MEDLINE, SCOPUS, EMBASE and Cochrane Central Register of Controlled Trials (CENTRAL) databases were searched up to September 2017. Studies were included if they had measured serum vitamin D levels or vitamin D intake and any periodontal parameter.

RESULTS: Overall, 27 studies were included (13 cross-sectional studies, 6 case-control studies, 5 cohort studies, 2 randomized clinical trials and 1 case series study). Sixty-five percent of the cross-sectional studies reported significant associations between low vitamin D levels and poor periodontal parameters. None of the observational longitudinal studies found that periodontal disease progression could be attributed to lower vitamin D levels. No interventional studies that evaluated the use of vitamin D supplementation as a solely adjuvant to periodontal treatment was found. No meta-analysis was performed due to high variability across studies.

CONCLUSION: The data to support or refute the association between vitamin D levels and periodontal disease are inconclusive at the moment. More rigorously designed longitudinal studies with standardized definitions of periodontal disease and vitamin D are necessary.

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Abstract

OBJECTIVES: To evaluate the effects of systemic antibiotics as adjuncts to nonsurgical periodontal treatment (NSPT), as opposed to using NSPT alone, on periodontal clinical parameters of diabetic patients with periodontitis.

MATERIALS AND METHODS: Randomised controlled trials with a follow-up of 3 months or more, assessing the effects of NSPT in combination with antibiotics, in diabetic patients with periodontitis were included. Trials published up to August 2016 were identified from MEDLINE, EMBASE and LILACS databases. Meta-analyses were conducted to determine changes in clinical attachment level (CAL), probing pocket depth (PPD), bleeding on probing (BOP) and gingival index (GI). Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed in this review.

RESULTS: Of the 164 papers potentially admissible to this systematic review, 15 articles on 11 randomised clinical trials were considered as eligible. The results of the meta-analyses presented a modest additional benefit of 0.14 mm (95% confidence interval: 0.08-0.20) in reducing PPD but no further benefit in CAL gain.

CONCLUSION: When the data for all antibiotic protocols were considered together for the treatment of periodontitis patients with DM, a significant, albeit small, reduction of PPD and no improvement in CAL gain was observed. When the antibiotic protocols were analysed separately, the combination of amoxicillin plus metronidazole yielded the best results for PPD.

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Abstract

OBJECTIVES: To evaluate the effects of systemic antibiotics as adjuncts to nonsurgical periodontal therapy for diabetic subjects: a systematic review and meta-analysis.

MATERIALS AND METHODS: Randomised controlled trials with a follow-up of 3 months or more, assessing the effects of NSPT in combination with antibiotics, in diabetic patients with periodontitis were included. Trials published up to August 2016 were identified from MEDLINE, EMBASE and LILACS databases. Meta-analyses were conducted to determine changes in clinical attachment level (CAL), probing pocket depth (PPD), bleeding on probing (BOP) and gingival index (GI). Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed in this review.

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CONCLUSION: When the data for all antibiotic protocols were considered together for the treatment of periodontitis patients with DM, a significant, albeit small, reduction of PPD and no improvement in CAL gain was observed. When the antibiotic protocols were analysed separately, the combination of amoxicillin plus metronidazole yielded the best results for PPD.
Is adjunctive photodynamic therapy more effective than scaling and root planing alone in the treatment of periodontal disease in hyperglycemic patients? A systematic review. [Review]

BACKGROUND: To assess the impact of scaling and root planing (SRP) with and without adjunct photodynamic therapy (PDT) in the treatment of periodontal disease (PD) in hyperglycemic patients.

METHODS: Databases (MEDLINE, EMBASE; and CENTRAL) were searched up to December 2017. The addressed PICO question was: "What is the effectiveness of adjunctive PDT to non-surgical periodontal treatment by means of clinical periodontal and glycemic parameters in hyperglycemic patients?" RESULTS: Four clinical trials and 1 experimental study were included. Energy fluence, power output, power density and duration of irradiation were 2.79 joules per square centimeters (Jcm$^{-2}$), 150 milliwatts (mW), 428 milliwatts per square centimeters (mWcm$^{-2}$) and 133 seconds (s) respectively. All studies reporting clinical periodontal and metabolic parameters, showed that aPDT was effective in the treatment of periodontal inflammation in hyperglycemic patients. When compared with SRP alone, none of the studies showed additional benefits of PDT as compared to SRP alone at follow-up. Three studies showed no influence of SRP with or without aPDT on HbA1c levels. One study showed a significant reduction of HbA1c levels in adjunctive aPDT as compared to SRP alone at follow-up.

CONCLUSION: It remains debatable whether adjunctive PDT as compared to SRP is effective in the treatment of periodontal inflammation and reduction of HbA1c levels in hyperglycemic patients.
In the present study, the impact of scaling and root planing (SRP) on gingival crevicular fluid (GCF) cytokine/chemokine levels in smokers with chronic periodontitis was assessed. The PICO (population, intervention, comparison, outcome) question was: In smokers with chronic periodontitis (population), what is the effect of SRP (intervention) in comparison to SRP in non-smokers with chronic periodontitis (comparison) on the GCF cytokine/chemokine level (outcome)? Indexed databases were searched up to September 2017. Of 4330 titles, nine studies reporting the levels of 13 different cytokines/chemokines were included. Eight studies had a moderate risk of bias, while one study had a high risk of bias. Almost all cytokines/chemokines were pro-inflammatory cytokines. Five cytokines/chemokines studied in four clinical studies were decreased in the smoker-chronic periodontitis group following SRP. One study observed that the GCF levels of interleukin-17 increased, while anti-inflammatory osteoprotegerin was reduced in both the SCP and non-smoker-chronic periodontitis groups at follow up. However, the majority of cytokines/chemokines did not change in the SCP groups at follow up. The current weight of evidence is not sufficient to prove that SRP has an impact on GCF cytokine/chemokine profile in smokers with chronic periodontitis. Evaluation of wide panels of pro-inflammatory cytokines/chemokines related to collagen degradation and alveolar bone destruction in future studies is warranted.
BACKGROUND: Obesity in young adults and adolescents is associated with chronic co-morbidities. This project investigated whether being overweight or obese is a risk factor for periodontitis in adolescents (13-17 years) and young adults (18-34 years).

METHODS: A search of 12 databases was conducted using Medical Subject Headings/Index and Emtree terms. Based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses, articles published between 2003 and 2016 were screened that reported periodontal and anthropometric measures. The Newcastle-Ottawa Scale was used to appraise the quality of studies.

RESULTS: Of 25 eligible studies from 12 countries, 17 showed an association between obesity and periodontitis (odds ratios ranged from 1.1 to 4.5). The obesity indicators of body mass index, waist circumference, waist-hip ratio and body fat percentage were significantly associated with measures of periodontitis of bleeding on probing, plaque index, probing depths, clinical attachment loss, calculus, oral hygiene index and community periodontal index. Two prospective cohort studies in the review
showed no significant association between obesity and periodontitis, but these studies had limitations of study design and used inappropriate epidemiological diagnostic measures of periodontitis.

CONCLUSION: There was evidence to suggest that obesity is associated with periodontitis in adolescents and young adults.

Systematic Review Registration: PROSPERO Registration Number: CRD42016046507.

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Publication Type
Journal Article. Review.

Year of Publication
2018

Title
Genetic polymorphisms and periodontal disease in populations of African descent: A review. [Review]

Source

Abstract
Aggressive periodontitis is a rare but rapidly progressing form of periodontal disease that usually affects otherwise systemically healthy individuals, at a young age. It usually affects first molars and incisors, which are usually lost if treatment is not properly and early rendered. Although of low prevalence, it affects individuals of African descent at a higher prevalence, and usually multiple members within the same family. Several studies have been performed in the attempt to evaluate specific single nucleotide polymorphisms (SNPs) that could be associated with this disease. To the best of our knowledge, the present article provides the first review of the literature focusing on studies that evaluated SNPs in patients of African descent with aggressive periodontitis. Several SNPs have been evaluated in different genes according to their role in the pathogenesis of the disease, with positive and negative associations (such as IL1, FCGR3B, FPR1, LTF, CYBA, GLT6D1, TLR4) with both the localized and generalized forms of aggressive periodontitis. Given the complexity of periodontitis, the difficulty in gathering large cohorts diagnosed with this rare form of disease, and the fact that candidate gene studies may only determine part of the genetic risk of a disease, the search for specific SNPs associated with aggressive periodontitis seems to be a long one, most likely to result in the combination of multiple SNPs, in multiple genes.
Association between asthma and periodontal disease: A systematic review and meta-analysis. [Review]

Title

Source


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Abstract

BACKGROUND: The aim of this systematic review (SR) is to evaluate the association between asthma and periodontal disease.

METHODS: An electronic search without date or language restrictions was carried out in PubMed/MEDLINE, Cochrane Central Register of Controlled Trials, Web of Science, and LILACS until May 2016. In addition, manual searches and searches of the gray literature were conducted. The search process, data analysis, and quality assessment were performed by two independent reviewing authors. Eligibility criteria included prospective and retrospective cohort studies, case-controls, and randomized clinical trials.

RESULTS: The search and selection process yielded 21 studies, published between 1979 and 2017. The meta-analysis showed a statistically significant difference for the parameters of gingival bleeding, plaque index, and gingival index for participants with asthma (P < 0.001).

CONCLUSION: Data from this SR strongly suggest the association of asthma with periodontal disease.

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Title

Is periodontitis a risk indicator for cancer? A meta-analysis.

Source


Abstract

BACKGROUND: The aim of the present systematic review was to evaluate the hypothesis of an association between periodontitis and the development of cancer.

METHODS: Two reviewers independently screened electronic and manual sources for pertinent articles. Primary outcome measures were the occurrence of neoplasm diagnosis in exposed and non-exposed groups, reported to evaluate association between cancer and periodontitis.

RESULTS: Of the 490 initially retrieved papers 10 were included in the qualitative synthesis and eight in the quantitative synthesis; the eight papers covered six studies. Considering hazard ratios, a statistically significant association was found for all cancers studied (1.14; CI 95%: 1.04, 1.24), digestive tract cancer (1.34; CI 95%: 1.05, 1.72), pancreatic cancer (1.74; CI 95%: 1.21, 2.52), prostate cancer (1.25; CI 95%: 1.04, 1.51), breast cancer (1.11; CI 95%: 1.00, 1.23), corpus uteri cancer (2.26; CI 95%: 1.16, 4.18), lung cancer (1.24; CI 95%: 1.06, 1.45), hematological cancer (1.30; CI 95%: 1.11, 1.53), esophagus/oropharyngeal cancer pooled together (2.25; CI 95%: 1.30, 3.90) and Non-Hodgkin lymphoma (1.30; CI 95%: 1.11, 1.52).

CONCLUSIONS: Despite the sparse scientific evidence and considering the low statistical power of the results, this systematic review revealed a substantial lack of studies with standardized and comparable methods to speculate about the association between periodontitis and cancer; more studies are need in order to explore further the scientific evidence of such correlation.

Publication Type
INTRODUCTION: Current studies show that, even in the era of antiretroviral therapies, HIV-1 infection is associated with more severe and frequent refractory chronic periodontitis. Areas covered: This review, based on a systematic analysis of the literature, intends to provide an update on factors that may be involved in the pathogenesis of periodontal disease in HIV-1-infected patients, including local immunosuppression, oral microbial factors, systemic inflammation, salivary markers, and the role of gingival tissue as a possible reservoir of HIV-1. Expert commentary: The therapeutic revolution of ART made HIV-1 infection a chronic controllable disease, reduced HIV-1 mortality rate, restored at least partially the immune response and dramatically increased life expectancy of HIV-1-infected patients. Despite all these positive aspects, chronic periodontitis assumes an important role in the HIV-1 infection status for activating systemic inflammation favoring viral replication and influencing HIV-1 status, and also acting as a possible reservoir of HIV-1. All these issues still need to be clarified and validated, but have important clinical implications that certainly will benefit the diagnosis and management of chronic periodontitis in HIV-1-infected patients, and also contributes to HIV-1 eradication.
Precision of cone beam CT to assess periodontal bone defects: a systematic review and meta-analysis.
Source
Abstract
OBJECTIVES: Evaluate the diagnostic validity of CBCT in measuring periodontal bone defects when compared with the reference standard (in situ measurement).

METHODS: Studies in which the main objective was to evaluate the diagnostic validity of CBCT in measuring periodontal bone defects when compared with the reference standard were selected. Four databases were searched. The studies were selected by two independent reviewers. The methodology of selected studies was assessed using the 14-item Quality Assessment Tool for Diagnostic Accuracy Studies. The quality of evidence and strength of recommendation was assessed by The Grading of Recommendations Assessment Tool, Development and Evaluation.

RESULTS: Using a selection process in two phases, 16 studies were identified and, in seven articles meta-analysis was performed. The results from these meta-analyses showed that no difference between the measurements of CBCT and in situ for alveolar bone loss, and demonstrated a concordance of 82.82% between CBCT and in situ for the classification of the degree of furcation involvement.

CONCLUSIONS: Based on a moderate level of evidence, CBCT could be useful for furcation involvement periodontal cases, but it should only be used in cases where clinical evaluation and conventional radiographic imaging do not provide the information necessary for an adequate diagnosis and proper periodontal treatment planning.

Aggregatibacter (Actinobacillus) actinomyctecomitans leukotoxin and human periodontitis - A historic review with emphasis on JP2. [Review]
Source
Abstract
Aggregatibacter (Actinobacillus) actinomyctecomitans (Aa) is a gram-negative bacterium that colonizes the human oral cavity and is causative agent for localized aggressive (juvenile) periodontitis (AgP). In the middle of 1990s, a specific JP2 clone of belonging to the cluster of serotype b strain of Aa with highly leukotoxicity (leukotoxin, LtxA) able to kill human immune cells was isolated. JP2 clone of Aa was strongly associated with in particularly in rapidly progressing forms of aggressive periodontitis. The JP2 clone of Aa is transmitted through close contacts. Therefore, AgP patients need intense monitoring of their periodontal status as the risk for developing severely progressing periodontitis lesions are relatively high. Furthermore, timely periodontal treatment, including periodontal surgery supplemented by the use of antibiotics, is warranted. More importantly, periodontal attachment loss should be prevented by early detection of the JP2 clone of Aa by microbial diagnosis testing and/or preventive means.
Status
In-Data-Review

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Title
Periodontal disease severity in subjects with dementia: A systematic review and meta-analysis. [Review]

Source

Abstract
BACKGROUND AND OBJECTIVE: Despite clinical trials and reviews attempt to assess a possible relationship between dementia and periodontal disease, no meta-analysis has been performed and this issue remains undetermined. The aim of this study is to conduct a systematic review and meta-analysis to assess severity of periodontitis in subjects with dementia.

METHODS: The search was conducted in Pubmed, Embase/MEDLINE. Two independent reviewers extracted data and assessed the risk bias (Newcastle-Ottawa scale). Meta-analyses were performed using the means of probing depth (PD) and clinical attachment loss (CAL) in patients with or without dementia. The mean difference were analyzed (P<0.05).

RESULTS: Fourteen studies were included in the systematic review. In the qualitative analysis, most studies reported higher prevalence of periodontal disease in dementia patients. The studies had low risk of bias and two meta-analyses were performed for each parameter, including or not a cross-sectional study. The meta-analyses including the cross-sectional study demonstrated significant association between dementia and periodontal disease (mean difference: PD=1.41; CAL=1.40, P<0.05), however, it wasn't confirmed when the cross-sectional study was removed (1.25mm, P<0.22) and CAL (1.20mm, P<0.22).

CONCLUSION: Although the qualitative analysis have suggested worse periodontal conditions in dementia patients, due to different study types and the high heterogeneity among them, the meta-analysis does not support the association between dementia and severity of periodontal disease.

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Abstract
Periodontitis affects glycaemic control in health and diabetes.
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Periodontal treatment for the prevention of adverse birth outcomes.

### Abstract

Data sources were Cochrane Oral Health and Pregnancy and Childbirth’s Trial Registries, Cochrane Register of Controlled Trials, Cochrane Library, Medline Ovid, Embase Ovid and Lilacs BIREME, clinicaltrials.com and the WHO Clinical Trials Registry. The search included observational, epidemiological studies and clinical trials that fulfilled the inclusion criteria. The publications assessed contained a periodontal examination and a validated OHRQoL questionnaire. There were no language restrictions and the review was performed according to the MOOSE statement. Data extraction and synthesis were performed using the PICO format. The quality of the observational studies was evaluated by the Newcastle Ottawa Scale (NOS) and clinical trials by the (MINORS) methodological index for non-randomised studies. The Strength of Grading Taxonomy (SORT) was utilised to assess the level of evidence and strength of recommendation of the included studies. A meta-analysis was not undertaken due to the heterogeneity of the included studies, therefore results were synthesised by applying a vote counting method. Results Thirty-seven studies included in the review were evaluated by the vote counting method. According to NOS and MINORS the risk of bias was identified as moderate with most studies assessing 50% to 83% of the parameters. A level two for quality of evidence and a level B for strength of recommendation were applicable for the relationship between clinically diagnosed periodontal disease and OHRQoL. The evidence level was consistent across the studies. Nineteen of the studies examined a distinct population group with respect to diagnosis of systemic disease, socioeconomic status, demographic background or periodontal diagnosis. Twenty-eight of the included studies reported an association between periodontal diseases and OHRQoL while eight of the publications highlighted a dose-response relationship between and extent and severity of periodontal disease and OHRQoL. Conclusions The findings support the association between clinically diagnosed periodontal diseases and subjectively assessed OHRQoL with a dose-response relationship demonstrated. In summation, periodontal diseases play a significant role in oral health and impact on the QoL of affected individuals. In publications that undertook a full mouth recording the results were more evident, therefore a comprehensive periodontal exam in conjunction with a validated OHRQoL questionnaire is recommended.

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and pre-eclampsia. Three studies with 3,610 participants showed no evidence of difference in the outcome small for gestational age: RR 0.97, 95% CI 0.81-1.16. Conclusions There is no clear evidence that periodontal treatment during pregnancy has an effect on preterm birth. There is some evidence that it may reduce incidence of low birth weight. There is insufficient evidence to define what type of periodontal treatment is superior in preventing any adverse pregnancy outcome.

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Title Mesenchymal Stem Cells of Dental Origin for Inducing Tissue Regeneration in Periodontitis: A Mini-Review. [Review]


Abstract Periodontitis is a chronic disease that begins with a period of inflammation of the supporting tissues of the teeth table and then progresses, destroying the tissues until loss of the teeth occurs. The restoration of the damaged dental support apparatus is an extremely complex process due to the regeneration of the cementum, the periodontal ligament, and the alveolar bone. Conventional treatment relies on synthetic materials that fill defects and replace lost dental tissue, but these approaches are not substitutes for a real regeneration of tissue. To address this, there are several approaches to tissue engineering for regenerative dentistry, among them, the use of stem cells. Mesenchymal stem cells (MSC) can be obtained from various sources of adult tissues, such as bone marrow, adipose tissue, skin, and tissues of the orofacial area. MSC of dental origin, such as those found in the bone marrow, have immunosuppressive and immunotolerant properties, multipotency, high proliferation rates, and the capacity for tissue repair. However, they are poorly used as sources of tissue for therapeutic purposes. Their accessibility makes them an attractive source of mesenchymal stem cells, so this review describes the field of dental stem cell research and proposes a potential mechanism involved in periodontal tissue regeneration induced by dental MSC.

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Title Association between COX2 -765G/C polymorphism and periodontitis in Chinese population: a meta-analysis.


Abstract BACKGROUND: Studies had attempted to clarify the relation between COX2 -765G/C gene polymorphisms and periodontitis risk, but there has been no definite consensus to date. A meta-analysis was performed to further explore the relationship of COX2 -765G/C polymorphism on periodontitis risk among Chinese population.
METHODS: The databases of PubMed, Springer Link, Ovid, Chinese Wanfang Databases, Chinese National Knowledge Infrastructure (CNKI) and Chinese Biology Medicine were searched up to January 2017. The overall result and subgroup analysis results were combined using fixed-effect or random-effect based on the heterogeneity.

RESULTS: Finally, 7 case-control publications including 1399 periodontitis cases and 1663 controls were identified according to the inclusion criteria. In the total analyses, COX2 -765G/C polymorphism had nonsignificant association on periodontitis risk in all models. The subgroup analyses suggested a significantly increased risk of periodontitis in studies with population-based controls and a significantly decreased risk in studies with hospital-based controls.

CONCLUSIONS: This meta-analysis indicated that COX2 -765G/C polymorphism had significantly affect on periodontitis risk among Chinese individuals, which should be confirmed by other ethnic groups.
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Title
Association Between Periodontal Disease and Erectile Dysfunction: A Systematic Review.

Source

Abstract
A limited number of studies have reported an association between erectile dysfunction (ED) and chronic periodontitis (CP). The aim of the present study is to assess the association between CP and ED through a systematic review of published literature. To address the focused question, "Is there a relationship between ED and CP?" indexed databases were searched till December 2015 using various key words "erectile dysfunction," "periodontal disease," "periodontitis," "dental infection," and "impotence." Letters to the editor, commentaries, historic reviews, and experimental studies were excluded. The pattern of the present systematic review was customized to primarily summarize the pertinent data. Nine studies were included. Seven studies had a cross-sectional design and two studies were randomized control trials. The number of study participants ranged between 53 and 513,258 individuals with age ranging between 20 years and 85 years (median age ranging between 34.9 +/− 4.9 years and 50.9 +/− 16.6 years). In all studies, a positive relationship between CP and ED was reported. In four studies, odds ratio were reported, ranging between 1.53 and 3.35. From the literature reviewed, there seems to be a positive association between ED and CP; however, further well-designed controlled clinical trials are needed in this regard. It is emphasized that physicians should refer patients with ED to oral health care providers for a comprehensive oral evaluation and treatment.

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Gaps in Knowledge About the Association Between Maternal Periodontitis and Adverse Obstetric Outcomes: An Umbrella Review.

Method
An umbrella review of systematic reviews with or without meta-analysis was performed. Quality evaluation and descriptive analysis of the characteristics of the included studies were conducted.

RESULTS: Nineteen systematic reviews/meta-analyses were considered. In total, the systematic reviews included 99 observational studies. Most of the reviews established an association between maternal periodontitis and a higher risk of low birth weight, preterm delivery, and preeclampsia and identify the gaps in the scientific literature.

CONCLUSIONS: Although scientific literature has established an association among the analyzed pathologies, conceptual and methodological gaps were identified, and they should be considered as integral components when this association is investigated.

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Association between Apical Periodontitis and Interleukin Gene Polymorphisms: A Systematic Review and Meta-analysis.

**Abstract**

**INTRODUCTION:** Genetic polymorphisms may result in altered gene expression or functional changes of the encoded molecules and could possibly generate a deficient immunity. Consequently, individuals with specific genotypes could be more susceptible to disease or could present an increase in disease severity. Our study is aimed to verify, through a systematic review and meta-analysis registered in the PROSPERO database (CRD42016043905), whether currently available evidence supports a relationship between interleukin gene polymorphisms and apical periodontitis (AP).

**METHODS:** A broad search for studies was conducted. The following databases were used: PubMed, Scopus, Web of Science, and the Virtual Health Library (MEDLINE, SciELO, IBRCS, and LilACS). The Medical Subject Headings (MeSH) terms “Periapical Periodontitis,” “Periapical Abscess,” “Polymorphism, Genetic,” and “Polymorphism, Single Nucleotide” were used. MeSH synonyms, related terms, and free terms were included. After application of the eligibility criteria, selected studies were qualified by assessment of their methodologic quality. A fixed effects model was used for the meta-analysis.

**RESULTS:** The initial search identified 71 references. After excluding duplicate abstracts, 33 were selected. From these, 6 were eligible for quality assessment; 5 were classified as being of moderate quality, and 1 was classified as being of high quality.

**CONCLUSIONS:** From these included studies, polymorphisms in IL1B, IL6, and IL8 were associated with AP. Polymorphisms in IL1A, IL10, or IL12B were not associated with AP regardless of the methodology used. The meta-analysis suggested that the genotype and allele distribution of IL1B (+3954 C/T) gene polymorphism was different in post-treatment AP. More research in this area is warranted to confirm these results.

**Copyright © 2017 American Association of Endodontists. Published by Elsevier Inc. All rights reserved.**
Antimicrobial peptides (AMPs) play a critical role in controlling innate and acquired immune responses. Local dysregulation of AMP is implicated in the pathogenesis of periodontal diseases as a response to periodontal pathogen challenge. Changes in AMP expression also characterize tobacco smoking, diabetes mellitus, obesity and rheumatoid arthritis, which are established risk factors of periodontal diseases, suggesting AMP may act as putative mechanistic links between these. The aim was to evaluate and summarize critically the current evidence pertaining to interrelationships between AMPs, periodontal diseases and selected periodontal disease risk factors. General and theme specific keywords were used to search the PUBMED database for studies relevant to AMP, periodontal diseases, smoking, diabetes mellitus, obesity and rheumatoid arthritis and critically reviewed. A total of 131 abstracts and 119 full text articles were screened for relevance; 13 studies were selected for inclusion after critical review. Local AMP dysregulation characteristic to periodontal diseases appears to occur within a broader landscape of complex systemic immune perturbations independently induced by smoking, metabolic and rheumatoid disease. The nature of these interactions and mechanistic pathways involved are inadequately understood. AMPs could be possible mechanistic interlinks between periodontal diseases and its risk factors. However, such evidence is very limited and more in vivo and in vitro studies are necessary to clarify the nature of such relationships. A greater understanding of AMPs as shared mediators is essential for unraveling their value as therapeutic or biomarker candidates.

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Abstract

OBJECTIVE: This study aimed to systematically review clinical trials about the effect of statins as adjunct to mechanical periodontal therapy, on probing pocket depth, clinical attachment level, and intrabony defects, in comparison to mechanical periodontal therapy alone or in association with placebo.

MATERIAL AND METHODS: Three databases were searched for controlled clinical trials that used any locally delivered or systemically statin as a sole adjunctive therapy to mechanical periodontal treatment. Weighted mean differences between baseline and 6 months after periodontal treatment for clinical attachment level (CAL), probing pocket depth (PPD), and intrabony defect (IBD) were calculated. A high heterogeneity was detected. Therefore, a meta-regression adjusted for type of statin and year of publication was performed.

RESULTS: Fifteen studies were included in the systematic review, and ten studies were included in the meta-analysis. In the meta-regression, the adjunct use of simvastatin, rosuvastatin, and atorvastatin additionally reduced PPD in comparison to control group (0.89+/-0.35 and 1.93+/-0.77 mm, respectively; p<0.05). Regarding the resolution of IBD, simvastatin and rosuvastatin significantly improved in comparison to control group (0.89+/-0.35 and 1.93+/-0.77 mm, respectively; p<0.05). No statistically significant difference was found between the statins for both PPD and IBD (p>0.05). Regarding CAL gain, simvastatin provided a statistically significant improvement as compared to the control group (2.02+/-0.79 mm; p=0.043).

CONCLUSIONS: The use of statins, used as sole adjuncts to mechanical periodontal treatment, improved the periodontal parameters. In the quantitative analyses, simvastatin was the only drug that showed additional benefits in all evaluated parameters.

CLINICAL RELEVANCE: Statins promote significantly clinical periodontal improvements when administered in association with non-surgical scaling and root planning (SRP), when compared to SRP alone or in association with a placebo.

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Title
Pulpal and Periodontal Tissues Changes Associated with Le Fort I and Sagittal Split Ramus Osteotomies: A review. [Review]
OPEN PAPER MEDLINE SEARCH

RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

Source

Abstract
Introduction: Le Fort I and sagittal split ramus osteotomies are the most commonly performed orthognathic surgery procedures on the maxilla and mandible, respectively.

Techniques: Despite progress in the techniques, these procedures may still be associated with morbidity, expressed as inflammation, inadequate bony union, periodontal damages or in extreme cases even total bone loss.

Discussion: Through a comprehensive review of the literature, the influences of maxillary and mandibular surgery on Pulpal Blood Flow (PBF), pulp sensitivity and pulp vitality are examined. Moreover, adverse effects of maxillary surgery on tooth color and periodontal tissues are also reported. The effects had a variety of expression. Concerning maxillary surgery, some studies showed an initial increase in PBF followed by a decrease to the baseline or even lower levels after 1-3 months. Other studies found an initial decrease in PBF followed by an increase soon after. There were also studies that showed no significant PBF changes, in contrast.

Conclusion: Concerning mandibular surgery, a recent study showed a decrease in PBF immediately after sagittal split ramus osteotomy. Some authors detected tooth discoloration of maxillary teeth after Le Fort I osteotomy. Root resorption and root injury were also detected, but were of minor significance. Usually, these adverse effects derive from injury of the vessels of the palatal pedicle. This pedicle should be maintained intact for the avoidance of blood flow impairments. In addition, the descending palatine artery should be protected during maxillary surgery procedures in order to maintain the highest possible blood flow on the maxillary teeth.

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Title
IL-13 -1112 polymorphism and periodontitis susceptibility: a meta-analysis.

Source

Abstract
BACKGROUND: Several studies have examined the association between the IL-13 -1112C/T polymorphism and the risk of periodontitis. However, these studies have reached different conclusions. The aim of the current study was to investigate the link between this IL-13 -1112 polymorphism and susceptibility to periodontitis.

METHODS: We utilized electronic databases, including the CNKI (China National Knowledge Infrastructure), Wanfang, PubMed, Embase, and Cochrane Library databases, to manually search for relevant research published through November 30, 2016. The Chinese and English terms used to search the literature included “periodontitis”, “periodontal disease”, “IL 13”, “IL-13”; and “interleukin-13”. In accordance with our inclusion criteria, we selected studies that involved case-control trials. All of these case-control trials described their objectives, design and specific statistical methods. For all included studies, odds ratios (ORs) and 95% confidence intervals (95% CIs) were provided or could be calculated from the study data. The quality of the included literature was evaluated using the Newcastle-Ottawa scale (NOS). STATA 12.0 was used to calculate the sizes of the combined effects and conduct a sensitivity analysis of the results.

RESULTS: Our meta-analysis included 4 articles representing 5 case-control studies with a total of 710 cases and 671 control subjects. The meta-analysis results indicated that the CC vs TT model, CT vs TT model and TT vs CT+CC model (CC VS TT: OR=0.615, 95% CI=0.395-0.957; CT vs TT: OR=0.518, 95% CI=0.323-0.830; and TT vs CT+CC: OR=1.739, 95% CI=1.130-2.676) were significant in five IL-13 -1112 gene polymorphism and periodontitis susceptibility models. Subgroup analysis indicated that the CC vs TT, CT vs TT and TT vs CT+CC models were significant in the chronic periodontitis (CP) group, whereas no significant differences were found in the five aggressive periodontitis (AgP) group models. The sensitivity analysis showed that dropping any single study did not affect the pooled analysis results.
CONCLUSION: The IL-13 -1112 polymorphism may be associated with susceptibility to periodontitis. The IL-13 -1112 gene polymorphism may be associated with susceptibility to CP but not to AgP. Thus, large-scale, multi-ethnic case-control trials are still warranted.

Abstract

OBJECTIVES: The holy grail of biomarker research in periodontology is to develop a high impact diagnostics which have a significant impact on clinical decision-making, patient outcomes and healthcare providers. In the field of periodontal diagnostics, oral fluid-based biomarkers have been studied mainly in the gingival crevicular fluid (GCF) and saliva.

METHODS: A literature search was performed using the Cochrane library and PubMed databases from 2000 to January 2017.

RESULTS: Currently, there are more than 90 different components in the GCF that have been investigated as diagnostic and prognostic markers of periodontal disease progression involving; inflammatory mediators, markers of oxidative stress, host-derived enzymes, tissue-breakdown products and mediators of bone homeostasis. Furthermore, various biomarkers in saliva have been proposed which reveal a promising outlook for saliva as a key diagnostic medium for periodontal disease. Recent systematic reviews with high value of evidence have shown that potential salivary biomarkers can provide important complimentary diagnostic information and can be used as tests for screening diagnosis, prognosis and predicting periodontal disease progression.

CONCLUSION: Future developments in proteomic analysis and personalized medicine will pave the way allowing novel diagnostic tools. Still, the application into the field of dentistry will depend on how practitioners will apply this into their daily clinical practice.

CLINICAL RELEVANCE: Still, the application into the field of dentistry will depend on how practitioners will apply this into their daily clinical practice.

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Matrix metalloproteinase-8 analysis in patients with periodontal disease with prediabetes or type 2 diabetes mellitus: A systematic review. [Review]


OBJECTIVES: The objective of this systematic review was to evaluate information on the levels of MMP-8 in patients diagnosed with prediabetes or type 2 diabetes mellitus with periodontal disease, analyzing its validity as a possible biomarker for the diagnosis and progression of periodontal disease (PD).

METHODS: A systematic search of the following databases was performed: PubMed/Medline, CENTRAL (The Cochrane Library), EMBASE and Web of Science. Studies involving the evaluation of MMP-8 in patients with prediabetes or patients presenting type 2 diabetes mellitus concomitantly with PD were selected. The evaluation of the methodological quality of the selected studies was based on the methodological bias risk analysis (QUADAS-2).

RESULTS: Eight of the initially identified 2683 articles were selected. In all the selected studies, evaluator calibration and the use of clear methods for patient diagnosis with periodontal disease were present. Studies have demonstrated significantly higher MMP-8 concentrations in PD patients compared to controls, as well as in patients presenting more advanced stages of PD. However, controversies regarding MMP-8 levels in prediabetes/diabetes type 2 patients with PD.

CONCLUSIONS: Higher MMP-8 levels in patients with PD compared to controls imply the potential use of MMP-8 in the diagnosis of PD. The influence of patient glycemic state, as well as medications these patients make use of, are factors that possibly contribute to the modulation of MMP-8 concentrations in patients with diabetes and should be analyzed, aiming at a better understanding of the relationship between glycemic state and MMP-8 levels in patients with PD.
OBJECTIVE: This study aimed to examine whether Sjogren syndrome (SS) is related to periodontal status. The findings currently available are inconsistent, some even contradictory. Therefore, we performed this meta-analysis to compare the periodontal health status of COPD patients and non-COPD subjects.

METHODS: PubMed and Embase were searched for all of the eligible studies. The results of periodontal parameters in each study were extracted and the mean differences and 95% confidence intervals (CIs) for each parameter were calculated to determine their overall effects.

RESULTS: In total, 14 studies involving 3348 COPD patients and 20612 non-COPD controls were included and 9 periodontal indexes were analyzed. The mean differences (95% CIs) between COPD and non-COPD subjects for probing depth, clinical attachment loss, level of alveolar bone loss, plaque index, oral hygiene index, bleeding index, bleeding on probing, gingival inflammation, and remaining teeth were 0.261 (0.020-0.501), 0.480 (0.280-0.681), 0.127 (0.000-0.254), 0.226 (0.043-0.408), 0.802 (0.326-1.279), 0.241 (-0.106 to 0.588), 8.878 (5.489-8.266), 0.364 (0.036-0.692), and -3.726 (-5.120 to -2.331), respectively.

CONCLUSION: In summary, this meta-analysis demonstrates that the COPD patients suffer from worse periodontal health status, indicated by deeper periodontal pockets, high level of clinical attachment loss, worse oral hygiene, more inflammation and bleeding in the gingival tissue, and lower number of remaining teeth. Nevertheless, considering the limitations in our meta-analysis, more high-quality, and well-designed studies focusing on the periodontal health of the COPD patients are required to validate our conclusion.

Title
Patients with Chronic Obstructive Pulmonary Disease Suffer from Worse Periodontal Health–Evidence from a Meta-Analysis.

Source

Abstract
It is widely accepted that there is an association between chronic obstructive pulmonary disease (COPD) and periodontitis. However, whether the periodontal status of the COPD patients is worse than that of the non-COPD subjects is seldom assessed. The findings currently available are inconsistent, some even contradictory. Therefore, we performed this meta-analysis to compare the periodontal health status of COPD patients and non-COPD subjects.

Methods: PubMed and Embase were searched for all of the eligible studies which comparing the periodontal status between COPD patients and non-COPD subjects. The results of periodontal parameters in each study were extracted and the mean differences and 95% confidence intervals (CIs) for each parameter were calculated to determine their overall effects.

Results: In total, 14 studies involving 3348 COPD patients and 20612 non-COPD controls were included and 9 periodontal indexes were analyzed. The mean differences (95% CIs) between COPD and non-COPD subjects for probing depth, clinical attachment loss, level of alveolar bone loss, plaque index, oral hygiene index, bleeding index, bleeding on probing, gingival index, and remaining teeth were 0.261 (0.020-0.501), 0.480 (0.280-0.681), 0.127 (0.000-0.254), 0.226 (0.043-0.408), 0.802 (0.326-1.279), 0.241 (-0.106 to 0.588), 8.878 (5.489-8.266), 0.364 (0.036-0.692), and -3.726 (-5.120 to -2.331), respectively.

Conclusion: In summary, this meta-analysis demonstrates that the COPD patients suffer from worse periodontal health status, indicated by deeper periodontal pockets, high level of clinical attachment loss, worse oral hygiene, more inflammation and bleeding in the gingival tissue, and lower number of remaining teeth. Nevertheless, considering the limitations in our meta-analysis, more high-quality, and well-designed studies focusing on the periodontal health of the COPD patients are required to validate our conclusion.
BDA LIBRARY MEDLINE SEARCH

RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

methodologic quality. Studies that correlated primary and/or secondary SS with plaque index, gingival index, probing depth, and bleeding on probing were included. The risk of bias was estimated on the basis of the Newcastle-Ottawa scale.

RESULTS: Seventeen studies were included in the review and 9 included in the meta-analysis, with a total of 518 and 544 patients, with or without SS, respectively. The mean difference of plaque index (0.29; 95% confidence interval [CI] 0.17-0.41), gingival index (0.52; 95% CI 0.14-0.89), and bleeding on probing (9.92; 95% CI 4.37-15.47) were larger in patients with SS than in controls. In primary SS (0.47; 95% CI 0.10-0.83) and secondary SS (0.74; 95% CI 0.10-1.38), only the mean gingival index was larger compared with that in control group. The majority of the included studies were judged as having a high risk of bias.

CONCLUSIONS: The present review did not provide strong evidence that periodontal status is affected by SS.

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Title
Definition of aggressive periodontitis in periodontal research. A systematic review.
Source
Local Messages
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Abstract
Since its introduction in 1999, the term aggressive periodontitis (AgP) has been the topic of many investigations. Articles supporting the International Workshop for a Classification of Periodontal Diseases list several disease features, but do not offer operational criteria for identifying cases. Consequently, considerable variation in the understanding of AgP can be anticipated.

AIM: To systematically assess the definitions of AgP reported in original periodontal research.

METHODS: A systematic review of original research on AgP published in English.

RESULTS: The electronic search yielded 833 abstracts. Of these, 472 publications fulfilled the inclusion criteria and were appraised. In 26.5% of the publications, no information on AgP operationalization is presented, but reference is made to another article. In 12.7% of the publications, no information is provided as to how the cases were defined. Many combinations of criteria for case definition were found.

CONCLUSIONS: This study revealed significant heterogeneity in the understanding and use of the term AgP in original research and poor documentation of the identification of cases. The direction and magnitude of the influence of misclassification and selection bias are unknown, but ought to be considered by the critical reader, professionals and patients using this term.

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Mendes, Vivian; Dos Santos, Gustavo Oliveira; Moraschini, Vittorio.
Interrelation of periodontal parameters between asthmatics and nonasthmatics subjects: a systematic review and meta-analysis.

METHODS: An electronic search without date or language restrictions was carried out in MEDLINE, Cochrane, Web of Science, and LILACS until May 2017. In addition, manual search and in the grey literature were also conducted. The search process, data analysis, and quality assessment were performed by two independent reviewing authors. Eligibility criteria included prospective and retrospective cohort studies, case-controls, and randomized clinical trials. For the meta-analysis, the inverse variance method was used in fixed or random effect models, which were chosen according to heterogeneity. The estimates of the intervention effects were expressed as the mean differences.

RESULTS: The search and selection process yielded 21 studies, published between 1979 and 2017. The meta-analysis showed a statistically significant difference for the parameters of gingival bleeding, plaque index, and gingival index for asthmatic participants with P<0.0001, P<0.0001, and P=0.0005, respectively.

CONCLUSIONS: The data from this SR suggest that asthmatic patients may be more susceptible to negative periodontal changes, although further high-quality research would be welcome.

An update of the evidence on the potential impact of periodontal therapy on diabetes outcomes.

AIM: To provide an update of the systematic review by Engebretson and Kocher J Clin Periodontol. 2013 Apr;40 Suppl 14:S153 on the effect of periodontal therapy on glycaemic control of people with diabetes.

METHODS: PubMed Literature search restricted to meta-analyses published from 2013 to the present was conducted. The search resulted in seven meta-analyses of RCTs.

RESULTS: Reduction in HbA1c at 3-4 months was reported in all reviews for the treatment group ranging from -0.27% (95% CI: -0.46, -0.07, p = .007) to -1.03% (95% CI: 0.36, -1.70, p = 0.003). At 6 months post-treatment, an HbA1c reduction ranging from -0.02 (95% CI: -0.20, -0.16, p = .84) to -1.18% (95% CI: 0.72%, 1.64%, p < 0.001) was reported.
CLINICAL RELEVANCE: The magnitude of the reduction in HbA1c, which is found to be associated with non-surgical periodontal treatment in patients with diabetes, seems to have clinically significant effects on systemic health, and thus should have a place in the treatment of diabetic patients.

CONCLUSIONS: Periodontal treatment (SRP) results in a statistically significant reduction in HbA1C levels at 3 months, with a lower reduction at 6 months.

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Title: Does the adjunctive use of statins provide additional benefits to nonsurgical periodontal treatment? A systematic review and meta-analysis. [Review]

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Abstract:
Adjunctive therapeutic agents may be used to improve the response to nonsurgical periodontal therapy. Local delivery of statins (simvastatin, atorvastatin and rosuvastatin) is a promising adjunct to scaling and root planing (SRP). Thus, the aim of this review is to evaluate if adjunctive local delivery of statins is more effective than SRP alone. Randomized clinical trials that presented a test group evaluating local delivery of statins as adjuncts in healthy, diabetic and smoking patients were included. Medline and the Cochrane library database were searched up to November 2016. Random effects meta-analyses were conducted for pocket depth change and clinical attachment gain. One hundred and twenty-five studies potentially related to the aim of this review were screened, but only 10 were included. The majority of the trials reported additional clinical benefits in the groups that were treated with adjunctive local delivery of statins. Pooled calculations showed that local delivery of statins resulted in additional reduction of pocket depth and clinical attachment gain in healthy people, smokers and diabetic patients. Local statins may offer additional clinical benefits to SRP, even in smokers and diabetics.
OBJECTIVES: To review the evidence for the efficacy of periodontal maintenance (PM) carried out in primary dental care (PDC) compared to the specialist setting for patients previously treated in a specialist setting for chronic (ChP) or aggressive (AgP) periodontitis.

METHODS: A focused PICO question and search protocol were developed. Online databases including MEDLINE, EMBASE, WEB OF SCIENCETM and COCHRANE LIBRARY were searched along with specialist journals in the subject area of periodontal research. Selection criteria included studies that investigated delivery of PM in both specialist and PDC settings for patients with ChP or AgP over a minimum 12 months. We looked for studies that reported changes in clinical attachment levels (CAL), tooth loss, pocket probing depths (PPD) and bleeding on probing (BoP) as outcome measures.

RESULTS: Eight cohort studies were chosen for inclusion. There was considerable heterogeneity found between the eight studies, which did not allow for quantitative (meta) analysis and statistical testing of differences between groups. Clinical attachment levels remained relatively stable in patients who received specialist PM with mean changes of -0.42 mm to +0.2 mm, while for those enrolled in PDC-based PM for periods >12 months mean CAL losses were between -0.13 mm and -2.80 mm. PPD reduction for those subjects receiving specialist PM was between 0.05 and 1.8 mm for five studies but two cohorts experienced increases of 0.32 and 0.80 mm, respectively. Increases of up to 2.90 mm (range: -0.1 to +2.90) and a higher proportion of deeper

CONCLUSION: There was no clinically meaningful difference between different doses or duration of amoxicillin-plus-metronidazole at 3 months post-treatment. Without compelling evidence to suggest that any one regimen performed superiorly, principles of responsible antibiotic use generally recommend the highest dose for the shortest duration of time to reduce the risk of antibiotic resistance. Therefore, a 7-day regimen of 500/500 mg or 500/400 mg of amoxicillin and metronidazole would be most appropriate.
pockets were noted among PDC PM cohorts. Higher rates of BoP among those in receipt of PDC PM were reported in half of all studies. There were insufficient long-term data to make any firm conclusions about the effect of the delivery of PM on tooth loss.

CONCLUSION: Within the limitations of the data available, it appears that specialist PM is effective in sustaining periodontal stability following active specialist intervention. There is limited evidence that PDC provides the same level of care; however, the limited comparative data available suggest that outcomes could be slightly worse in PDC.

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Title
The effect of professional tooth cleaning or non-surgical periodontal therapy on oral halitosis in patients with periodontal diseases. A systematic review. [Review]

Objective
OBJECTIVE: The aim of this systematic review was to give the best available evidence on the impact of professional tooth cleaning (PTC) and scaling and root planing (SRP) on oral halitosis in patients with periodontal diseases.

Material and Methods
MATERIAL AND METHODS: Three databases were screened for relevant studies. Only randomized controlled trials (RCTs) or controlled clinical trials (CCT) were included. The primary outcome in all included studies was volatile sulphur compounds (VSC) measured by Halimeter or OralChroma and organoleptic scores as secondary outcome. Only studies investigating healthy adults except for periodontitis or gingivitis were included. The considered intervention strategies were professional tooth cleaning and non-surgical periodontal treatment. For both strategies, additional oral hygiene instructions (OHI) were possible. Two independent reviewers performed the study selection and quality assessment.

Search Results
SEARCH RESULTS: After abstract and title screening and subsequent full-text reading of potential papers, a placebo-controlled RCT could not be found. However, eight studies or particular arms used PTC or SRP as sole interventions and were included in this review. All trials or study arms included showed a positive effect on VSC levels or organoleptic scores after intervention.

Conclusions
CONCLUSIONS: Based on best available evidence, PTC and SRP in combination with oral hygiene instructions reduced VSC values in patients with oral halitosis and/or periodontal diseases, independent of tongue cleaning and the use of mouth rinses.

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Title
A systematic review and meta-analysis of epidemiologic observational evidence on the effect of periodontitis on diabetes An update of the EFP-AAP review. [Review]

Source
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Abstract
AIM: To update the available evidence on the impact of periodontitis on diabetes control, incidence and complications.

METHODS: Observational studies on the effect of periodontitis on diabetes, published after 2012, were identified through electronic databases and hand-searched journals. Findings were summarized by evidence tables, using PRISMA statement. Quality of the included studies was evaluated through the Newcastle Ottawa scale.

RESULTS: Healthy individuals with periodontitis exhibit a poor glycaemic control and a higher risk of developing diabetes. Individuals affected by diabetes show a deterioration of glycaemic control if also affected by periodontitis and significantly higher prevalence of diabetes-related complications. Limited evidence is available on gestational diabetes and type 1 diabetes.

CONCLUSIONS: Periodontitis has a significant impact on diabetes control, incidence and complications. Nevertheless, the heterogeneity and quality of the included publications suggest that caution should be exercised when interpreting the data and that there remains an important need for additional evidence.

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Title
Uncertainty about whether periodontal therapy improves oral health-related quality of life owing to serious limitations in systematic review addressing this question.

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Puertas, Alberto; Magan-Fernandez, Antonio; Blanc, Vanessa; Revelles, Laura; O'Valle, Francisco; Pozo, Elena; Leon, Ruben; Mesa, Francisco.
Association of periodontitis with preterm birth and low birth weight: a comprehensive review.

It is estimated that six million perinatal deaths occur every year worldwide, with premature birth being the main cause. Scientific evidence has shown that there is an association between periodontal health during pregnancy and adverse outcomes of labor, although interventional studies based on the treatment of periodontitis have failed to document an impact on reducing the incidence of preterm birth (PB) or low birth weight (LBW). Two pathogenic mechanisms have been proposed to explain this association. The direct pathway is based on the presence of gram-negative anaerobic bacteremia originating in the gingival biofilm, whereas the indirect pathway involves the production of pro-inflammatory markers which enter the bloodstream from the gingival submucosa. The result is the same: the development of an immune inflammatory response and/or the local suppression of growth factors in the fetal-placental unit, which in turn triggers labor. In the present review, we describe current concepts pertinent to PB and LBW, chronic and aggressive periodontitis, and the most frequent aspects of periodontal pathology during pregnancy. We evaluate the scientific evidence available to date, and offer a detailed description of the two pathways proposed to explain the association of maternal periodontitis with preterm and LBW delivery.

The effect of orthodontic treatment on periodontal tissue inflammation: A systematic review.

OBJECTIVE: The aim of the present systematic review was to evaluate the periodontal tissue inflammation indexes in patients undergoing different orthodontic treatment.

METHOD AND MATERIALS: The Cochrane Oral Health Group specialist trials, Medline, and Embase databases were used for the research. All the included studies had to report bleeding on probing (BOP) depth as primary outcome. Changes in probing depth, clinical attachment level, Gingival Index, and Periodontal Index were included in the review as secondary outcome measurements.

RESULTS: Ten studies reporting on 421 patients and different types of orthodontic treatment were selected for the analysis. Owing to the heterogeneity of studies present in the literature, it was not possible to perform a meta-analysis.

CONCLUSION: Within their limits, the results showed an increase of periodontal parameters after orthodontic treatment, indicating that it influences the accumulation and composition of the subgingival microbiota and subsequently induces more inflammation and higher BOP.
Efficacy of photodynamic therapy as adjunct treatment of chronic periodontitis: a systematic review and meta-analysis of treatment effects of antimicrobials.

Abstract
This is a systematic review of clinical and laboratory studies evaluating the effect of Melaleuca alternifolia on periodontopathogens, dental plaque, gingivitis, periodontitis, and inflammatory responses. The PubMed, Cochrane, Web of science, Bireme, Lilacs, Prospero, Open Grey, and Clinical Trials databases were searched to identify potentially eligible studies through October 2016. Of 1,654 potentially eligible studies, 25 were included in the systematic review. Their methodology was evaluated through the Cochrane Handbook for clinical studies and the GRADE system for in vivo/in vitro studies. Although clinical studies must be interpreted with caution due to methodological limitations, laboratory studies have found promising results. In vitro evidences showed that M. alternifolia has bactericidal and bacteriostatic effects against the most prevalent periodontopathogens. Clinical studies found comparable effects to chlorhexidine 0.12% in reducing gingival inflammation, although the antiplaque effect was lower. M. alternifolia also showed antioxidant properties, which are beneficial to the host, allied to the reduction on immune-inflammatory responses to pathogens. This systematic review suggests that the M. alternifolia has potential anti-inflammatory and antimicrobial properties, which can be easily applied to the periodontal tissues. However, further clinical trials are needed to elucidate the clinical relevance of its application.

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Meta-analysis of treatment effects of antimicrobial photodynamic therapy (aPDT) adjunct to non-surgical scaling and root planing (SRP) in comparison to SRP alone on patients with chronic periodontitis. The meta-analysis was performed according to PRISMA statement and Cochrane Collaboration guidelines. Electronic search complemented by hand search assured a high yield of randomized controlled trials (RCTs) of aPDT as adjunct modality to SRP. Differences in probing depth (PD) and clinical attachment level (CAL) were calculated with 95% confidence intervals and pooled in a random effects model. Analysis for intra- and inter-study heterogeneity was provided by chi <sup>2</sup> and I <sup>2</sup> tests, and publication bias was checked by funnel plots. Pooled overall effects of 26 RCTs attested significant benefits of aPDT adjunct to SRP with respect to PD reduction (MD 0.37; 95% CI 0.12-0.53; P<0.0001) and CAL gain (MD 0.33; 95% CI 0.19-0.48; P<0.0001) after 3 and 6 months. Sensitivity analysis minimized heterogeneity of PD reduction (MD 0.21; 95% CI 0.13-0.30; P<0.00001) and CAL gain (MD 0.36; 95% CI 0.27-0.44). aPDT adjunct to SRP provides significant PD reduction and CAL gain in treatment of chronic periodontitis. This moderate effect was found after 3 and 6 months which is short from a clinical perspective.

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Title
Assessment of the periodontal health status in patients undergoing orthodontic treatment with fixed appliances and invisalign system: A meta-analysis.
Source
Abstract
BACKGROUND: At present, many scholars have studied the periodontal health status of patients undergoing orthodontic treatment with fixed appliances and invisalign. However, those results are inconsistent. Therefore, we conducted this meta-analysis, and then provide reference for clinical treatment.
METHODS: Most databases, such as the Cochrane Library, EMBASE, PubMed, Medline, Chinese Biomedical Literature Database, CNKI, and Wan Fang Data were retrieved for related articles from the establishment of the database to October 2017. Meanwhile, we also searched the references of the related literatures manually, in order to increase the included literatures. Two researchers screened the related literatures according to the inclusion criteria and exclusion criteria. Stata 12.0 software was used for data analysis, and results are estimated by odds ratio (OR) and 95% confidence interval (CI).
RESULTS: Finally, 7 articles, including 368 patients, were included into our meta-analysis. Meta-analysis results showed that there was no statistically significant difference of gingival index (GI) and sulcus probing depth (SPD) status between the invisalign group and the control group, including at 1, 3, and 6 months (all P > .05). When compared with the control group, the invisalign group presented a lower plaque index (PLI) and sulcus bleeding index (SBI) status at 1 month (OR = 0.53, 95% CI: 0.89 to 0.18; OR = 0.44, 95% CI: 0.70 to 0.19, respectively), 3 months (OR = 0.69, 95% CI: -1.12 to -0.27; OR = 0.49, 95% CI: 0.93 to 0.05, respectively), and 6 months (OR = 0.91, 95% CI: -1.47 to -0.35; OR = 0.40, 95% CI: -0.63 to -0.07, respectively). Subgroup analysis showed that the SPD status was lower in the invisalign group at 6 months when measured the teeth using Ramfjord index (OR = 0.74, 95% CI: -1.35 to -0.12). However, there was no statistically significant difference between the 2 groups when using other measure methods (OR = 0.12, 95% CI: 0.26 to 0.17).
CONCLUSION: Our meta-analysis suggests that comparing with the traditional fixed appliances, patients treated with invisalign have a better periodontal health. However, more studies are needed to confirm this conclusion in the future.
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Title
Salivary matrix metalloproteinase (MMP)-8 as a biomarker for periodontitis: A PRISMA-compliant systematic review and meta-analysis. [Review]
Source
Abstract
BACKGROUND: Salivary matrix metalloproteinase (MMP)-8 is currently considered to be one of the most promising biomarkers for early diagnosis of periodontitis, however, several recent studies showed conflicting results.
OBJECTIVE: To determine the salivary matrix metalloproteinase (MMP)-8 levels between periodontitis patients and healthy individuals, and to assess its diagnostic value in periodontitis.
METHODS: Literatures were searched on PubMed and Embase databases up to August 2017, for articles reporting salivary MMP-8 levels between periodontitis patients and health controls with the data of means +/- standard deviation (SD).
METHODS: We did not identify any RCTs evaluating the effects of SPT versus monitoring only, or of providing SPT at different time intervals for SPT delivery. We excluded split-mouth studies where there could be a risk of contamination. Participants must have completed active periodontal therapy at least six months prior to randomisation and be enrolled in an SPT programme. Trials must have had a minimum follow-up period of 12 months.

DATA COLLECTION AND ANALYSIS: Two review authors independently screened search results to identify studies for inclusion, assessed the risk of bias in included studies and extracted study data. When possible, we calculated mean differences (MDs) and 95% confidence intervals (CIs) for continuous variables. Two review authors assessed the quality of evidence for each comparison and outcome using GRADE criteria.

MAIN RESULTS: We included four trials involving 307 participants aged 31 to 85 years, who had been previously treated for moderate to severe chronic periodontitis. Three studies compared adjuncts to mechanical debridement in SPT versus debridement only. The adjuncts were local antibiotics in two studies (one at high risk of bias and one at low risk) and photodynamic therapy in one study (at unclear risk of bias). One study at high risk of bias compared provision of SPT by a specialist versus a general practitioner. We did not identify any RCTs evaluating the effects of SPT versus monitoring only, or of providing SPT at different
time intervals, or that compared the effects of mechanical debridement using different approaches or technologies. No included trials measured our primary outcome 'tooth loss'; however, studies evaluated signs of inflammation and potential periodontal disease progression, including bleeding on probing (BoP), clinical attachment level (CAL) and probing pocket depth (PPD). There was no evidence of a difference between SPT delivered by a specialist versus a general practitioner for BoP or PPD at 12 months (very low-quality evidence). This study did not measure CAL or adverse events. Due to heterogeneous outcome reporting, it was not possible to combine data from the two studies comparing mechanical debridement with or without the use of adjunctive local antibiotics. Both studies found no evidence of a difference between groups at 12 months (low to very low-quality evidence). There were no adverse events in either study. The use of adjunctive photodynamic therapy did not demonstrate evidence of benefit compared to mechanical debridement only (very low-quality evidence). Adverse events were not measured. The quality of the evidence is low to very low for these comparisons. Future research is likely to change the findings, therefore the results should be interpreted with caution.

AUTHORS' CONCLUSIONS: Overall, there is insufficient evidence to determine the superiority of different protocols or adjunctive strategies to improve tooth maintenance during SPT. No trials evaluated SPT versus monitoring only. The evidence available for the comparisons evaluated is of low to very low quality, and hampered by dissimilarities in outcome reporting. More trials using uniform definitions and outcomes are required to address the objectives of this review.

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Title
Effect of orthodontic treatment on periodontal clinical attachment: a systematic review and meta-analysis.
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Abstract
Background: Insertion of orthodontic fixed appliances has been shown to induce a mostly transient qualitative and quantitative alteration of the intraoral microbiota. However, the extent to which treatment with fixed appliances might have a lasting adverse effect on the periodontal attachment of the teeth has not yet been investigated in an evidence-based manner.

Objectives: Aim of this systematic review was to assess the effect of comprehensive treatment with fixed orthodontic appliances on clinical attachment levels of adolescent and adult periodontally healthy patients.

Selection criteria: Prospective non-randomized longitudinal clinical studies.

Data collection and analysis: After duplicate study selection, data extraction, and risk of bias assessment according to the Cochrane guidelines, Paule-Mandel random-effects meta-analyses of the clinical attachment loss and its 95 per cent confidence intervals (CIs) were calculated.

Results: A total of 9 trials were identified that included 335 treated patients (at least 34 per cent male / 66 per cent female) with an average age of 22.6 years. The average pooled clinical attachment loss was 0.11 mm (9 studies; 335 patients; 95 per cent CI = 0.12 mm gain to 0.34 mm loss; \( P = 0.338 \)) with high heterogeneity. Furthermore, one study hinted that a small amount of clinical attachment might be gained by intrusion of upper incisors. Additional analyses indicated that the results were robust to addition of untreated patient groups, while patient age and timing of outcome measurement might play an important role.

Conclusions: According to existing evidence from longitudinal clinical studies orthodontic treatment with fixed appliances has little to no clinically relevant effect on periodontal clinical attachment levels.

Registration: PROSPERO (CRD42017057042).
Funding: None.
Gingival cyst of the adult, lateral periodontal cyst, and botryoid odontogenic cyst: An updated systematic review. [Review]

Abstract

The aim of the present review was to integrate the available data published on gingival cyst of the adult (GCA), lateral periodontal cyst (LPC), and botryoid odontogenic cyst (BOC) into a comprehensive analysis of their clinical/radiological features. An electronic search was undertaken in July/2017. Eligibility criteria included publications having enough clinical/radiological/histological information to confirm the diagnosis. A total of 146 publications (157 GCAs, 213 LPCs, 96 BOCs) were included. GCA and LPC presented highest prevalence in the sixth/fifth decades; BOC in the sixth/seventh decades. LPCs were larger lesions than GCAs and GCAs appeared at an older age than LPC. There was no statistically significant difference between them for other factors (location, symptoms, recurrence, follow-up time). In comparison with LPC, BOC lesions were larger, appeared more often in mandible and in older subjects, had more often a multilocular appearance, and presented a higher recurrence rate. Recurrence rates: GCA (3.2%), LPC (2.4%), BOC (21.7%). No factor seems to influence the recurrence rate of GCA or LPC. Multilocular radiological appearance seems to affect the recurrence rate of BOCs. Conservative surgical approaches seem to be enough for GCA/LPC. BOC presents a more aggressive behavior than GCA/LPC. Therefore, treatment of this lesion might involve some kind of adjunctive therapy after enucleation.

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Assessed diabetes, lack of confounding for diabetes control in included studies introduces estimation bias. The overall odds ratio for diabetes patients to be among subjects with periodontitis as compared to those without periodontitis was 6.5% when diabetes was clinically assessed. The highest prevalence of diabetes among subjects with periodontitis was observed in studies originating from Asian countries (17.2%, n=16647) and the lowest in studies describing the prevalence of diabetes in people clinically diagnosed with periodontitis: A systematic review and meta-analysis of preclinical in vivo trials.

METHODS: The MEDLINE-PubMed, CENTRAL and EMBASE databases were searched. Prevalence of diabetes mellitus among subjects with periodontitis were extracted or if possible calculated.

RESULTS: From the 803 titles and abstracts that came out of the search, 29 papers met the initial criteria. Prevalence of diabetes was 9.4% among subjects with periodontitis and 12.6% among subjects without periodontitis. Based on sub-analysis, for subjects with periodontitis, the prevalence of diabetes was 6.5% when diabetes was self-reported, compared to 17.3% when diabetes was clinically assessed. The highest prevalence of diabetes among subjects with periodontitis was observed in studies originating from Asian countries (17.2%, n=16647) and the lowest in studies describing populations from Europe (4.3%, n=7858). The overall odds ratio for diabetes patients to be among subjects with periodontitis as compared to those without periodontitis was 2.59 (95% CI [2.12; 3.15]). A substantial variability in the definitions of periodontitis, combination of self-reported and clinically assessed diabetes, lack of confounding for diabetes control in included studies introduces estimation bias.
CONCLUSIONS: The overall prevalence and odds of having diabetes is higher within periodontitis populations compared to people without periodontitis. Self-reported diabetes underestimates the prevalence when compared to this condition assessed clinically. Geographical differences were observed: the highest diabetes prevalence among subjects with periodontitis was observed in studies conducted in Asia and the lowest in studies originating from Europe. This article is protected by copyright. All rights reserved.
BACKGROUND: Atherosclerosis is a multifactorial inflammatory disease of the cardiovascular system. It has been suggested that periodontitis, an infectious disease of oral cavity caused by gram-negative anaerobic bacteria, could be linked to atherosclerosis.

OBJECTIVE: The objective of this systematic review was to assess the evidence between the association of periodontitis and atherosclerosis in adults.

METHODS: A systematic literature search was conducted in 7 databases up to January 2017, according to the Preferential Reports for Systematic Review and Meta-analysis (PRISMA) guidelines. Studies in humans with atherosclerosis were considered eligible when considering a group exposed to periodontitis and a control group (absence of periodontitis), in which the primary outcome was the association between the 2 diseases (atherosclerosis and periodontitis). The synthesis of the qualitative studies included was evaluated using previously validated checklist for assessing the risk of bias.

RESULTS: Among the 2138 studies found, 4 observational studies met the eligibility criteria and were included in the qualitative synthesis. All articles were considered adequate, presenting consistent and valid information. The results of the selected studies show the expected effects, being considered as low risk of bias.

CONCLUSION: The available evidence indicates an association between the 2 diseases, with elevated levels of inflammatory markers, mainly C-reactive protein and interleukin 6.
Network meta-analysis of studies included in the Clinical Practice Guideline on the nonsurgical treatment of chronic periodontitis. [Review]

MATERIALS AND METHODS: A star-shaped NMA was performed based on 36 indirect comparisons of clinical attachment-level (CAL) gains among nine adjuncts in 74 studies from the Clinical Practice Guideline.

RESULTS: All pairwise differences were accompanied by wide confidence intervals, and none of the adjuncts were statistically significantly superior to another. Local doxycycline hyclate and photodynamic therapy with a diode laser had the highest probabilities for ranking first and second, respectively. Publication bias was evident, with fewer than expected studies with small effects. The lack of these studies inflated the treatment effects by an estimated by 20%.

CONCLUSIONS: Adjuncts improve CAL gain by about a third of a mm over 6-12 months compared with SRP alone, but no significant differences were found among the adjuncts. The patient-perceived benefit of this gain is unclear because CAL is a physical measure made by the clinician and not a patient-oriented outcome. Publication bias inflated the observed treatment effects.
BACKGROUND: To determine whether treatment with antimicrobial photodynamic therapy (aPDT) as an adjunct to scaling and root planing (SRP) yield better clinical periodontal outcomes than antibiotics (AB) as adjunct to SRP in periodontitis.

METHODS: Electronic searches were conducted in databases (MEDLINE, PubMed, EMBASE, SCOPUS, Cochrane Central Register of Controlled Trials and Cochrane Oral Health Group Trials Register databases) up to and including April 2017.

RESULTS: Five randomized trials were included. All studies used the combined approach aPDT+SRP and AB+SRP in the test and control group respectively. The follow up period ranged from 12 to 48 weeks. All studies used diode lasers. The wavelengths, power density and duration of irradiation used were 670 nanometre, 75 milliwatts per square centimeters and 60s respectively. None of the studies showed additional benefits of aPDT at follow up. Considering the effects of adjunctive aPDT as compared to AB, a high degree of heterogeneity for periodontal probing depth (PPD) (p<0.0001, I²=87.47%) was noticed among both the groups. Meta-analysis showed significant clinical attachment level (CAL) gain (WMD=0.60, 95% CI=0.25 to 0.95, p=0.001), and not PPD reduction (WMD=0.67, 95% CI=-0.36 to 1.71, p=0.204) for aPDT as compared to AB at follow up.

CONCLUSION: It remains debatable whether aPDT is more effective as compared to adjunctive AB in the treatment of periodontitis, given that the scientific evidence is weak. Precautions must be exercised when interpreting the results of this study due to the small sample size and high heterogeneity among studies.

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Year of Publication
2017

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Title
Effects of periodontal endoscopy on the treatment of periodontitis: A systematic review and meta-analysis. [Review]
Source
Abstract

BACKGROUND: For this systematic review, the authors evaluated and synthesized the available scientific evidence related to the effects of periodontal endoscopy on the treatment of periodontitis.

METHODS: The authors searched PubMed, Embase, Cochrane Library, Chinese Scientific Journals database, China National Knowledge Infrastructure, and Chinese Medicine Premier's Wanfang database for articles about periodontal endoscopy that were published through January 2017. The authors considered the percentage of residual calculus, average treatment time, bleeding on probing (BOP), gingival inflammation (GI), and probing depth (PD) as outcome measures. The authors extracted data and performed meta-analyses for groups of articles for which it was appropriate.

RESULTS: The authors identified 8 articles as being suitable for this systematic review. The investigators of 3 studies reported results related to BOP and GI that revealed some advantages of periodontal endoscopy over traditional scaling and root planing (SRP). The investigators of 4 studies explored PD and found no difference between periodontal endoscopy and traditional SRP. The authors could not perform meta-analyses on the study results related to BOP, GI, or PD. The percentage of residual calculus after periodontal endoscopy-aided debridement was significantly less than the percentage of residual calculus after traditional SRP (mean difference, -3.18; 95% confidence interval, -4.86 to -1.49; P = .002; heterogeneity I² = 74%). The authors found that periodontal endoscopy took significantly more time than traditional SRP (mean difference, 6.01 minutes; 95% confidence interval, 4.23 to 7.8; P < .00001; heterogeneity I² = 0%).

CONCLUSIONS AND PRACTICAL IMPLICATIONS: Periodontal endoscopy may provide additional benefits for calculus removal compared with traditional SRP, although it could take more time to perform. With respect to BOP, GI, and PD, the authors found no sufficient evidence to support the difference between the use of periodontal endoscopy and traditional SRP. The authors concluded that additional scientific research is required to assess the effects of periodontal endoscopy on the treatment of periodontitis.
Chlorhexidine mouthwash as an adjunct to mechanical therapy in chronic periodontitis: A meta-analysis. [Review]

Source

Abstract
BACKGROUND: Through a systematic literature review, the authors evaluated the use of chlorhexidine (CHX) mouthwash as an adjunct to mechanical periodontal therapy for chronic periodontitis.

TYPES OF STUDIES REVIEWED: The authors performed a systematic search by using PubMed (MEDLINE), Scopus, Scientific Electronic Library Online, and Cochrane Central Register of Controlled Trials. The authors selected randomized controlled clinical trials in which the investigators evaluated the probing depth (PD) and clinical attachment level (CAL) in test groups by using CHX as an adjuvant and in control groups and subject to mechanical periodontal therapy (scaling and root planing [SRP] 4-6 visits or 24 hours).

RESULTS: The literature search resulted in 8 articles, which the authors then assessed for quality. After testing for heterogeneity, the authors performed a meta-analysis only in the SRP group with 4 to 6 visits. Results were positive for both PD and CAL with use of CHX. However, the summary measure was significant (P < .05) only for PD at 40 to 60 days (0.33 millimeters; 95% confidence interval, 0.08 to 0.58 mm) and 180 days (0.24 mm; 95% confidence interval, 0.02 to 0.47 mm) of follow-up, showing positive results for the use of CHX at those times. Although those differences were statistically significant, they could be interpreted as clinically slight.

CONCLUSIONS AND PRACTICAL IMPLICATIONS: Adjunctive use of CHX mouthrinse with mechanical SRP resulted in slightly greater PD reduction than did SRP alone. Clinicians must consider the small additional gain in PD reduction, negligible effect on CAL, and potential for tooth staining when using CHX as an adjunct to SRP in treating chronic periodontitis.

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AIM: To analyse the regenerative potential of leucocyte- and platelet-rich fibrin (L-PRF) during periodontal surgery.

MATERIALS AND METHODS: An electronic and hand search were conducted in three databases. Only randomized clinical trials were selected and no follow-up limitation was applied. Pocket depth (PD), clinical attachment level (CAL), bone fill, keratinized tissue width (KTW), recession reduction and root coverage (%) were considered as outcome. When possible, meta-analysis was performed.

RESULTS: Twenty-four articles fulfilled the inclusion and exclusion criteria. Three subgroups were created: intra-bony defects (IBDs), furcation defects and periodontal plastic surgery. Meta-analysis was performed in all the subgroups. Significant PD reduction (1.1 +/- 0.5 mm, p < 0.001), CAL gain (1.2 +/- 0.6 mm, p < 0.001) and bone fill (1.7 +/- 0.7 mm, p < 0.001) were found when comparing L-PRF to open flap debridement (OFD) in IBDs. For furcation defects, significant PD reduction (1.9 +/- 1.5 mm, p = 0.01), CAL gain (1.3 +/- 0.4 mm, p < 0.001) and bone fill (1.5 +/- 0.3 mm, p < 0.001) were reported when comparing L-PRF to OFD. When L-PRF was compared to a connective tissue graft, similar outcomes were recorded for PD reduction (0.2 +/- 0.3 mm, p > 0.05), CAL gain (0.2 +/- 0.5 mm, p > 0.05), KTW (0.3 +/- 0.4 mm, p > 0.05) and recession reduction (0.2 +/- 0.3 mm, p > 0.05).

CONCLUSIONS: L-PRF enhances periodontal wound healing.
Background: The mouth cavity hosts various types of anaerobic bacteria including Porphyromonas gingivalis, which causes periodontal inflammatory diseases. P. gingivalis is a gram-negative oral anaerobe and is considered as a main etiological factor in periodontal diseases. Several studies have reported a relationship between P. gingivalis in individuals with periodontal diseases and a critical role of this bacterium in the pathogenesis of periodontal diseases. The present study aimed at estimating this probability using a meta-analysis.

Methods: We searched several databases including PubMed, Scopus, Google Scholar, and Web of Science to identify case-control studies addressing the relationship between P. gingivalis with periodontal diseases. A total of 49 reports published from different countries from 1993 to 2014 were included in this study. I2 (heterogeneity index) statistics were calculated to examine heterogeneity. Data were analyzed using STATA Version 11.

Results: After a detailed analysis of the selected articles, 49 case-control studies with 5924 individuals fulfilled the inclusion criteria for the meta-analysis. The healthy controls included 2600 healthy individuals with a Mean±SD age of 36.56±7.45 years. The periodontal diseases group included 3356 patients with a mean age of 43.62±8.35 years. There was a statistically significant difference between P. gingivalis in periodontal patients and healthy controls; 9.24 (95% CI: 5.78 to 14.77; P = 0.000). In the other word, there was a significant relationship between the presence of P. gingivalis and periodontal diseases. Analyzing the results of the present study, we found a strong association between the presence of P. gingivalis and periodontal diseases. This result suggests that another research is needed to further assess this subject.

Conclusions: Injectable vitamin D is an adjunctive treatment modality that needs to be discovered in another way. It may provide further solutions for the periodontal regeneration problem. Clinical studies with large sample sizes and long term follow up are needed.

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Title
Hypothyroidism as a risk factor of periodontitis and its relation with vitamin D deficiency: mini-review of literature and a case report. [Review]

Source
Polymorphisms in interleukins 17A and 17F genes and periodontitis: results from a meta-analysis. [Review]


Polymerisms in inflammatory genes such as interleukins 17A and 17F are associated with the risk of development of periodontitis, although the results remain contradictory. Hence, the aim of this study was perform a meta-analysis focusing on two polymorphisms (rs2275913 and rs763780) in interleukins 17A and 17F genes, respectively, in both chronic (CP) and aggressive periodontitis (AgP). A review in literature was performed in several databases for studies published before 25, September 2016. The meta-analysis was obtained through the review manager statistical software (version 5.2) with odds ratio (OR) calculation and funnel plot (P < 0.05) for heterogeneity, as well as the comprehensive meta-analysis software (version 3.3.070) for the assessment of publication bias. Seven articles with 1540 participants composed the results in which the mutant allele in the rs2275913 polymorphism did not present significant association with the risk of CP or AgP (OR 1.56, 95% CI 0.77, 3.15, P = 0.21; OR 1.12, 95% CI 0.05, 23.44, P = 0.94, respectively) nor was the mutant allele in rs763780 associated with the risk of CP (OR 1.19, 95% CI 0.80, 1.76, P = 0.39) or AgP (OR 1.07, 95% CI 0.63, 1.84, P = 0.79). No bias of publication was observed by Egger's and Begg's tests in any allelic evaluation. This meta-analysis showed a non-significant association between the polymorphisms rs2275913 and rs763780 in interleukins 17A and 17F genes and chronic and aggressive periodontitis in the allelic evaluation.
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**Title**
Serum lipid levels in patients with periodontal disease: A meta-analysis and meta-regression.

**Source**

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**AIM:** Several papers have considered the potential relationship between periodontitis and lipid parameters. The present systematic review, meta-analysis and meta-regression studies focused on investigating whether serum lipid parameter levels were elevated in patients with periodontal disease (PD; without altered systemic conditions) in comparison with periodontally healthy subjects.

**MATERIALS AND METHODS:** Eligible studies were those with data about serum lipid parameter levels in non-smoking subjects with and without chronic periodontitis, who are generally healthy and not taking any medication for dyslipidaemia. Mean differences and 95% confidence intervals for total cholesterol, triglycerides, low-density lipoprotein (LDL) cholesterol and high-density lipoprotein (HDL) cholesterol were obtained from all the selected studies.

**RESULTS:** A total of 19 publications were included for meta-analysis. Participants with chronic periodontitis presented significantly higher serum levels of LDL and triglycerides (p = .003 and p < .0001, respectively). The total cholesterol was higher in the PD group, but without significant difference in comparison with healthy participants. Significantly (p = .0005) lower HDL serum levels were found in patients with chronic periodontitis than in healthy subjects.

**CONCLUSIONS:** Even considering the limitations of this meta-analysis, it is suggested that PD is significantly associated with reduction in HDL and elevation of LDL and triglyceride concentrations. This analysis supports the rationale that periodontal disease is associated with lipid metabolic control.
OBJECTIVES: To evaluate the effect of local and systemic statin use as an adjunct to non-surgical and surgical periodontal therapy—A systematic review and meta-analysis. [Review]

DATA: Literature search according to PRISMA guidelines with the following eligibility criteria: (a) English or German language; (b) interventional studies; (c) statins as monotherapy or as an adjunct to non-surgical and/or surgical treatment of periodontitis; (d) clinical and/or radiographic treatment effect size of statin intake reported.

SOURCES: Medline (PubMed), Embase (Ovid), CENTRAL (Ovid).

STUDY SELECTION: Thirteen clinical studies regarding local application and 2 with systemic administration of statins as an adjunct to non-surgical treatment (SRP) and 4 studies regarding intrasurgical statin application with a maximum follow-up of 9 months could be included: simvastatin, atorvastatin, and rosuvastatin were used. Local but not systemic statin application as an adjunct to SRP yielded significantly larger probing pocket depth (PD), radiographic defect depth (RDD), and bleeding index reduction, and larger clinical attachment level gain, and less residual PD and RDD (p<0.016); rosuvastatin appeared as the most efficacious. Three of 4 studies reported a significant positive effect of intrasurgical statin application. No adverse events were reported after statin use. The vast majority of the included studies were from the same research group.

CONCLUSIONS: Significant additional clinical and radiographic improvements are obtained after local, but not systemic, statin use as an adjunct to SRP in deep pockets associated with intrabony defects and seemingly with furcation defects; intrasurgical statin application seems similarly beneficial. Confirmation of these results, and especially of the effect size, from other research groups is warranted.

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BACKGROUND: There is an association between chronic periodontitis and cardiovascular disease (CVD). However, it is not known whether periodontal therapy could prevent or manage CVD in patients with chronic periodontitis.

OBJECTIVES: The objective of this systematic review was to investigate the effects of periodontal therapy in preventing the occurrence of, and management or recurrence of, CVD in patients with chronic periodontitis.

SEARCH METHODS: Cochrane Oral Health’s Information Specialist searched the following databases: Cochrane Oral Health’s Trials Register (to 31 August 2017), the Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library, 2017, Issue 7), MEDLINE Ovid (1946 to 31 August 2017), Embase Ovid (1980 to 31 August 2017) and the Cumulative Index to Nursing and Allied Health Literature (CINAHL EBSCO) (1937 to 31 August 2017). The US National Institutes of Health Trials Registry (ClinicalTrials.gov), the World Health Organization International Clinical Trials Registry Platform and Open Grey were searched for ongoing trials. No restrictions were placed on the language or date of publication when searching the electronic databases. We also searched the Chinese BioMedical Literature Database (1994 to 27 August 2017), the VIP database (1989 to 27 August 2017) and Sciencepaper Online (2003 to 27 August 2017).

SELECTION CRITERIA: Randomised controlled trials (RCTs) and quasi-RCTs were considered eligible. Studies were selected if they included patients with a diagnosis of chronic periodontitis and previous CVD (secondary prevention studies) or no CVD (primary prevention studies); patients in the intervention group received active periodontal therapy compared to maintenance therapy, no periodontal treatment or another kind of periodontal treatment in the control group.

DATA COLLECTION AND ANALYSIS: Two review authors carried out the study identification, data extraction and risk of bias assessment independently and in duplicate. Any discrepancies between the two authors were resolved by discussion or with a third review author. A formal pilot-tested data extraction form was adopted for the data extraction, and the Cochran tool for risk of bias assessment was used for the critical appraisal of the literature.

MAIN RESULTS: No studies were identified that assessed primary prevention of CVD in people with periodontitis. One study involving 303 participants with >= 50% blockage of one coronary artery or a coronary event within three years, but not the three months prior, was included. The study was at high risk of bias due to deviation from the protocol treatment allocation and lack of follow-up data. The trial compared scaling and root planing (SRP) with community care for a follow-up period of six to 25 months. No data on deaths (all-cause or CVD-related) were reported. There was insufficient evidence to determine the effect of SRP and community care in reducing the risk of CVD recurrence in patients with chronic periodontitis (risk ratio (RR) 0.72; 95% confidence interval (CI) 0.23 to 2.22; very low quality evidence). The effects of SRP compared with community care on high-sensitivity C-reactive protein (hs-CRP) (mean difference (MD) 0.62; -1.45 to 2.69), the number of patients with high hs-CRP (RR 0.77; 95% CI 0.32 to 1.85) and adverse events (RR 9.06; 95% CI 0.49 to 166.82) were also not statistically significant. The study did not assess modifiable cardiovascular risk factors, other blood test results, heart function parameters or revascularisation procedures.

AUTHORS’ CONCLUSIONS: We found very low quality evidence that was insufficient to support or refute whether periodontal therapy can prevent the recurrence of CVD in the long term in patients with chronic periodontitis. No evidence on primary prevention was found.
Oxidative Stress and Antioxidants in the Diagnosis and Therapy of Periodontitis. [Review]


Abstract
Oxidative stress has been implicated in the pathogenesis of numerous diseases. However, large interventional studies with antioxidants failed to show benefits in the prevention or treatment of cardiovascular diseases, cancer, or diabetes mellitus. Numerous clinical studies have confirmed the association of oxidative stress markers and periodontitis. Technical and biological variability is high for most of the analyzed markers and none of them seems to be optimal for routine clinical use. In a research setting, analysis of a palette of oxidative stress markers is needed to cover lipid peroxidation, protein oxidation, and the antioxidant status. The source of reactive oxygen species and their role in the pathogenesis of periodontitis remains unclear. Intervenational experiments indicate that oxidative stress might be more than just a simple consequence of the inflammation. Small studies have confirmed that some antioxidants could have therapeutic value at least as an addition to the standard non-surgical treatment of periodontitis. A clear evidence for the efficiency of antioxidant treatment in large patient cohorts is lacking. Potentially, because lowering of oxidative stress markers might be a secondary effect of anti-inflammatory or antibacterial agents. As the field of research of oxidative stress in periodontitis gains attraction and the number of relevant published papers is increasing a systematic overview of the conducted observational and interventional studies is needed. This review summarizes the currently available literature linking oxidative stress and periodontitis and points toward the potential of adjuvant antioxidant treatment, especially in cases where standard treatment fails to improve the periodontal status.

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Title
Osteoporosis and Periodontitis in Postmenopausal Women: A Systematic Review. [Review]


Abstract
This systematic review was done to assess the strength of association between osteoporosis and chronic periodontitis in postmenopausal women, assessed by bone mineral density (BMD) and clinical attachment loss, respectively. The Pubmed, Cochrane central, EMBASE, and Google Scholar were searched from year 1990 to 2015 for studies on association between chronic periodontitis and osteoporosis. Studies measuring osteoporosis in terms of central BMD and periodontitis in terms of clinical attachment level were studied. Data were extracted and descriptive analysis was performed. Screening of 1188 articles resulted in 24 articles for review after reading the titles and abstracts. Fifteen studies were shortlisted for inclusion in systematic review. Ten of these studies showed an association between periodontitis and osteoporosis. It implies that patients with severe periodontitis should also be evaluated for systemic bone health and vice versa.

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2017

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Title
Osteoporosis and Periodontitis in Postmenopausal Women: A Systematic Review. [Review]


Abstract
This systematic review was done to assess the strength of association between osteoporosis and chronic periodontitis in postmenopausal women, assessed by bone mineral density (BMD) and clinical attachment loss, respectively. The Pubmed, Cochrane central, EMBASE, and Google Scholar were searched from year 1990 to 2015 for studies on association between chronic periodontitis and osteoporosis. Studies measuring osteoporosis in terms of central BMD and periodontitis in terms of clinical attachment level were studied. Data were extracted and descriptive analysis was performed. Screening of 1188 articles resulted in 24 articles for review after reading the titles and abstracts. Fifteen studies were shortlisted for inclusion in systematic review. Ten of these studies showed an association between periodontitis and osteoporosis. It implies that patients with severe periodontitis should also be evaluated for systemic bone health and vice versa.

Publication Type
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Title
Is Antimicrobial Photodynamic Therapy Effective as an Adjunct to Scaling and Root Planing in Patients with Chronic Periodontitis? A Systematic Review. [Review]
Source
Biomolecules. 7(4), 2017 11 24.
Abstract
The aim of this systematic review was to investigate whether antimicrobial photodynamic therapy (aPDT) as either a primary mode of treatment or an adjunct to non-surgical treatment was more effective than scaling and root planning (SRP) alone in treating chronic periodontitis in terms of clinical attachment level (CAL) gain and probing depth (PD) reduction. The focused question was developed using the Patient, Intervention, Comparison, and Outcome (PICO) format, and two authors independently searched the Medline, EMBASE, Cochrane Library, Web of Science, Google Scholar, and Scopus databases for relevant studies from January 2008 to December 2016. Twenty studies included in this systematic review were randomized clinical trials (RCTs) or quasi-RCTs of aPDT compared to placebo, no intervention, or non-surgical treatment in an adult population. Basic study characteristics, photosensitizing agents and wavelengths used in aPDT, frequency of aPDT application, effect of aPDT on clinical parameters, antimicrobial effect of aPDT in chronic periodontitis, effect of immunological parameters following aPDT and patient-based outcome measures were collected from the studies. Although there was a wide range of heterogeneity in the included studies, they all indicated that aPDT has the potential to be an effective adjunct in the treatment of chronic periodontitis. Long-term, multicenter studies with larger sample sizes are needed before aPDT can be recommended as an effective treatment modality.
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Title
Periodontal Disease and Dental Caries among children and Adolescents Suffering from Endocrine Disorders - A Literature Review.
Source
Abstract
BACKGROUND: Dental caries and periodontal disease are the most common oral diseases. Their link to disorders of endocrine system is of high interest. Most of the available data relates to the adult population, though its importance among children and adolescents is paramount.
OBJECTIVE: To review the existing evidence examining the link between these clinical conditions among children and adolescents.
DATA SOURCES: Electronic bibliographic databases and hand searches of relevant publications, based on prepared list of relevant key-words was performed.
RESULTS: Paucity of existing data leaves the question of association between most endocrine disorders of the youth with dental caries and periodontal disease, inconclusive, apart from obesity and diabetes mellitus, where it seems to be elucidated.
CONCLUSION: A profound research should be done in order to amend our understanding to what extent, if at all, exists the link between these oral maladies and different pediatric endocrine disorders.
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ANCIENT SEED FOR MODERN CURE - POMEGRANATE REVIEW OF THERAPEUTIC APPLICATIONS IN PERIODONTICS. [Review]

Abstract
Punica granatum (pomegranate), the member of Punicaceae family, is used in the prevention and treatment of health disorders. P. granatum contains diverse range of phytochemicals including ellagic acid, punicalagin, pedunculagin, quercetin, rutin, tannic acid, polyphenol, anthocyanins, and catechins. This review aims at providing an overview of the chemical constituents, antibacterial, anti-inflammatory, and antioxidant properties of P. granatum, and its role in the prevention and treatment of gingival and periodontal diseases.

THE EFFECT OF PHOTODYNAMIC THERAPY IN THE TREATMENT OF CHRONIC PERIODONTITIS: A REVIEW OF LITERATURE. [Review]

Abstract
Introduction: Chronic periodontitis is the most common periodontal disease which is related to the chronic accumulation of bacterial plaque. Since mechanical methods are not sufficient in the treatment of this disease, administration of local/systemic antibiotic is recommended following mechanical debridement. However, side effects of antibiotics such as microbial resistance and patient allergy led to development of alternative methods. One of these suggested methods is the antimicrobial photodynamic therapy (aPDT). PDT is a local noninvasive treatment modality without the side effects caused by antibiotics. The aim of this study was to review the articles related to the application of PDT with laser in the treatment of chronic periodontitis. <b>Conclusion</b>: Considering the safety, the lack of side effects and general advantages like more patient compliance, the PDT treatment with scaling and root planing (SRP) is recommended as an efficient adjunctive modality for the treatment of localized chronic periodontitis especially during the maintenance phase in non-surgical treatment.
Is there an association between ABO blood grouping and periodontal disease? A literature review. [Review]


Introduction: Although several studies have investigated the relationship between ABO blood group and medical diseases, few reports have explored the association with oral diseases, including periodontal disease (PD).

Aim: The aim of this literature review was to assess the association between the ABO blood grouping and PD.

Methods: We searched PubMed and Google Scholar databases using the following terms in different combinations: “ABO blood group,” “periodontitis,” “aggressive periodontitis (AP),” “risk factor,” and “Rhesus factor.” Databases were searched for articles published from 1977 to August 2016. Titles and abstracts of articles were screened for English-language papers describing clinical studies, case reports, or retrospective studies of oral health status in patients with different ABO blood groups. Letters to the editor, historic reviews, and articles including unpublished data were excluded. Reference lists of included studies were reviewed for additional original and review studies.

Results: We identified eight articles describing studies of the relationship between ABO blood groups and PD. The findings suggested a possible genetic basis in the association of the blood group AB with AP. Four studies showed that chronic periodontitis was more common among patients with blood group O.

Conclusion: ABO blood subgroup and Rhesus factor could constitute risk predictors in the development of PD.

Is Khat (Catha edulis) chewing a risk factor for periodontal diseases? A systematic review. [Review]


Background: Khat (Catha edulis) chewing is a highly prevalent habit in the Arabian Peninsula and East Africa, and has recently spread to Western countries. The association between khat chewing and oral mucosal lesions is well documented in the literature. However, there is no concrete evidence on the association between khat chewing and periodontal disease. The purpose of this systematic review was to analyze the influence of khat chewing on periodontal health.

Material and Methods: A literature search of PubMed, Scopus and Web of Sciences databases was carried out to identify relevant articles published from 1990 to May 2017. The inclusion criteria were all clinical studies that assessed the relationship between khat chewing and periodontal disease.
Results: The search yielded 122 articles, of which 10 were included in this systematic review. Most of the studies exhibited a positive correlation between khat chewing and periodontal disease.

Conclusions: Altogether, the analysis of the current evidence reveals that khat chewing is destructive to the periodontium and enhances the risk of periodontal disease progression. However, due to variability of studies, more longitudinal case-controlled studies are highly warranted to establish a causal relation between khat chewing and periodontal disease. <key words>Key words</key words> Khat chewing, periodontal health, periodontal disease, risk factor.

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Chronic periodontitis and the risk of erectile dysfunction: a systematic review and meta-analysis: methodological issues.
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Title
Association between Systemic Lupus Erythematosus and Periodontitis: A Systematic Review and Meta-analysis.
Source
Frontiers in Immunology. 8:1295, 2017.

Abstract
BACKGROUND: Systemic lupus erythematosus (SLE) is a chronic systemic inflammatory autoimmune disease, the etiology of which remains only partially characterized. Strong evidence implicates chronic infections in the development and chronicity of autoimmune conditions. Recently, an association has been demonstrated between periodontitis and rheumatoid arthritis. Such observations have led to the investigation of the possible role of periodontitis and oral dysbiosis in other systemic inflammatory conditions, including SLE. The aim of this study was to examine whether there is an association between SLE and periodontitis.

METHODS: MEDLINE via OVID, EMBASE via OVID, and PsycINFO via OVID databases were searched to identify eligible studies, screened by two independent authors and verified by a third. Studies comparing presence of periodontitis in SLE cases to controls without SLE were included. Data were extracted using a predefined table and papers were appraised using Down's and Black tool. Mantel-Haenszel meta-analysis was performed using RevMan.

RESULTS: Eight case-control studies were included, with 487 SLE cases and a total of 1,383 participants. On meta-analysis of four studies, risk of periodontitis in SLE cases compared to controls was significantly greater with a risk ratio of 1.76 (95% CI 1.29-2.41, p=0.0004). No statistical difference was found in individual measures of periodontitis, such as probing depth or clinical attachment loss, between SLE cases and controls.

CONCLUSION: Our study found a statistically significant increased risk of periodontitis in patients with SLE compared to controls. This finding suggests a possible association between these two conditions. Larger longitudinal studies are needed to confirm this possible association.
Platelet-rich Fibrin: A Paradigm in Periodontal Therapy - A Systematic Review. [Review]


Effect of intra-pregnancy nonsurgical periodontal therapy on inflammatory biomarkers and adverse pregnancy outcomes: a systematic review with meta-analysis.

METHODS: On June 5, 2017, we searched PubMed, Cochrane, SCOPUS, Web of Science, LILACS, ProQuest, Open Grey, and Google Scholar databases. Randomized clinical trials in which pregnant women with chronic periodontitis underwent nonsurgical periodontal therapy, compared with an untreated group, tested for inflammatory biomarkers, and followed till delivery were included. Primary outcomes were preterm birth, low birth weight, and preeclampsia. Meta-analysis was performed with 5.3.5 version of Review Manager software.

RESULTS: We found 565 references in the databases, 326 after duplicates removal, 28 met criteria for full text reading, and 4 met eligibility criteria for quantitative and qualitative synthesis. Intra-pregnancy nonsurgical periodontal therapy improved periodontal clinical parameters (periodontal pocket depth, clinical attachment level, and bleeding on probing) and reduced biomarker level from gingival crevicular fluid (GCF), and some from blood serum; however, it did not influence biomarker level from umbilical cord blood. Meta-analysis showed tendency for reduction of the risk of preterm birth before 37 weeks for treated group (risk ratio (RR) = 0.54, 95% CI 0.38-0.77; p = 0.0007; inconsistency indexes (I2) 32%) but did not show any difference for low birth weight occurrence (RR = 0.78, 95% CI 0.50-1.21; p = 0.27; I2 41%). No included study considered preeclampsia as a gestational outcome.

CONCLUSIONS: These results demonstrated that the intra-pregnancy nonsurgical periodontal therapy decreased periodontal inflammatory biomarker levels from gingival crevicular fluid and some from serum blood, with no influence on inflammatory biomarker level from cord blood, and it did not consistently reduce adverse gestational adverse outcome occurrence.

SYSTEMATIC REVIEW REGISTRATION: PROSPERO CRD42015027750.

**Abstract**

Currently, investigations have focused on the identification of Single Nucleotide Polymorphisms (SNP) involved in host response and its ability to generate an immunity deficiency. The aim of this study was to perform a systematic review (SR) and meta-analysis to evaluate the association between TNF-\textalpha-308 G>A polymorphism and apical periodontitis (AP) phenotypes. A broad search for studies was conducted. The following databases were used: PubMed, Scopus, Web of Science, and VHL (Medline, SciELO, Ibecs, and Lilacs). The MeSH terms "Periapical Periodontitis," "Periapical Abscess," "Polymorphism, Genetic," and "Polymorphism, Single Nucleotide" were used. MeSH synonyms, related terms, and free terms were included. Clinical investigations of individuals with different AP phenotypes in permanent teeth were selected. After application of the eligibility criteria, selected studies were qualified by assessing their methodological quality. A fixed effect model was used for the meta-analysis. The initial search identified 71 references. After excluding duplicate abstracts, 33 were selected. From these, two were eligible for quality assessment and were classified as being of moderate evidence. The included studies did not demonstrate association between AP and TNF-\textalpha-308 G>A SNP. However, the meta-analysis demonstrated an association between the genotype distribution and AP phenotype (OR=0.49; confidence interval=0.25, 0.96; p=0.04). The role of TNF-\textalpha-308 G>A SNP in AP phenotypes is debatable. Further studies are needed to confirm and understand the underlying mechanisms of the identified association.

**Publication Type**

Journal Article.

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2017
**Title**
Association between vitamin D receptor BsmI gene polymorphism and periodontitis: a meta-analysis in a single ethnic group.

**Source**

**Abstract**
Although many researchers have studied on the association between vitamin D receptor (VDR) BsmI polymorphism and periodontitis, this association remains elusive. To further assess the effects of VDR BsmI polymorphism on the risk of periodontitis, a meta-analysis was performed in a single ethnic group. We searched PubMed and Chinese databases for relevant studies till April 2017. The strength of the associations were assessed used pooled odds ratios (ORs) and 95% confidence intervals (CIs). Six studies including 757 periodontitis cases and 670 controls were identified at last. In the total analyses, VDR BsmI polymorphism was not associated with the risk of periodontitis in all models. The subgroup analyses suggested a significantly reduced risk of periodontitis in South China. In conclusion, our meta-analysis showed that VDR BsmI polymorphism was associated with the decreased risk of periodontitis in Chinese individuals from South China, and further studies in other ethnic groups are required for definite conclusions.

**Publication Type**
Journal Article.

**Year of Publication**
2017

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**Title**

**Source**

**Abstract**

SOURCE OF FUNDING: Self-funded by the authors and their institution TYPE OF STUDY/DESIGN: Systematic review with meta-analysis of data.

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**Title**
Gap Analysis of Older Adults With Type 2 Diabetes Receiving Nonsurgical Periodontal Therapy. [Review]

**Source**
OBJECTIVE: Twenty percent of the elderly US population is diagnosed with diabetes. The elderly are at a higher risk of developing serious complications from diabetes. Regular professional dental care may help control blood glucose levels and thereby diabetes complications. Since such potential benefits could play a clinically significant role in diabetes management, our aim was to identify and review relevant evidence among the older population.

MATERIALS AND METHODS: Electronic databases were searched for periodontal intervention studies using modified search terms from previous systematic reviews. The final search date was October 31, 2016.

RESULTS: Twenty-five publications (22 studies) were included in our final review. They varied in study design, duration, therapeutic interventions, and systemic outcomes measured. No study restricted its participants to seniors, and therefore, a mean age of 55 years or more was used. Fourteen studies showed significant reductions in serum glycated hemoglobin levels, but 8 studies showed nonsignificant changes.

CONCLUSION: The evidence suggests a beneficial effect of receiving periodontal care on serum glycated hemoglobin and systemic biomarker levels in older persons with T2DM. Such care would be considered a novel, safe, and acceptable adjunct to current medical management of T2DM in older individuals. The dearth of studies restricted to the elderly represents a gap in knowledge that needs to be addressed in the United States.

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Publication Type
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2017
Point of Care- A Novel Approach to Periodontal Diagnosis- A Review. [Review]


Patient Reported Outcome Assessment of Periodontal Therapy: A Systematic Review.


INTRODUCTION: Patient Reported Outcomes (PROs) are now regarded as a fundamental measure of therapeutic success. Patient's opinion regarding the impact of disease and its treatment is assessed using scales such as Oral Health Related Quality Of Life (OHRQoL) tools. Patient centred outcome assessment is now being considered as a primary outcome measure in clinical trials.

AIM: To evaluate whether treatment of periodontal disease could influence OHRQoL based on available literature.

MATERIALS AND METHODS: An electronic search was done in Google, Google Scholar and Pubmed for articles in English language using the terms Quality of Life or OHRQoL or PROs or patient centered outcome and periodontal therapy. The search commenced on 1<sup>st</sup> September 2016 and ended on 15<sup>th</sup> December 2016. Studies that employed one or
more than one multi-item OHRQoL instrument to assess PROs related to either non-surgical or surgical periodontal therapy were reviewed.

RESULTS: Initially 423 relevant articles were obtained, from which based on screening titles and abstracts 396 were excluded. Full text of remaining 27 articles were retrieved. Nineteen clinical studies with 1345 participants and 2 systematic reviews were included after the full text review.

CONCLUSION: Both surgical and Non-surgical Periodontal Therapy (NSPT) significantly influenced the OHRQoL scores. However the change in scores after surgical therapy when compared to nonsurgical therapy was not statistically significant. There is a need for a specific PROs scale that could potentially tap the entire dimension of the change in patients’ perception brought about by periodontal therapy.

BACKGROUND: Clinical and radiographic examinations are essential in establishing correct periodontal diagnoses as well as providing appropriate treatment options. Current radiographic examinations, however, do not provide adequate information regarding the severity of periodontal disease, presenting a need to investigate alternative methods. The aim of this best evidence consensus is to determine when cone-beam computed tomography (CBCT) imaging is appropriate for diagnostic inquiry in the management of inflammatory periodontitis.

METHODS: Literature was systematically reviewed to answer three clinically relevant focused questions regarding the role of CBCT in the management of inflammatory periodontitis. 1) Clinical situation: In patients with periodontitis, what (if any) clinical situations/conditions exist where CBCT imaging improves diagnostic acumen and subsequent treatment recommendations compared with two-dimensional radiographic interpretation? 2) Intervention: Does CBCT imaging improve the accuracy of a diagnostic assessment and establishment of a prognosis in the analysis of furcation and/or intrabony defects? Is the execution of therapy improved and facilitated, or is it therapeutically challenged? 3) Outcomes: Does the use of CBCT imaging provide superior short-term or long-term clinical outcomes, more favorable patient-reported outcomes, or more consistent clinical treatment decisions affecting tooth prognosis (as measured by defect fill, improvements in bone anatomy, mobility patterns, and ultimate tooth survival)? An extensive literature search was performed using the MEDLINE database and the most respected journals in the field.

RESULTS: An electronic database search identified 885 citations, and a manual search yielded an additional five citations. From screening of article titles and abstracts, studies were excluded if irrelevant to the topic of this systematic review. Of the remaining full-text articles, 74 were obtained and reviewed. Sixty-two articles not meeting inclusion criteria were further excluded. Twelve total references met the inclusion criteria to determine the role of CBCT in diagnosis and treatment of both intrabony and furcation defects. Intrabony and furcation defects were the two most commonly discussed bony defects when comparing efficacy of CBCT versus intraoral radiographs (IRs). After a review of the literature, while diagnostic aspects of intrabony and furcation defects can be improved via the use of CBCT, limited evidence supported the use of CBCT imaging improving the execution of therapy for both types of defects. There was also a lack of literature to support the use of CBCT imaging for superior short-term or long-term clinical outcomes. None of the literature reported patient-reported outcomes when CBCT imaging was used.

CONCLUSIONS: Currently, limited evidence supports the utilization of CBCT for diagnosis of intrabony and furcation defects. Despite the fact that there is rapidly accruing literature on CBCT, there are still no current evidence-based guidelines on its necessity and use for periodontal treatment planning. In selective cases, however, limited field of view CBCT may be useful for periodontal disease diagnoses due to less radiation dosage to the patient, higher spatial resolution, and shorter volumes to be interpreted.

BDA LIBRARY MEDLINE SEARCH

RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

An electronic database search identified 885 citations, and a manual search yielded an additional five citations. From screening of article titles and abstracts, studies were excluded if irrelevant to the topic of this systematic review. Of the remaining full-text articles, 74 were obtained and reviewed. Sixty-two articles not meeting inclusion criteria were further excluded. Twelve total references met the inclusion criteria to determine the role of CBCT in diagnosis and treatment of both intrabony and furcation defects. Intrabony and furcation defects were the two most commonly discussed bony defects when comparing efficacy of CBCT versus intraoral radiographs (IRs). After a review of the literature, while diagnostic aspects of intrabony and furcation defects can be improved via the use of CBCT, limited evidence supported the use of CBCT imaging improving the execution of therapy for both types of defects. There was also a lack of literature to support the use of CBCT imaging for superior short-term or long-term clinical outcomes. None of the literature reported patient-reported outcomes when CBCT imaging was used.

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BACKGROUND: The American Academy of Periodontology (AAP) recently embarked on a Best Evidence Consensus (BEC) model of scientific inquiry to address questions of clinical importance in periodontology for which there is insufficient evidence to arrive at a definitive conclusion. This review addresses oral indications for use of cone-beam computed tomography (CBCT).

METHODS: To develop the BEC, the AAP convened a panel of experts with knowledge of CBCT and substantial experience in applying CBCT to a broad range of clinical scenarios that involve critical structures in the oral cavity. The panel examined a clinical scenario or treatment decision that would likely benefit from additional evidence and interpretation of evidence, performed a systematic review on the individual, debated the merits of published data and experiential information, developed a consensus report, and provided a clinical bottom line based on the best evidence available.

RESULTS: This BEC addressed the potential value and limitations of CBCT relative to specific applications in the management of patients requiring or being considered for the following clinical therapies: 1) placement of dental implants; 2) interdisciplinary dentofacial therapy involving orthodontic tooth movement in the management of malocclusion with associated risk on the supporting periodontal tissues (namely, dentoalveolar bone); and 3) management of periodontitis.

CONCLUSION: For each specific question addressed, there is a critical mass of evidence, but insufficient evidence to support broad conclusions or definitive clinical practice guidelines.

METHODS: Both observational and interventional trials reporting on the use of CBCT imaging assessing the impact of orthodontic/dentofacial orthopedic treatment on periodontal tissues (i.e., alveolar bone) were included. Changes in the alveolar bone thickness and height around natural teeth as well as treatment costs were evaluated. MEDLINE (via PubMed) and EMBASE databases were searched for articles published in the English language, up to and including July 2016, and extracted data were organized into evidence tables.

RESULTS: Thirteen studies were included in this systematic review describing the positive or deleterious changes on the alveolar bone surrounding natural teeth undergoing orthodontic tooth movement or influenced by orthopedic forces through fixed appliances. Clinical recommendation summaries presenting the strengths and weaknesses of the evidence in terms of benefits and harms were generated.

CONCLUSIONS: CBCT imaging can improve the periodontal diagnostic acumen regarding alveolar bone alterations influenced by orthodontic tooth movement and can help determine risk assessment prior to such intervention. Clinicians are also better informed to determine risk assessment and develop preventative or plan interceptive periodontal augmentation (soft tissue and/or bone augmentation) therapies for patients undergoing orthodontic tooth movement. These considerations are recognized as being especially critical for treatment approaches in patients where buccal tooth movement (expansion) is planned in the anterior mandible or involving the maxillary premolars.
point-of-care imaging modality and should be used selectively as an adjunct to two-dimensional dental radiography. As with other ionizing radiation imaging modalities, CBCT imaging should be used only when the potential benefits to the patient outweigh the risks. Dental health care professionals should consider CBCT imaging only when they expect the diagnostic information yielded will lead to better patient care, enhanced patient safety, and ultimately facilitate a more predictable, optimal treatment outcome.

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Title
Possible interaction between visfatin, periodontal infection, and other systemic diseases: A brief review of literature. [Review]

Source

Abstract
Gingivitis and periodontitis are common bacterial infections caused by a variety of microorganisms. Despite the microorganism's roles as etiologic agents, inflammation-induced substances also have crucial parts in the loss of connective tissue and the supporting alveolar bone. Visfatin is a pleiotropic mediator, which acts as growth factor, cytokine, and pre-B-cell colony-enhancing factor. A positive correlation was detected between the serum/plasma levels of visfatin and inflammatory disorders such as diabetes mellitus and cardiovascular disease. In addition, the visfatin level was higher in saliva and the gingival crevicular fluid (GCF) of subjects with periodontal disease. This review defined current, predictable patterns of possible interaction of visfatin with periodontal infection and other systemic diseases, using PubMed and Medline databases searching for articles written in English. Peer-reviewed articles were targeted using the following keywords: "visfatin," "periodontal disease," "inflammatory mediator," and "biomarker." Available full-text articles were read, and related articles were also scrutinized, while a hand search was also performed. Search was confined to human studies, and articles written in English and published between 1985 and 2016 were selected. It was concluded that periodontal infection and other systemic diseases could be related to the levels of visfatin in GCF, saliva, and serum as a biomarker of these diseases.

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Title
Core outcomes in periodontal trials: study protocol for core outcome set development.

Source

Abstract
BACKGROUND: There are a large number of clinical outcome measures used to assess the effectiveness of prevention and management strategies of periodontal diseases. This heterogeneity causes difficulties when trying to synthesise data for systematic reviews or clinical guidelines, reducing their impact. Core outcome sets are an agreed, standardised list of outcomes that should be measured and reported in all trials in specific clinical areas. We aim to develop a core outcome set for effectiveness trials investigating the prevention and management of periodontal disease in primary or secondary care.

METHODS: To identify existing outcomes we screened the Cochrane systematic reviews and their included studies on the prevention and management of periodontal diseases. The core outcome set will be defined by consensus of key stakeholders using an online e-Delphi process and face-to-face meeting. Key stakeholders involved in the development will include: patients,
dentists, hygienists/therapists, specialists, clinical researchers and policy-makers. Stakeholders will be asked to prioritise outcomes and feedback will be provided in the next round(s). Stakeholders will have an opportunity to add outcomes found in the Cochrane review screening process at the end of the first round. If consensus is not reached after the second round we will provide feedback prior to a third round. Remaining outcomes will be discussed at a face-to-face meeting and agreement will be measured via defined consensus rules of outcome inclusion.

DISCUSSION: The inclusive consensus process should provide a core outcome set that is relevant to all key stakeholders. We will actively disseminate our findings to help improve clinical trials, systematic reviews and clinical guidelines with the ultimate aim of improving the prevention and management of periodontal diseases.


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Title
Methodological Quality Assessment of Systematic Reviews on Autologous Platelet Concentrates for the Treatment of Periodontal Defects. [Review]

Source

Abstract
OBJECTIVES: Evaluation of the methodological quality of systematic reviews (SRs) on the effectiveness of autologous platelet concentrates as an adjunct to regenerative procedures for the treatment of periodontal defects.

MATERIAL AND METHODS: After a literature screening, eligible SRs were qualitatively assessed using 2 validated instruments: A Measurement Tool to Assess systematic Reviews checklist and Overview Quality Assessment Questionnaire. The characteristics and findings of SRs were also reported.

RESULTS: Ten SRs fulfilled the inclusion criteria and were evaluated. With A MeaSurement Tool to Assess systematic Reviews tool, SRs displayed a generally satisfying quality. Six SRs satisfied >=8 items of 11 (high-quality score), and 4 were classified of medium quality (score 4-7). Using Overview Quality Assessment Questionnaire instrument, more than half SRs (N = 6) satisfied >=7 items of 9, resulting to be of high quality; 3 were classified as medium quality (4-6 criteria met); and only 1 of low quality (3 items satisfied). A significant correlation between the results of the 2 questionnaires was found (Spearman's r = 0.915, P = .0005).

CONCLUSIONS: SRs considered had an overall high methodological quality. However, some areas were not systematically addressed, like a thorough research strategy or publication bias assessment. Standard guidelines for designing, performing, and reporting SRs should always be followed. The use of platelet concentrates as an adjunct to periodontal surgery procedures may have beneficial effects for the treatment of periodontal defects.

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AIM: Ehlers-Danlos syndromes (EDS) are a group of inherited connective tissue disorders, characterized by joint hypermobility, skin hyperextensibility, and tissue fragility. Periodontal EDS (pEDS) is a specific EDS subtype caused by heterozygous mutations in complement 1 subunit genes C1R and C1S, with early severe periodontitis as predominant clinical feature. We aimed to systematically assess the spectrum of periodontal abnormalities in all EDS subtypes.

MATERIALS AND METHODS: An electronic and manual search was conducted in three databases (Medline, LIVIVO, CENTRAL). Publications of all study designs written in English/German without date restriction evaluating periodontal features in EDS were included.

RESULTS: Thirty articles on pEDS and thirteen articles on other EDS subtypes were analysed. In pEDS, early severe periodontitis (98.4%) and gingival recession (87.1%) are the predominant features. Reports on periodontal manifestations in other EDS subtypes are rare. Described were severe gingival enlargement in dermatosparaxis EDS, and localized periodontal breakdown related to teeth with shortened roots in classical EDS (n = 3, respectively).

CONCLUSION: Early severe periodontitis is the hallmark of pEDS; there is no evidence that it is part of the clinical phenotype of other EDS subtypes. Stringent analyses of periodontal manifestations in most EDS subtypes are missing. Prospero registration number CRD42017056889.
OBJECTIVE: To assess the effects of adjunctive use of systemic antibiotics in nonsurgical periodontal treatment compared to nonsurgical periodontal treatment alone, on mean glycated hemoglobin (HbA1c) reductions in patients with diabetes.

DATA: Two independent reviewers screened six electronic databases, registers of clinical trials, meeting abstracts and four major dental journals for controlled clinical trials with at least 3-month follow-up.

SOURCES: After duplicates removal, electronic and hand searches yielded 2136 records; 32 full-text articles were independently read by two reviewers. To evaluate the additional effect of antibiotic usage, pooled weighted mean differences and 95% confidence intervals were calculated using fixed and random effects models.

STUDY SELECTION: Twelve studies met the inclusion criteria, nine of which provided data that allowed their inclusion in meta-analyses. The meta-analyses showed no significant effect favouring scaling and root planing (SRP) plus antibiotic for reductions in mean HbA1c (-0.11% [-0.35, 0.13]; 6 studies), and an estimated prediction interval varying from -0.45 to 0.23. There was also no significant effect favouring the adjunctive usage of sub-antimicrobial doxycycline in HbA1c mean reduction (-0.19% [-1.04, 0.67]; 2 studies).

CONCLUSION: Adjunctive use of systemic antibiotic provides no statistically significant benefit in terms of HbA1c improvement in periodontal treatment of patients with diabetes.

CLINICAL SIGNIFICANCE: Adjunctive use of systemic antibiotics associated with nonsurgical periodontal treatment provides no additional benefit in terms of HbA1c of diabetic patients. Clinicians should weigh the trade-off between risks and benefits provided by the use of systemic antibiotics before prescribing them for periodontal disease treatment.
BACKGROUND: Although recent short-term cross-sectional studies have revealed that chronic periodontitis (CP) may be a risk factor for increased cognitive impairment in patients with Alzheimer's disease (AD), systematic reviews and long-term longitudinal studies have provided less clear evidence regarding the relationship between CP and AD. Therefore, we conducted a retrospective cohort study using the National Health Insurance Research Database (NHIRD) of Taiwan to determine whether patients with CP are at increased risk of developing AD.

METHODS: We conducted a retrospective matched-cohort study using the NHIRD of Taiwan. We identified 9291 patients newly diagnosed with CP between 1997 and 2004. A total of 18,672 patients without CP were matched to the patient cohort according to sex, age, index year, co-morbidity and urbanisation level. Cox proportional hazards regression analyses were performed to evaluate the subsequent risk of AD.

RESULTS: Patients with CP had a higher prevalence of hyperlipidaemia, depression, traumatic brain injury and co-morbidities, as well as higher urbanisation levels, than those in the unexposed cohort (all p<0.01). At the final follow-up, totals of 115 (1.24%) and 208 (1.11%) individuals in the CP exposed and unexposed groups, respectively, had developed AD. Patients with 10 years of CP exposure exhibited a higher risk of developing AD than unexposed groups (adjusted HR 1.707, 95% CI 1.152-2.528, p=0.0077).

CONCLUSIONS: Our findings demonstrate that 10-year CP exposure was associated with a 1.707-fold increase in the risk of developing AD. These findings highlight the need to prevent progression of periodontal disease and promote healthcare service at the national level.
Is periodontitis associated with halitosis? A systematic review and meta-regression analysis. [Review]

AIM: To systematically review the literature in order to investigate a potential association between periodontitis and halitosis.

METHODS: Electronic searches were performed in four different databases: PubMed, Scopus, Web of Science and Scielo. Population-based observational studies that tested the association between periodontitis and halitosis were included. Additionally, meta-analysis, meta-regression and subgroup analyses were performed to synthesize the evidence.

RESULTS: A total of 1,107 articles were identified in electronic searches; out of which, five were included within the meta-analysis. Pooled estimates revealed that individuals with periodontitis presented 3.16 times higher odds (OR 3.16; 95% CI: 1.12-8.95) of having halitosis. Meta-regression and subgroups analyses showed that criteria used for halitosis and periodontitis assessment explained nearly 45% and 24% of heterogeneity between studies, respectively.

CONCLUSIONS: Positive association between periodontitis and halitosis was found in pooled results of population-based observational studies. However, this evidence is derived from cross-sectional studies.

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Mandibular Osteonecrosis due to the Pulpal-Periodontal Syndrome: a Case Report and Review of the Literature.

AIM: To systematically review the literature in order to investigate a potential association between periodontitis and halitosis.

METHODS: Electronic searches were performed in four different databases: PubMed, Scopus, Web of Science and Scielo. Population-based observational studies that tested the association between periodontitis and halitosis were included. Additionally, meta-analysis, meta-regression and subgroup analyses were performed to synthesize the evidence.

RESULTS: A total of 1,107 articles were identified in electronic searches; out of which, five were included within the meta-analysis. Pooled estimates revealed that individuals with periodontitis presented 3.16 times higher odds (OR 3.16; 95% CI: 1.12-8.95) of having halitosis. Meta-regression and subgroups analyses showed that criteria used for halitosis and periodontitis assessment explained nearly 45% and 24% of heterogeneity between studies, respectively.

CONCLUSIONS: Positive association between periodontitis and halitosis was found in pooled results of population-based observational studies. However, this evidence is derived from cross-sectional studies.
OBJECTIVE: Ischemic bone disease has multifactorial etiologies. Cronic dental infections should be eliminated to prevent osteonecrosis of the jaw.

CASE REPORT: We report an unusual case of osteonecrosis due to the pulpal-peridontal syndrome and subsequent pulp necrosis. A case of 38 year old woman who presented with exposed bone, 8 mm in diameter, in the lingual area of the right lower third molar. The patient was otherwise healthy and was not taking any medications. A detailed medical history showed no previous diseases. Patient denied any type of local trauma. A complete blood count showed no abnormalities. The panoramic radiograph revealed a deep periodontal pocket between teeth 47 and 48. The CBCT revealed a deep periodontal pocket between molars and bone sequestrum of the lingual plate. Topical treatment consisted of adhesive periodontal dressing based on the cellulose and bethamethasone ointment together with orabase, without improvement. Therefore, peroral amoxycillin was prescribed for a week. Since there was no improvement, the third molar was removed as well as necrotic bone; the alveolar bone was remodelled and sutures were placed. After suturing, the whole area was covered using intraoral resorbable bandage. Microbial swab of the wound aspirate did not reveal polymorphonuclears or the presence of microorganisms. Microbial swab of the biopsy specimen of the necrotic bone particle and sequestrum showed a large amount of gram-positive coccae, however, polymorphonuclears were not found. Histopathological analysis revealed acute chronic inflammation. One week after the surgery, the area healed completely.

CONCLUSION: This case highlights the fact that in some patients bone exposure might develop due to the pulpal-peridontal syndrome i.e. pulp necrosis.

METHODS: A systematic search of the Pubmed, Embase, Web of Science, and Cochrane Library up to September 2016 was conducted. The studies were screened and selected by two writers according to the specific eligibility criteria. The quality of included cross-sectional studies was assessed using the quality assessment form recommended by the Agency for Healthcare Research and Quality and Methodological Index for Nonrandomized Studies. The meta-analyses were conducted using the STATA 12.0 software.

RESULTS: A total of 399 manuscripts were yielded and 25 studies were included in the present meta-analysis. Significantly elevated serum levels of leptin and decreased serum levels of adiponectin in patients with periodontitis were observed in the subgroup analysis of body mass index (BMI) <30. The overall and subgroup analyses showed no significant change in the serum levels of leptin in patients with periodontitis after periodontal treatment. The subgroup analysis of systemically healthy patients showed no significant change in serum levels of adiponectin in patients with periodontitis after periodontal treatment.

CONCLUSIONS: The present meta-analysis supported elevated serum levels of leptin and decreased serum levels of adiponectin in patients with periodontitis compared with controls in the BMI <30 population. In systemically healthy patients with periodontitis, serum levels of leptin and adiponectin do not significantly change after periodontal treatment.
Khat chewing habit produces a significant adverse effect on periodontal, oral health: A systematic review and meta-analysis.

Abstract
Although there is a general agreement that a khat chewing habit produces clinicopathological changes in the oral mucosa. However there is no reliable evidence of the effects of a khat chewing habit on the periodontal tissues. Thus, authors aimed to investigate the influence of khat chewing habits on periodontal, oral health, by comparing khat chewers to non-chewers in respect of gingival recession, periodontal pocketing depth and loss of attachment. A systematic review and meta-analysis were conducted based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. We searched PubMed, the Cochrane Library, Web of Science, Scopus and grey literature. The inclusion criteria were all studies with aims of comparing khat chewers and/or sides to non-chewers and/or sides in respect of gingival recession, periodontal pocketing depth and loss of attachment. For continuous data, we computed weighted mean difference or standard mean difference analyses. An odds ratio using a random effect model was used if heterogeneity was detected; otherwise, a fixed effects model with a 95% confidence interval was used for continuous data. Two subgroups were analysed: khat chewers vs non-chewers and khat chewer sides vs non-chewer sides of the chewer's individuals. A total of 6373 participants were enrolled in 12 studies (khat chewers=3812, non-chewers=2561). There were statistically significant differences between khat and non-chewers in both subgroup analyses regarding gingival recession, periodontal pocketing depth and loss of attachment (P<.05). The odds ratios for khat chewers compared to non-chewers, in respect of depth of periodontal pocket and gingival recession were 4.797 and 6.853 respectively. The results of this meta-analysis have shown that the khat chewing habit produces a destructive and adverse effect on periodontal, oral health.
BACKGROUND: To determine whether treatment with antimicrobial photodynamic therapy (aPDT) as an adjunct to scaling and root planing (SRP) improves clinical, microbiological and immunological outcomes in type 2 diabetes mellitus (T2DM) and cigarette smokers with chronic periodontitis (CP).

METHODS: Databases (MEDLINE, PubMed; Cochrane Central Register of Controlled Trials and Cochrane Oral Health Group Trials Register) were searched up to and including May 2017. The addressed PICO question was: "Does aPDT as an adjunct to SRP improves clinical, microbiological and immunological outcomes in T2DM and smokers with CP?"

RESULTS: Six randomized clinical trials were included. All studies reporting clinical periodontal, microbiological, and immunological parameters showed that aPDT was effective in the treatment of CP in T2DM and smokers at follow up. When compared with SRP alone, none of the studies showed additional benefits of aPDT at follow up. Considering the effects of adjunctive aPDT as compared to SRP on clinical signs of CP in T2DM and smokers, no difference could be observed for all evaluated parameters (PD: Z=0.81, P=0.41; CAL: Z=0.19, P=0.84) except IL-1beta (Z=4.57, P<0.001).

CONCLUSION: Due to limited evidence, it remains debatable whether aPDT as an adjunct to SRP is effective in improving clinical, microbiological and immunological outcomes compared to SRP alone in T2DM and smokers with CP. Further well-designed, large-scale clinical trials with microbiological parameters and long follow up periods are needed in order to assess the efficacy of adjunctive aPDT in T2DM and cigarette smokers with CP.
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Title: Influence of periodontal treatment on rheumatoid arthritis: a systematic review and meta-analysis.


Abstract: OBJECTIVE: To evaluate the influence of periodontal treatment on rheumatoid arthritis activity.

METHODS: MEDLINE/PUBMED, The Cochrane Library, Clinical Trials, SciELO and LILACS were searched for studies published until December 2014. Included articles were: prospective studies; including patients older than 18 years, diagnosed with periodontitis and rheumatoid arthritis submitted to non-surgical periodontal treatment; with a control group receiving no periodontal treatment; with outcomes including at least one marker of rheumatoid arthritis activity. Methodological quality of the studies was assessed using PEDro scale. Quantitative data were pooled in statistical meta-analysis using Review Manager 5.

RESULTS: Four articles were included. Non-surgical periodontal treatment was associated with a significant reduction of DAS28 (OR: -1.18; 95% CI: -1.43, -0.93; p<0.00001). Erythrocyte sedimentation rate, C-reactive protein, patient's assessment of rheumatoid activity using visual analogical scale, tender and swollen joint counts showed a trend toward reduction (not statistically significant).

CONCLUSIONS: The reduction of DAS 28 in patients with rheumatoid arthritis after periodontal treatment suggests that the improvement of periodontal condition is beneficial to these patients. Further randomized controlled clinical trials are necessary to confirm this finding.

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Genetic Factors and the Risk of Periodontitis Development: Findings from a Systematic Review Composed of 13 Studies of Meta-Analysis with 71,531 Participants. [Review]

**Source**

**Abstract**
Purpose. This work aimed to synthesize the results of recent meta-analysis focusing on polymorphism in inflammatory mediators and its relation with the risk of periodontitis development. Materials and Methods. A systematic search was conducted using databases for publications prior to October 2016. Three examiners extracted data from articles with a clear association between polymorphisms in the inflammatory mediator gene and the development of periodontitis through meta-analysis using the fixed or randomized statistical models to calculate the Odds Ratio with values of P < 0.05 considered significant. Results. A total of 13 meta-analysis articles with 25 polymorphisms in seven interleukins (IL-1A, IL-1B, IL-4, IL-6, IL-8, IL-10, and IL-18), three cellular receptors (Fcgamma receptors: FCGR2A, FCGR3A, and FCGR3B), and five inflammatory mediators (COX-2, MMP-2, MMP-3, MMP-8, and MMP-9), with a total of 71,531 participants, approaching different classifications of the disease. Conclusion. The study demonstrated that polymorphisms in the IL-1A, IL-1B, IL-6, IL-10, MMP-3 (chronic form), and MMP-9 (chronic form) polymorphisms were significantly associated with the risk of developing periodontitis, whereas other polymorphisms in the IL-4, IL-8, IL-18, Fcgamma, COX-2, MMP-2, MMP-3 (aggressive), MMP-8, and MMP-9 (aggressive) polymorphisms had no significant association with risk of developing periodontitis.
**Abstract**


**SOURCE OF FUNDING:** The authors did not report any funding source information for the study.

**TYPE OF STUDY/DESIGN:** Systematic review with meta-analysis of data.

---

**Abstract**

Atherosclerosis is a progressive narrowing of arteries that may lead to occlusion as a consequence of lipid deposition. It underlies coronary heart disease, as well as myocardial and cerebral infarctions. Recent attention has been directed towards the potential contribution of chronic inflammatory processes that may amplify vascular inflammation in atherosclerosis, as it is recognized as a chronic inflammatory disease. In this category are two of the most prevalent oral diseases: periodontal disease and apical periodontitis (AP). There is increasing epidemiologic evidence for a positive association between periodontal disease and cardiovascular disease (CVD) as well as between AP and CVD. A review of the literature, as well as a potential mechanism for the linkage between AP and atherosclerosis, are presented in this article.

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**Abstract**

**OBJECTIVE:** The purpose of this study was to present a rare case of periodontal disease-like bone loss and possible treatment options. This paper discusses the pros and cons of conservative treatment and radical surgical intervention and summarizes possible complications. It focuses also on the individual situation of the patient and provides a review of literature.

**METHOD AND MATERIALS:** A 32-year-old patient presented with widening of the periodontal spaces and apical translucencies at every tooth after adjuvant radiotherapy of an oral squamous cell carcinoma (OSCC) of the tongue. In addition, the patient suffers from slight mental retardation. The following periodontal parameters were examined: Bleeding Index, Plaque Index, tooth mobility, and clinical attachment loss. Panoramic radiography and computed tomography were used for diagnosis and follow-up purposes. The literature review was carried out systematically combined with individual searching.

**RESULTS:** This study presents a distinct case of rarely mentioned periodontal-disease-like bone loss, most likely radiation-induced. This resulted in complete devitalization of the entire dentition and will eventually lead to a loss of all teeth. The review of
the literature summarizes the incidence of post-radiogenic periodontitis, bone loss, and possible risk-factors of unwanted events after radiotherapy in the oral cavity and dentoalveolar structures.

CONCLUSION: The combination of the patient's history and individual situation makes this a special case with regard to decision making and further therapy. After carefully considering the possible options, a conservative treatment with minimal surgical interventions and close surveillance was followed. The intention was the preservation of the patient's natural dentition as long as possible as well as the prevention of an osteonecrosis of the jaw. Taking the literature review into account this article presents a patient with an unusually distinct extent of periodontal disease-like bone loss, which is not to be compared to periodontal disease.

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Title
Efficacy of stem cells on periodontal regeneration: Systematic review of pre-clinical studies. [Review]
Source
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Abstract
This systematic review aims to evaluate mesenchymal stem cells (MSC) periodontal regenerative potential in animal models. MEDLINE, EMBASE and LILACS databases were searched for quantitative pre-clinical controlled animal model studies that evaluated the effect of local administration of MSC on periodontal regeneration. The systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement guidelines. Twenty-two studies met the inclusion criteria. Periodontal defects were surgically created in all studies. In seven studies, periodontal inflammation was experimentally induced following surgical defect creation. Differences in defect morphology were identified among the studies. Autogenous, allogeneous and xenogenous MSC were used to promote periodontal regeneration. These included bone marrow-derived MSC, periodontal ligament (PDL)-derived MSC, dental pulp-derived MSC, gingival margin-derived MSC, foreskin-derived induced pluripotent stem cells, adipose tissue-derived MSC, cementum-derived MSC, periapical follicular MSC and alveolar periosteal cells. Meta-analysis was not possible due to heterogeneities in study designs. In most of the studies, local MSC implantation was not associated with adverse effects. The use of bone marrow-derived MSC for periodontal regeneration yielded conflicting results. In contrast, PDL-MSC consistently promoted increased PDL and cementum regeneration. Finally, the adjunct use of MSC improved the regenerative outcomes of periodontal defects treated with membranes or bone substitutes. Despite the quality level of the existing evidence, the current data indicate that the use of MSC may provide beneficial effects on periodontal regeneration. The various degrees of success of MSC in periodontal regeneration are likely to be related to the use of heterogeneous cells. Thus, future studies need to identify phenotypic profiles of highly regenerative MSC populations.

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Title
Commentary on Baghaie et al. (2017): Out of the shadows, into the limelight-sobering salience of meta-analysis of chronic periodontitis in drug addiction.
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Title
Source
Abstract
Periodontal disease is a common oral health problem in the elderly population. The prevalence varied substantially due to absence of a universal diagnostic criteria. We conducted a systematic review to identify the epidemiological characteristics of periodontal diseases among Chinese elderly people. A total of 19 articles were included. The pooled detection rates for three indicators, including bleeding on probing (BOP), pocket depth (PD) and clinical attachment loss (CAL), were 53.9% (95% CI: 43.8-63.9%), 57.0% (50.8-63.2%), and 70.1% (65.4-74.8%), respectively. No significant differences in these indicators between urban and rural population. When stratified by gender, BOP (+) detection rates did not show any differences, but the detection rates of PD>=4mm and CAL>=4mm were significantly higher in males than in females (59.3% [53.4-65.2%] versus 50.8% [43.5-58.0%], RR=1.13 [1.01-1.26]; 73.8% [70.2-77.7%] versus 65.2% [60.2-70.2%], RR=1.12 [1.01-1.26]). No statistically significant differences were observed between CAL>=4mm and PD>=4mm (RR=1.12 [0.83-1.50]). A geographical map based on available data during 1987-2015 showed wide variations of periodontal disease across the mainland China. Some factors such as heterogeneity of case definitions, no specific diagnosis of periodontitis, and variable quality of the included studies could affect the final results. Hence, further high-quality epidemiological studies with standardized diagnostic criteria are needed.
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Title
Periodontitis and Systemic Disease: Association or Causality?. [Review]

Source

Abstract
PURPOSE OF REVIEW: The aim was to assess recent evidence that diabetes, metabolic syndrome (MetS) and obesity impact the progression of periodontitis.

RECENT FINDINGS: Electronic searches using Embase, Medline, and Web of Science were carried out for epidemiological studies on humans, published between 2014 and 2016. A small number of prospective studies and systematic reviews were identified that in general provide further support for the hypothesis that diabetes, metabolic syndrome and obesity can adversely affect the periodontal condition.

SUMMARY: Confounding remains the most challenging issue in the interpretation of the associations found between diabetes, MetS, obesity and periodontal disease. Recent research applying a Mendelian randomisation approach concluded that the association between obesity and periodontitis is confounded and questioned a role for obesity in causation. Further studies are warranted to assess the issue of causality.

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Title
Motivational Interviewing As an Adjunct to Periodontal Therapy - A Systematic Review. [Review]

Source

Abstract
<b>Aim:</b> Periodontal therapy is highly dependent on a patient's long-term adherence with regard to oral hygiene, diet, and regular check-ups at the dentist. Motivational Interviewing (MI) is a client-centered, directive method for encouraging a patients' behavioral health change. The aim of this systematic review was to reveal the effects of MI as an adjunct to periodontal therapy. 
<b>Methods:</b> Three databases (PubMed, Cochrane Library, and Web of Science) were reviewed for randomized controlled clinical trials. Articles were included when using MI as an adjunct to periodontal therapy and presenting clinical periodontal and oral hygiene related parameters. Two authors independently coded the relevant articles. <b>Results:</b> The search yielded 496 articles. After analysis and exclusion, a total of five papers could be included. The quality of the articles ranged between 72-88%. In two studies MI showed a significant positive effect on bleeding on probing and plaque values. One study showed improvement of self-efficacy in interdental cleaning. Two studies showed no influence of MI on periodontal parameters of the patients. <b>Conclusion:</b> The use of MI as an adjunct to periodontal therapy might have a positive influence on clinical periodontal parameters (plaque values, gingival, and periodontal inflammation) and psychological factors related to oral hygiene (self-efficacy). Due to the low body of evidence further studies are needed. Future studies should include fidelity measures of the applied MI, a high number of counselors, several MI sessions, and long-term study follow-up to show potential effects.

Publication Type
Comparisons of periodontal regenerative therapies: A meta-analysis on the long-term efficacy. [Review]

OBJECTIVES: We conducted a meta-analysis for the long-term differences in treatment outcomes between periodontal regeneration therapies and flap operation.

METHODS: A systematic literature search was conducted using the EMBASE, PubMed and Cochrane databases up to June 2016. Treatment outcomes were changes in probing pocket depth and clinical attachment level. We extracted data reported at different time points after periodontal surgery and incorporated all data into the same model. The restricted cubic spline regression was used to estimate the non-linear trend in treatment outcomes. As some studies reported outcomes at multiple time points, we considered several correlation structures for data reported by the same study.

RESULTS: A total of 52 randomized controlled trials were included in our longitudinal meta-analysis. The follow-up length ranged from 0.5 year to 10 years. The trends in the treatment outcomes were similar under different correlation structures. Enamel matrix derivatives (EMD) and guided tissue regeneration (GTR) achieved greater probing pocket depth (PPD) reduction and clinical attachment level (CAL) gain than flap operation (FO) in the long-term follow up, but no differences were found between EMD and GTR.

CONCLUSION: Compared with FO, periodontal regeneration surgeries achieved greater PPD reduction and gain in CAL after 1 year, and its effects may last for 5-10 years.
Nutrition, dental caries and periodontal disease: a narrative review.

Source

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Abstract
AIM: To provide a narrative review of the role of macro- and micronutrients in relation to dental caries, gingival bleeding and destructive periodontal disease.

MATERIALS & METHODS: This review is based on systematic reviews (when available) and comparative human studies.

RESULTS: Dental caries cannot develop without the presence of dietary fermentable carbohydrates, in particular sugar. The susceptibility to develop caries in the presence of carbohydrates may be influenced by genetics and micronutrients such as vitamin D. Gingival bleeding and destructive periodontal disease are sensitive markers to both abnormalities in macronutrient content (excessive carbohydrates or poly-unsaturated fat intake, deficient protein intake) and micronutrient intake (e.g. vitamin C and B12).

CONCLUSION: Dental caries and periodontal diseases are a sensitive alarm bell for an unhealthy diet, which predicts the future onset of the diseases of civilizations.

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Title
Global epidemiology of dental caries and severe periodontitis - a comprehensive review.

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Abstract
BACKGROUND: Dental caries and periodontitis are the most common oral diseases and major causes of tooth loss.

AIM: To perform a review of global prevalence and incidence of dental caries and periodontitis.

METHODOLOGY: Inclusion and exclusion criteria were developed. MEDLINE database and EMBASE database were used to search for eligible publications using keywords and MeSH terms. Additionally, WHO databank was used for obtaining dental caries information and PUBMED for a search on trends of dental caries prevalence and severity.

RESULTS: Over the last four decades, the prevalence and severity of dentine carious lesions among 5- and 12-year-olds have declined; the decay-component is very high, with the lowest prevalence among 12-year-olds in high-income countries, which also had the lowest prevalence among 35- to 44-year-olds; and the number of retained teeth has increased around the globe. The prevalence of periodontitis is high, with approximately 10% of the global population affected by severe periodontitis. Study heterogeneity and methodological issues hamper comparisons across studies and over time.

CONCLUSION: While the prevalence of dental caries has decreased, the disease is prevalent in all age groups. The prevalence of periodontitis is high. There is insufficient evidence to conclude that the prevalence of periodontitis has changed over time.

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Socio-behavioural aspects in the prevention and control of dental caries and periodontal diseases at an individual and population level.

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**Abstract**
AIM: Aim was to systematically review behavioural aspects in the prevention and control of dental caries and periodontal diseases at individual and population level.

**MATERIAL & METHODS:** With regard to caries, MEDLINE/PubMed was searched on three subheadings focusing on early childhood, proximal and root caries. For periodontal diseases, a meta-review on systematic reviews was performed; thus, the search strategy included specific interventions to change behaviour in order to perform a meta-review on systematic reviews. After extraction of data and conclusions, the potential risk of bias was estimated and the emerging evidence was graded.

**RESULTS:** Regarding early childhood, proximal and root caries, 28, 6 and 0 papers, respectively, could be included, which predominantly reported on cohort studies. Regarding periodontal diseases, five systematic reviews were included. High evidence of mostly high magnitude was retrieved for behavioural interventions in early childhood caries (ECC), weak evidence for a small effect in proximal caries and an unclear effect of specific informational/motivational programmes on prevention of periodontal diseases and no evidence of root caries.

**CONCLUSION:** Early childhood caries can be successfully prevented by population-based preventive programmes via aiming at the change in behaviour. The effect of individual specific motivational/informational interventions has not yet been clearly demonstrated neither for the prevention of caries nor for periodontal diseases.

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**Title**
Socio-behavioural aspects in the prevention and control of dental caries and periodontal diseases at an individual and population level.

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**MATERIAL & METHODS:** With regard to caries, MEDLINE/PubMed was searched on three subheadings focusing on early childhood, proximal and root caries. For periodontal diseases, a meta-review on systematic reviews was performed; thus, the search strategy included specific interventions to change behaviour in order to perform a meta-review on systematic reviews. After extraction of data and conclusions, the potential risk of bias was estimated and the emerging evidence was graded.

**RESULTS:** Regarding early childhood, proximal and root caries, 28, 6 and 0 papers, respectively, could be included, which predominantly reported on cohort studies. Regarding periodontal diseases, five systematic reviews were included. High evidence of mostly high magnitude was retrieved for behavioural interventions in early childhood caries (ECC), weak evidence for a small effect in proximal caries and an unclear effect of specific informational/motivational programmes on prevention of periodontal diseases and no evidence of root caries.

**CONCLUSION:** Early childhood caries can be successfully prevented by population-based preventive programmes via aiming at the change in behaviour. The effect of individual specific motivational/informational interventions has not yet been clearly demonstrated neither for the prevention of caries nor for periodontal diseases.

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Periodontal diseases and dental caries are the most common diseases of humans and the main cause of tooth loss. Both diseases can lead to substantial economic and social burden. As complex chronic diseases, they share common risk factors, such as a requirement for a pathogenic plaque biofilm, yet they exhibit distinct pathophysiologies. Multiple expression of these factors is crucial in the prevention of both diseases as well as in their management.

AIM: To systematically appraise the scientific literature to identify potential risk factors for caries and periodontal diseases.

METHODS: One systematic review (genetic risk factors), one narrative review (role of diet and nutrition) and reference documentation for modifiable acquired risk factors common to both disease groups, formed the basis of the report.

RESULTS & CONCLUSIONS: There is moderate strong evidence for a genetic contribution to periodontal diseases and caries susceptibility, with an attributable risk estimated to be up to 50%. The genetics literature for periodontal disease is more substantial than for caries and genes associated with chronic periodontitis are the vitamin D receptor (VDR), Fc gamma receptor IIa (Fc-gammaRIIA) and Interleukin 10 (IL10) genes. For caries, genes involved in enamel formation (AMELX, AMBN, ENAM, CAGETTI, MARIA Grazia, WHO Collaboration Centre for Epidemiology and Community Dentistry, Milan, Italy. Campus, Guglielmo, WHO Collaboration Centre for Epidemiology and Community Dentistry, Milan, Italy. Campus, Guglielmo, Department of Surgery, Microsurgery and Medicine Sciences, School of Dentistry, Universita degli Studi di Sassari, Sassari, Italy. Carra, Maria-Clotilde. Department of Periodontology, Service of Odontology, Rothschild Hospital, AP-HP, Paris 7-Denis Diderot University, U.F.R. of Odontology, Paris, France. Carra, Maria-Clotilde. INSERM, U1018, Villejuif, France. Cocco, Fabio. Department of Surgery, Microsurgery and Medicine Sciences, School of Dentistry, Universita degli Studi di Sassari, Sassari, Italy. Nibi, Luigi. Centre for Oral Clinical Research, Institute of Dentistry, Barts and The London School of Medicine and Dentistry, Queen Mary University London (QMUL), London, UK. Hujel, Philippe. Public Health Sciences, University of Washington, Seattle, WA, USA. Laine, Marja L. Department of Periodontology, Academic Centre for Dentistry in Amsterdam, Amsterdam, the Netherlands. Lingstrom, Peter. Department of Cariology, Institute of Odontology, Gothenburg, Sweden. Mantov, David J. Melbourne Dental School, University of Melbourne, Parkville, Vic., Australia. Montero, Eduardo. Faculty of Dentistry, Universidad Complutense de Madrid, Madrid, Spain. Pitts, Nigel. Dental Innovation and Translation Centre, Dental Institute, Kings College London, London, UK. Range, Helene. Department of Periodontology, Service of Odontology, Rothschild Hospital, AP-HP, Paris 7-Denis Diderot University, U.F.R. of Odontology, Paris, France. Range, Helene. EA 2496, Paris 5-Desmardes University, U.F.R. of Odontology, Paris, France. Schlüeter, Nadine. Division for Cariology, Department of Operative Dentistry and Periodontology, Center for Dental Medicine, University Medical Center, Albert-Ludwig-University, Freiburg, Germany. Teughels, Wim. Periodontology, K. U. Leuven, Leuven, Belgium. Tetewman, Svante. Faculty of Health and Medical Sciences, School of Dentistry, Section of Cariology and Endodontics, University of Copenhagen, Copenhagen, Denmark. Van Loveren, Cor. Department of Cariology, Academic Centre for Dentistry Amsterdam, Amsterdam, the Netherlands. Van der Weijden, Fridus. Department of Periodontology, Academic Centre for Dentistry in Amsterdam, Amsterdam, the Netherlands. Vieira, Alexandre R. Oral Biology, University of Pittsburgh, Pittsburgh, PA, USA. Schulte, Andreas G. Department of Special Care Dentistry, Dental School, Witten/Herdecke University, Witten, Germany.

Title Interaction of lifestyle, behaviour or systemic diseases with dental caries and periodontal diseases: consensus report of group 2 of the joint EFP/ORCA workshop on the boundaries between caries and periodontal diseases.


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Abstract Periodontal diseases and dental caries are the most common diseases of humans and the main cause of tooth loss. Both diseases can lead to nutritional compromise and negative impacts upon self-esteem and quality of life. As complex chronic diseases, they share common risk factors, such as a requirement for a pathogenic plaque biofilm, yet they exhibit distinct pathophysiology.

Multiple exposure contribute to their causal pathways, and susceptibility involves risk factors that are inherited (e.g. genetic variants), and those that are acquired (e.g. socio-economic factors, biofilm load or composition, smoking, carbohydrate intake). Identification of these factors is crucial in the prevention of both diseases as well as in their management.

AIM: To systematically appraise the scientific literature to identify potential risk factors for caries and periodontal diseases.

METHODS: One systematic review (genetic risk factors), one narrative review (role of diet and nutrition) and reference documentation for modifiable acquired risk factors common to both disease groups, formed the basis of the report.

RESULTS & CONCLUSIONS: There is moderate strong evidence for a genetic contribution to periodontal diseases and caries susceptibility, with an attributable risk estimated to be up to 50%. The genetics literature for periodontal disease is more substantial than for caries and genes associated with chronic periodontitis are the vitamin D receptor (VDR), Fc gamma receptor IIa (Fc-gammaRIIA) and Interleukin 10 (IL10) genes. For caries, genes involved in enamel formation (AMELX, AMBN, ENAM, TUFT, MMP20, and KLK4), salivary characteristics (AQP5) and immune regulation and dietary preferences had the largest impact. No common genetic variants were found. Fermentable carbohydrates (sugars and starches) were the most relevant common dietary risk factor for both diseases, but associated mechanisms differed. In caries, the fermentation process leads to acid production and the generation of biofilm components such as glucans. In periodontitis, glycaemia drives oxidative stress and advanced glycation end-products may also trigger a hyper inflammatory state. Micronutrient deficiencies, such as vitamin C, vitamin D or vitamin B12, may be related to the onset and progression of both diseases. Functional foods or probiotics could be helpful in caries prevention and periodontal disease management, although evidence is limited and biological mechanisms not fully elucidated.

Hyposalivation, rheumatoid arthritis, smoking/tobacco use, undiagnosed or sub-optimally controlled diabetes and obesity are common acquired risk factors for both caries and periodontal diseases.
Age-related changes in immune function (immune senescence) in caries and periodontal diseases: a systematic review.

AIM: To systematically review the evidence regarding immune senescence in the pathogenesis of periodontitis and dental caries.

METHODS: A systematic search of electronic databases utilizing medical subject headings (MeSH terms) supplemented by screening of review articles and other relevant texts was undertaken.

RESULTS: Seventy-three articles were included (43 for periodontitis, 30 for caries). Study results were found to be generally heterogeneous. Regarding periodontitis, human studies suggest evidence for altered neutrophil function and increased production of pro-inflammatory mediators (e.g. interleukin-1beta, interleukin-6 and prostaglandin E<sub>2</sub> ) in older compared to younger subjects, and animal experiments suggest increased expression of genes that contribute to a pro-inflammatory state in older compared to younger animals. Regarding dental caries, research relating to changes in immune functioning and the impact of ageing is in its infancy. A small number of studies have reported components of innate and adaptive immunity that affect the composition of saliva and dental biofilms with possible impacts on caries progression.

CONCLUSION: There is evidence that immune functioning related to periodontitis and (less investigated) dental caries alters with increasing age. In both conditions, age-associated mechanistic changes in immune functioning are complex and incompletely understood and it is not clear how these relate to disease susceptibility.
Impact of periodontal disease on quality of life: a systematic review. [Review]


Abstract

The diagnosis of periodontal disease is commonly based on objective evaluations of the patient's medical/dental history as well as clinical and radiographic examinations. However, periodontal disease should also be evaluated subjectively through measures that quantify its impact on oral health-related quality of life. The aim of this study was to evaluate the impact of periodontal disease on quality of life among adolescents, adults and older adults. A systematic search of the literature was performed for scientific articles published up to July 2015 using electronic databases and a manual search. Two independent reviewers performed the selection of the studies, extracted the data and assessed the methodological quality. Thirty-four cross-sectional studies involving any age group, except children, and the use of questionnaires for the assessment of the impact of periodontal disease on quality of life were included. Twenty-five studies demonstrated that periodontal disease was associated with a negative impact on quality of life, with severe periodontitis exerting the most significant impact by compromising aspects related to function and esthetics. Unlike periodontitis, gingivitis was associated with pain as well as difficulties performing oral hygiene and wearing dentures. Gingivitis was also negatively correlated with comfort. The results indicate that periodontal disease may exert an impact on quality of life of individuals, with greater severity of the disease related to greater impact. Longitudinal studies with representative samples are needed to ensure validity of the findings.

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Abstract
OBJECTIVES: It is important to evaluate the characteristics of the most cited articles in any specialty. The number of citations may be a proxy for clinical and research activity. The objectives of the present methodological study were (1) to report the characteristics of the 300 most cited articles in periodontology and (2) to explore the association of these characteristics with the number of citations.

METHODS: We searched in the Web of Science database for the 300 most cited articles published in periodontology on June 15, 2015. We described characteristics of the articles such as type of study, type of scientific journal, topic reported, year of publication, affiliation of the first author of the article, and impact factor. Linear regression analysis was used to investigate associations of these variables with the number of citations.

RESULTS: The search retrieved approximately 155,356 publications; out of the studies that met the eligibility criteria, the 300 most cited were included for analysis. Comprising more than 50 % of the included articles, basic biology and the detection of bacteria were the most prevalent topics. Narrative reviews were the most frequent type of article (27 % of the sample). Regression analysis demonstrated that some characteristics, for example “narrative reviews,” are more prone to be cited than others.

CONCLUSION: We conclude that scientific evolution in periodontology has been based more on narrative reviews than on reproducible systematic reviews.

CLINICAL RELEVANCE: Future research is encouraged to elucidate the extent to which scientific progress is improved through systematic compared with narrative reviews.

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Title
Periodontal regeneration in aggressive periodontitis patients: A systematic review of the literature. [Review]
Source
Journal of Investigative & Clinical Dentistry. 8(4), 2017 Nov.
Abstract
The aim of the present study was to systematically review the existing literature on periodontal regenerative procedures in individuals affected by aggressive periodontitis (AgP). An electronic and manual search was performed using an ad hoc prepared search string. All types of study designs were considered acceptable for inclusion. Data about treated patients, baseline clinical parameters, type of surgery, and outcomes were extracted and recorded. A narrative evaluation of the results was performed. After the article-selection process, a total of 22 full-texts were included in the qualitative synthesis. Twelve papers were case reports; one was a retrospective study; six were non-randomized, comparative studies; and three papers were published on two randomized, controlled trials (RCT). Various biomaterials and surgical techniques were described in the included papers. Based on the existing literature, even considering the relatively low level of evidence, periodontal regenerative surgery could be successfully performed in patients affected by AgP. There is a substantial need of high-quality RCT to support this.

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A systematic review was conducted to assess the association between apical periodontitis (AP) and cardiovascular disease (CVD). Studies published from the earliest date available until September 2015 were retrieved from the Medline, PubMed and Embase databases. The included studies reported the results from observational studies and assessed the link between AP and CVD as confirmed by one of the following criteria: diagnosed coronary artery disease, angina pectoris, acute myocardial infarction, stroke or mortality caused by cardiac pathology. The study characteristics were abstracted by independent researchers following the PRISMA standard protocol. NOS criteria were used to rate the quality of the studies, and the GRADE was used for level of evidence evaluation. Nineteen epidemiological studies fulfilled the predetermined inclusion criteria: 10 case-control studies, five cross-sectional studies and four cohort studies. There was considerable heterogeneity amongst the included studies in terms of their study design, population, outcomes of interest and AP evaluation methods. Considering the limited availability and the heterogeneity amongst the studies, meta-analysis was not attempted. Thirteen of the 19 included studies found a significant positive association between apical periodontitis and cardiovascular disease, although in two of them, the significance was present only in univariate analysis. Five studies failed to reveal positive significance, and one study reported a negative association. In conclusion, although most of the published studies found a positive association between apical periodontitis and cardiovascular disease, the quality of the existing evidence is moderate-low and a causal relationship cannot be established.
RESULTS: Ten studies, eight RCTs and two prospective studies, were included. Each study included 15 to 105 patients between 25 and 55 years of age. Statistical results were recorded; weighted mean difference (WMD) and confidence interval (CI) were calculated; and meta-analyses were performed for defect fill, probing depth (PD) reduction, and clinical attachment level (CAL) gain in both statin and placebo/no treatment groups. Overall analysis of defect fill presented WMD of 1.37 mm (95% CI = 0.96 to 1.77; P < 0.0001), PD reduction presented WMD of 1.76 mm (95% CI = 1.04 to 2.47; P < 0.0001), and CAL gain presented WMD of 1.58 mm (95% CI = 0.89 to 2.28; P < 0.0001). However, comparison presented considerable heterogeneity among studies.

CONCLUSIONS: This systematic review and meta-analysis find that adjunctive use of locally delivered statins to mechanical SRP is beneficial to increasing bone fill percentage. Improved inflammatory and bleeding control as well as PD reduction and CAL gain are possible advantages to using these drugs in treating patients with periodontal IBDs.
Do periapical and periodontal pathologies affect Schneiderian membrane appearance? Systematic review of studies using cone-beam computed tomography.

OBJECTIVES: This systematic review analyzed the relationship between periapical and periodontal pathologies in the posterior maxilla and the appearance of the Schneiderian membrane in cone-beam computed tomography (CBCT) compared with sound dentitions.

METHODS: Five electronic databases (Cochrane Library, Embase, OpenGrey, PubMed, Web of Science), complemented by hand searching, were screened up to May 9, 2016. Human clinical studies that used CBCT and contained information on the periapical/periodontal status in the posterior maxilla and Schneiderian membrane appearance were included. A weighted vote counting (WVC) method was applied to summarize results across studies.

RESULTS: Out of 413 records, 20 studies were included. In the WVC, the studies that observed a positive association between periapical lesions and the appearance of the Schneiderian membrane outweighed those that found no such association (WVC 51% and WVC 33%, respectively), with some studies yielding indeterminate results (WVC 16%). Regarding the relation between periodontal pathologies and the appearance of the Schneiderian membrane, WVC produced a tie between studies demonstrating a positive association (WVC 46%) and those showing no association (WVC 44%); one study (WVC 10%) reported indeterminate results.

CONCLUSIONS: On CBCT scans, periapical lesions in the posterior maxilla are likely to be associated with Schneiderian membrane thickening. In contrast, current evidence regarding the relation between periodontal diseases and the appearance of the Schneiderian membrane in CBCT is inconclusive.

CLINICAL RELEVANCE: Incidental maxillary sinus findings on CBCT scans warrant thorough differential diagnosis. Frequently, they may be related to dental pathologies.
BACKGROUND: Comprehensive understanding of the referral process and factors associated with it will assist general dentist (GD)-periodontist relationships and benefit patient care and services. Non-clinical factors (NCFs) influence clinical decision making but are rarely considered. The objective of this review is to identify NCFs found to be associated with referrals to periodontal specialists.

METHODS: A systematic review of English-language literature was conducted according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. An electronic search was carried out using the Cumulative Index to Nursing and Allied Health Literature, Dentistry and Oral Sciences Sources, and PubMed. Search terms used included: 1) refer; 2) referral; 3) periodontal; and 4) periodontist. Potentially relevant publications were analyzed in detail using predetermined inclusion and exclusion criteria. Selected papers were assessed using the Mixed Methods Appraisal Tool, and data extracted were thematically synthesized.

RESULTS: Ten studies that examined NCFs fulfilled inclusion criteria. Four NCF themes identified were practice-, GD-, patient-, and periodontist-related factors.

CONCLUSIONS: Limited literature is available on NCFs associated with referrals to periodontal specialists. Within the limits of this systematic review, NCFs affecting the referral process are practice-, GD-, patient-, and periodontist-related factors. These vary among different GD populations studied. Factors that could be targeted to improve referral processes include geographic location, undergraduate training, and continuing professional development.

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Abstract

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BACKGROUND AND OBJECTIVES: Although low-level laser therapy (LLLT) has been demonstrated to have a biomodulatory effect on periodontal tissue, no systematic review has exclusively addressed its effectiveness as an adjunct to non-surgical periodontal treatment: a meta-analysis.

MATERIAL AND METHODS: An extensive search was conducted in the Cochrane Library (Issue 8, 2015), PubMed (1997) and EMBASE (1947) before August 2015 for randomized controlled trials (RCTs). The bias risk was assessed with the Cochrane tool for risk of bias evaluation. A meta-analysis was performed using REVMAN 5.3.

RESULTS: After independent screening of 354 initial records, eight publications (seven RCTs) were included. However, six were rated as 'having a high risk of bias' as a result of major methodological weakness in 'allocation concealment' and 'blinding of key personnel'. Meta-analysis showed that LLLT-mediated SRP demonstrated significant short-term benefits over SRP monotherapy in the improvement of the probing pocket depth (p = 0.0009 at 1 mo; p = 0.03 at 2 mo) and the level of interleukin-1beta in the gingival crevicular fluid (p = 0.01 at 1 mo). Nevertheless, LLLT failed to show significant additional intermediate-term (3 and 6 mo) effects in terms of clinical parameters and alveolar bone density.

CONCLUSION: These findings indicated that LLLT showed only short-term additional benefits after conventional SRP. Its long-term effects remain unclear due to substantial methodological weaknesses and an insufficient number of current studies. Future RCTs with better designs and longer follow-up periods are required to assess the effectiveness of LLLT as an adjunctive treatment strategy in patients with periodontal disease.

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Publication Type

Journal Article.
Year of Publication
2017

Title
Comprehensive analysis of interleukin-8 gene polymorphisms and periodontitis susceptibility.

Source

Abstract
BACKGROUND: Associations between interleukin-8 (IL-8) gene polymorphisms and periodontitis susceptibility have been investigated in many published studies, but the conclusions are still inconsistent. Therefore, we performed this systematic review and meta-analysis to review which polymorphisms have been researched and to obtain a precise result of the same polymorphism from different studies.

RESULTS: Finally 10 publications involving 1938 patients and 1569 controls were yielded, including 12 polymorphisms. Six studies investigated rs4073 polymorphism; two focused on rs2227306 and rs2227307; two referred to rs2227532 and T-738A; one detected rs2230054, rs1126579 and rs1126580; one inspected A2767T, T11722T2 and C1633T, and one for rs2234671 polymorphism. Of them, IL-8 C1633T and rs1126580 polymorphisms showed positive association while the other ten polymorphisms revealed negative results.

MATERIALS AND METHODS: A comprehensive literature search from PubMed, Web of Science, and Chinese National Knowledge Infrastructure was conducted for all potentially relevant studies published before January 2, 2017. Two authors selected the studies and extracted data. The pooled analysis was conducted using the RevMan 5.1 software if a polymorphism was reported by two or more studies.

CONCLUSIONS: Based on current evidence, the IL-8 rs4073, A2767T, T11722T2, rs2234671, rs2230054, rs1126579, rs2227306, rs2227307, rs2227532, and T-738A polymorphisms were not associated with periodontitis susceptibility; the IL-8 C1633T and rs1126580 polymorphisms were associated with increased risk of periodontitis.

Publication Type

Year of Publication
2017
Periodontal disease (periodontitis) is a chronic inflammatory condition initiated by microbial infection that leads to gingival tissue destruction and alveolar bone resorption. The periodontal tissue's response to dental plaque is characterized by the accumulation of polymorphonuclear leukocytes, macrophages, and lymphocytes, all of which release inflammatory mediators and cytokines to orchestrate the immunopathogenesis of periodontal disease. Ubiquitination is achieved by a mechanism that involves a number of factors, including an ubiquitin-activating enzyme, ubiquitin-conjugating enzyme, and ubiquitin-protein ligase. Ubiquitination is a post-translational modification restricted to eukaryotes that are involved in essential host processes. The ubiquitin system has been implicated in the immune response, development, and programmed cell death. Increasing numbers of recent reports have provided evidence that many approaches are delivering promising reports for discovering the relationship between ubiquitination and periodontal disease. The scope of this review was to investigate recent progress in the discovery of ubiquitinated protein in diseased periodontium and to discuss the ubiquitination process in periodontal diseases.

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Title
Reliability of periodontal diagnostic tools for monitoring peri-implant health and disease. [Review]

Source

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Abstract
The prevalence, causes and consequences of crestal bone loss at dental implants are a matter of debate. In recent years, a high prevalence of peri-implant soft-tissue inflammation, associated with peri-implant bone loss, has been reported and the need for treatments similar to those offered for natural teeth affected by periodontitis has been proposed. This suggestion is based on the assumption that periodontal indices, such as probing pocket depth and bleeding on probing, are reliable indicators of the peri-implant tissue conditions and good predictors of future bone loss. However, based on a critical review of the literature in the present paper, it is concluded that periodontal indices are not reliable either for identifying peri-implant disease or for predicting future risk for peri-implant crestal bone loss and implant failure. The long-term experiences with dental implants, presented in the literature, indicate that the presence of bleeding on probing, probing pocket depths much larger than 4 mm and some bone loss seem to reflect, in most instances, normal conditions of well-functioning dental implants, bearing in mind that healing of dental implants is the result of a foreign body reaction with the formation of scar tissue. Therefore, the use of probing pocket depth and bleeding on probing assessments may lead to over-diagnosis and possibly to over-treatment of assumed biofilm-mediated peri-implantitis lesions. It is the opinion of the authors of this review that a treatment should only be initiated when a clinical problem is present based on patient's symptoms (discomfort, pain), the presence of swelling, redness and pus, and significant crestal bone loss over time (as verified with radiographs). The treatment should aim at resolving the infection, which could include removal of the implant.

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Title
Periodontal disease, tooth loss and dementia: Is there a link? A systematic review. [Review]

Source

Local Messages
**Abstract**

**BACKGROUND:** It has been suggested that dementia is caused by neuronal damage due to chronic inflammation from peripheral sources such as the oral cavity in periodontal disease.

**OBJECTIVE:** The aim of our review was to assess the risk of dementia or cognitive impairment associated with chronic periodontitis and multiple tooth loss.

**MATERIALS AND METHODS:** An extensive search of electronic databases of articles on the relation between periodontitis, tooth loss and dementia published on or before April 2016 was conducted. Experimental and human studies that provided a description consistent with multiple tooth loss, chronic periodontal disease and cognitive impairment obtained by validated methods were selected. The data extracted from the articles included study design, country of origin, sample size, methods used to assess periodontitis and cognition, average age at the baseline and number of years of follow-up. The Newcastle-Ottawa scale was used to assess the quality of human studies.

**RESULTS:** The literature search yielded 756 articles which were independently screened, and 16 articles were included in the review. Four human studies reported an association of subsequent dementia with multiple tooth loss. One human study reported that chronic periodontitis was associated with dementia. Eight experimental studies demonstrated an association between cognitive impairment and tooth loss.

**CONCLUSION:** The literature on chronic periodontitis and multiple tooth loss as risk factors to dementia remains inconclusive. More randomised clinical trials on the association between periodontitis and dementia with uniform criteria for evaluation and diagnosis of periodontitis are warranted.

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**Trichomonas tenax and periodontal diseases: a concise review.**

**Source**


**Abstract**

Periodontal diseases (gingivitis and periodontitis), result from a disruption of the host-oral microbiome homoeostasis. Whereas the pathological role of some specific bacterial strains during periodontal diseases is well documented, the impact of parasites in periodontium pathophysiology is still under debate. This review aims to collect data about the prevalence and the potential role of *Trichomonas* tenax during periodontal diseases. Data from 47 studies revealed that *T.* tenax prevalence in diseased periodontium ranged from 0 to 94.1%. The prevalence of oral protozoan infections was found to be largely greater in patients with periodontal diseases than with healthy periodontium. The parasite detection was mainly performed by direct microscopy. *Trichomonas* tenax presence was clearly correlated with periodontal disease. The high heterogeneity of its periodontal prevalence may be correlated with the diversity of the population screened (age, sex, systemic diseases), and the methods used for diagnosis. This protozoan seems to have the capacity to be involved in the inflammatory process of gum disease. Animal experimentation, using relevant physiopathological models of periodontitis, needs to be performed to investigate the ability of *T.* tenax to cause and/or worsen the disease. Further investigations using standardized experimental designs of epidemiologic studies are also needed.
Effect of laser-assisted scaling and root planing on the expression of pro-inflammatory cytokines in the gingival crevicular fluid of patients with chronic periodontitis: A systematic review. [Review]

BACKGROUND: The aim of the present systematic review was to assess the efficacy of laser-assisted (low level laser therapy [LLLT], high intensity laser therapy [HILT], or antimicrobial photodynamic therapy [aPDT]) scaling and root planing (SRP) compared with SRP alone on the expression of inflammatory cytokines in the gingival crevicular (GCF) of patients with chronic periodontitis (CP).

METHODS: In order to address the focused question: "What is the efficacy of SRP with and without laser and/or aPDT on the expression of pro-inflammatory cytokines in the GCF of patients with CP?" an electronic search without time or language restrictions was conducted up to and including February 2017 in indexed databases using various key words.

RESULTS: Twenty-two randomized control trials were included in the present systematic review. Nine studies and six studies assessed the efficacy of LLLT and HILT, as adjunct to SRP, respectively. Seven studies assessed the efficacy of aPDT as adjunct to SRP on down-regulating the expression of pro-inflammatory cytokines in the GCF among patients with CP. The outcomes of the studies included based upon the reduction in the levels of pro-inflammatory cytokines were inconsistent.

CONCLUSION: The role of laser-assisted SRP on the expression of pro-inflammatory cytokines in the GCF of patients with CP remains unclear. Further long term and well-designed randomized clinical trials are needed in this regard.
Clinical efficacy of photodynamic therapy adjunctive to scaling and root planing in the treatment of chronic periodontitis: A systematic review and meta-analysis. [Review]

Source

Abstract
PURPOSE: To evaluate the clinical efficacy of photodynamic therapy (PDT) adjunctive to scaling and root planing (SRP) in patients with untreated chronic periodontitis based on up-to-date evidence.

METHODS: MEDLINE and the Cochrane Library were systematically searched to identify eligible randomized controlled trials (RCTs), supplemented by a manual literature search. Mean differences (MD) and the corresponding 95% confidence intervals (CI) of probing depth (PD) reduction and clinical attachment level (CAL) gain were synthesized. The I² statistic was used to determine the inter-study heterogeneity. Subgroup analysis based on smoking status was performed.

RESULTS: Eleven RCTs with a total of 243 subjects were included. Significant improvement in PD reduction (MD=0.13, CI:0.02-0.24, p=0.02) and marginal significant improvement in CAL gain (MD=0.18, CI:-0.005-0.363, p=0.056) were observed in favor of SRP+PDT at 3months. When evaluated at 6months after baseline, the association of PDT with SRP resulted in a significant benefit in PD reduction (MD=0.40, CI:0.05-0.74, p=0.03), but not in CAL gain (MD=0.37, CI:-0.18-0.93, p=0.18). Subgroup analysis revealed that the combined therapy produced no significant improvements in PD and CAL at neither 3months nor 6months for studies with smokers. No treatment-related adverse events or side effects had been reported by the included studies.

CONCLUSIONS: Pooled analysis suggests a short-term benefit of PDT as an adjunct to SRP in clinical outcome variables. However, evidence regarding its long-term efficacy is still insufficient and no significant effect has been confirmed in terms of CAL gain at 6months. Future clinical trials of high methodological quality are needed to establish the optimal combination of photosensitizer and laser configuration.
Is Periodontal Disease Associated with Alzheimer's Disease? A Systematic Review with Meta-Analysis. [Review]

Leira, Yago; Dominguez, Clara; Seoane, Juan; Seoane-Romero, Juan; Pias-Peleteiro, Juan Manuel; Takkouche, Bahi; Blanco, Juan; Aldrey, Jose Manuel.

Leira Y; Dominguez C; Seoane J; Seoane-Romero J; Pias Peleteiro JM; Takkouche B; Blanco J; Aldrey JM.

Leira, Yago. Department of Periodontology, School of Dentistry, University of Santiago de Compostela, Santiago de Compostela, Spain.


BACKGROUND: In the last decade, several observational studies have suggested that there exists an association between periodontal disease (PD) and Alzheimer's disease (AD). The aim of this systematic review was to investigate whether or not this link exists.

SUMMARY: The Preferred Reporting Items for Systematic Reviews and Meta-Analysis guideline for systematic review was used and registered at PROSPERO (CRD42016035377). The search strategy included using electronic databases and by hand searching articles published up to January 2016. MEDLINE via PubMed, EMBASE and Web of Science were searched by 2 independent reviewers. Observational studies including patients meeting criteria for both AD and PD were eligible to be included in the analysis. Quality assessment of selected studies was performed by the Newcastle-Ottawa Scale. From a total of 550 titles and abstracts, 5 studies were included (2 cross-sectional, 2 case-control and one cohort study) in the review. A fixed effects meta-analysis showed that the presence of PD is associated with the presence of AD (OR 1.69, 95% CI 1.21-2.35). When only severe forms of PD were evaluated, a significant association was also observed (OR 2.98, 95% CI 1.58-5.62). Key Messages: In the
present review, a significant association was observed between PD and AD. Further studies should be carried out in order to investigate the direction of the association and factors that may confound it.

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Abstract
Although periodontal factors do not usually have a direct effect on the survival of a fixed prosthesis, harmony between the prosthesis and the periodontium is critical otherwise esthetics, the longevity of the prosthesis and the periodontium will be compromised. A close interdisciplinary relationship between periodontics and prosthodontics is therefore necessary to avoid an
unsatisfactory treatment outcome, requiring extensive and expensive retreatment. The design of the prosthesis, the number and quality of the abutment teeth, the preparation and the pontic, the occlusion and the material need to be considered when planning prosthodontic treatment. The location of the preparation margin and the contour and emergence profile of the prosthesis will influence the response of the gingival tissues to the prosthesis. Pontic design and cleanliness also contribute to the response of the gingival tissues as well as to the clinical and esthetic outcome. Even an optimal pontic design will not prevent inflammation of the mucosa adjacent to the pontic if pontic hygiene is not maintained by removal of plaque. Case selection and the patients’ ability to carry out adequate oral hygiene are therefore essential for longevity of the prosthesis, and regular reviews provide an opportunity for early detection and treatment of failures.
Socioeconomic position during life and periodontitis in adulthood: a systematic review. [Review]

Schuch HS; Peres KG; Singh A; Peres MA; Do LG.

Socioeconomic position during life and periodontitis in adulthood. The findings were consistent despite differences in study methods. The available scientific evidence demonstrates potential longitudinal impact of earlier lower SEP on later periodontal health. The methodological quality of the studies was assessed using the Newcastle-Ottawa Quality Assessment Scale (NOS). The search identified 1720 papers. After removal of duplicates (n=697), title and abstract screening (n=996), and full-text review (n=19), eight original manuscripts from seven studies were finally included. Sample sizes ranged from 167 to 2806, and the follow-up time from exposure to outcome ranged from 2 to 28 years. Studies evaluated education, occupation or income as SEP indicators. Prevalence, extent and severity of periodontal attachment loss, probing pocket depth and alveolar bone loss were the studied outcomes. Based on NOS, studies presented low risk of bias. Six of eight papers reported that relatively low SEP earlier in life was associated with poorer periodontal health in adulthood. The available scientific evidence demonstrates potential longitudinal impact of earlier lower SEP on later periodontal health. The findings were consistent despite differences in study methods.
Title

Source

Abstract
BACKGROUND: Gingival overgrowth (GO) induced by cyclosporine (CsA), one of the common complications after kidney transplantation, is associated with a genetic component. However, the effect of TGF-beta1 and MDR1 gene polymorphisms on the pathogenesis of CsA-induced GO remains to be determined. This study aimed to determine the association between TGF-beta1 and MDR1 gene polymorphisms and CsA-induced GO in kidney transplant recipients.

METHODS: The Pubmed, Embase, Cochrane Library, and Chinese CNKI (China National Knowledge Infrastructure) and Wanfang databases were comprehensively searched. Data were extracted and pooled results estimated from odds ratios (ORs) and 95% confidence intervals (CIs). In addition, quality assessment and publication bias of each eligible study were examined.

RESULTS: Three trials focusing on the relationship between TGF-beta1 +869T>C and +915G>C and 3 studies on MDR1 C3435T gene polymorphisms and the onset of CsA-induced GO were included. No association between the +869T>C polymorphism and CsA-induced GO was found in the dominant model (TT+TC vs CC: OR, 0.77; 95% CI, 0.29-2.10; P = .614). In the recessive model, no association was found between the +915G>C polymorphism and CsA-induced GO (CC vs GG+GC: OR, 1.40; 95% CI, 0.81-2.43; P = .225). And in the dominant model, no significance was calculated between MDR1 C3435T gene polymorphisms and CsA-induced GO in kidney transplant recipients (TT vs CC+CT: OR, 1.14; 95% CI, 0.62-2.09; P = .68).

CONCLUSIONS: No significant association exists between TGF-beta1 +869T>C, and +915G>C and MDR1 C3435T gene polymorphisms and the pathogenesis of CsA-induced GO in kidney transplant recipients.
The present review describes the role of chemically modified tetracyclines in the management of periodontal diseases. Tetracyclines which are unique amongst antimicrobials, with therapeutic applications in periodontal and metabolic diseases.

Researchers have found that Chemically Modified Tetracyclines (CMTs) act through multiple mechanisms, affecting several parameters of osteoclast function and consequently inhibit bone resorption by altering intracellular calcium concentration and interacting with the putative calcium receptor; decreasing ruffled border area; diminishing acid production; diminishing the secretion of lysosomal cysteine proteinases (cathepsins); inducing cell retraction by affecting podosomes; inhibiting osteoclast gelatinase activity; selectively inhibiting osteoclast ontogeny or development; and inducing apoptosis or programmed cell death by affecting podosomes. Hence, the present review describes the role of chemically modified tetracyclines in the management of periodontal diseases.
Minimally Invasive Surgery in Periodontal Regeneration: A Review of the Literature. [Review]

Abstract
New techniques have emerged to achieve periodontal regeneration without the drawbacks associated with conventional flap surgery. Minimally invasive surgery (MIS) is a method of surgical access that minimizes flap reflection and tissue trauma, resulting in maintenance of critical blood supply, stability of the blood clot within the wound site, and less postoperative recession over time. As advancements in materials and techniques are made, MIS in periodontal regeneration continues to evolve. The emergence of a videoscope for use during MIS (VMIS) has improved visual access to surgical sites, facilitating improved defect debridement and root planing. As demonstrated, VMIS has resulted in an actual gain in soft-tissue height up to 3 years postoperatively.

Periodontal disease as a potential factor of migraine chronification.

Abstract
Migraine is a hereditary constitutional base disorder, which is characterized by recurrent episodes of headache pulsatile characteristics associated with photophobia/phonophobia, nausea and/or vomiting. The main complication in migraine is the chronicity of the process, now recognized as a chronic migraine. Although pathogenic mechanisms that may influence the pathophysiology of migraine and its possible chronicity are not fully understood, previous studies have shown in patients with migraine molecular alterations of systemic inflammation, neurogenic inflammation, endothelial dysfunction, innate immunity, dysfunction of matrix proteases and blood-brain barrier. Periodontal disease is an inflammatory lesion caused by bacteria. After the bacterial infection begins, an immune response that will be responsible for individual susceptibility appears. More advanced forms of periodontitis have demonstrated molecular alterations of inflammation, endothelial dysfunction, dysfunction of matrix proteases and innate immunity, similar to those observed in migraine. Furthermore, the main molecular mediators of neurogenic inflammation related to activation of the trigeminovascular system, which are characteristic of migraine, are overexpressed in gingival crevicular fluid and mucosa in patients with periodontal disease. Hypertension, hypercholesterolemia, insulin resistance, stroke or coronary artery disease are comorbidities that periodontal disease and migraine could share. Therefore, several mechanisms and hypotheses could explain the possible association between both diseases. However, epidemiological and molecular studies will be necessary to provide a better understanding of this potential association, which could be implicated in the chronification of migraine.
INFLUENCE OF DIABETES IN THE DEVELOPMENT OF APICAL PERIODONTITIS: A CRITICAL LITERATURE REVIEW OF HUMAN STUDIES. [Review]

INTRODUCTION: The aim of this study was to perform a critical review of the literature that investigated the association between diabetes and apical periodontitis.

METHODS: An electronic search was performed on PubMed/MEDLINE, LILACS, Scientific Electronic Library Online (Scielo), and Cochrane Collaboration databases. Human studies assessing the effect of diabetes in apical periodontitis development or in healing after root canal treatment were included. The outcome was apical periodontitis.

RESULTS AND CONCLUSIONS: Nine articles were included. The results presented in the literature to date are still scarce and incipient, and the evidence for such an association is not yet conclusive. However, the published results trend to converge on a positive association between diabetes and a larger number of periapical lesions.

BACKGROUND: The association between periodontitis and systemic diseases has been increasingly recognized. However, the data on the association between periodontitis and psoriasis are still limited.
OBJECTIVES: To summarize all available data on the association between periodontitis and the risk of psoriasis.

METHODS: Two investigators independently searched published studies indexed in MEDLINE and EMBASE databases from inception to July 2016 using a search strategy that included terms for psoriasis and periodontitis. Studies were included if the following criteria were met: (i) case-control or cohort study comparing the risk of psoriasis in subjects with and without periodontitis; (ii) subjects without periodontitis were used as comparators in cohort studies while participants without psoriasis were used as controls in case-control studies; and (iii) effect estimates and 95% confidence intervals (CI) were provided. Point estimates and standard errors from each study were extracted and combined together using the generic inverse variance technique described by DerSimonian and Laird.

RESULTS: Two cohort studies and three case-control studies met the inclusion criteria and were included in the meta-analysis. The pooled risk ratio of psoriasis in patients with periodontitis versus comparators was 1.55 (95% CI, 1.35-1.77). The statistical heterogeneity was insignificant with an $I^2$ of 18%. Subgroup analysis according to study design revealed a significantly higher risk among patients with periodontitis with a pooled RR of 1.50 (95% CI, 1.37-1.64) for cohort studies and a pooled RR of 2.33 (95% CI, 1.51-3.60) for case-control studies.

CONCLUSIONS: Patients with periodontitis have a significantly elevated risk of psoriasis.
Abstract
The extraction of an impacted third molar violates the surrounding soft and bony tissues. The surgeon's access to the tooth, for which there are various surgical approaches, has an important impact on the periodontium of the adjacent second molar. The aim of this review was to analyze the relationships between the different flap techniques and postoperative periodontal outcomes for the mandibular second molars (LM2) adjacent to the impacted mandibular third molars (LM3). An electronic search of MEDLINE and other databases was conducted to identify randomized controlled trials fulfilling the eligibility criteria. To assess the impact of flap design on the periodontal condition, the weighted mean difference of the probing depth reduction (WDPDR) and the weighted mean difference of the clinical attachment level gain (WDCAG) at the distal surface of LM2 were used as the primary outcomes. The results showed that, overall, the different flap techniques had no significant impact on the probing depth reduction (WDPDR - 0.84 to 0.94). However, a subgroup analysis revealed that the Szmyd and paramarginal flap designs may be the most effective in reducing the probing depth in impacted LM3 extraction, and the envelope flap may be the least effective.

Effect of flap design on periodontal healing after impacted third molar extraction: a systematic review and meta-analysis. [Review]

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Title
Periodontal ligament entheses and their adaptive role in the context of dentoalveolar joint function. [Review]
OBJECTIVE: The dynamic bone-periodontal ligament (PDL)-tooth fibrous joint consists of two adaptive functionally graded interfaces (FGI), the PDL-bone and PDL-cementum that respond to mechanical strain transmitted during mastication. In general, from a materials and mechanics perspective, FGI prevent catastrophic failure during prolonged cyclic loading. This review is a discourse of results gathered from literature to illustrate the dynamic adaptive nature of the fibrous joint in response to physiologic and pathologic simulated functions, and experimental tooth movement.

METHODS: Historically, studies have investigated soft to hard tissue transitions through analytical techniques that provided insights into structural, biochemical, and mechanical characterization methods. Experimental approaches included two dimensional to three dimensional advanced in situ imaging and analytical techniques. These techniques allowed mapping and correlation of deformations to physicochemical and mechanobiological changes within volumes of the complex subjected to concentric and eccentric loading regimes respectively.

RESULTS: Tooth movement is facilitated by mechanobiological activity at the interfaces of the fibrous joint and generates elastic discontinuities at these interfaces in response to eccentric loading. Both concentric and eccentric loads mediated cellular responses to strains, and prompted self-regulating mineral forming and resorbing zones that in turn altered the functional space of the joint.

SIGNIFICANCE: A multiscale biomechanics and mechanobiology approach is important for correlating joint function to tissue-level strain-adaptive properties with overall effects on joint form as related to physiologic and pathologic functions. Elucidating the shift in localization of biomolecules specifically at interfaces during development, function, and therapeutic loading of the joint is critical for developing "functional regeneration and adaptation" strategies with an emphasis on restoring physiologic joint function.
The prognosis for successful treatment of periodontal diseases is generally poor. Current therapeutic strategies often fail to regenerate infected periodontium. Recently an alternative strategy has been developed that combines conventional treatment with the application of recombinant human growth factors (rhGFs). But ambiguities in existed studies on the clinical efficacy of rhGFs do not permit either the identification of the specific growth factors effective for therapeutic interventions or the optimal concentration of them. Neither is it known whether the same rhGF can stimulate regeneration of both soft tissue and bone, or whether different patient populations call for differential use of the growth factors. In order to explore these issues, a meta-analysis was carried out. Particular attention was given to the therapeutic impact of fibroblast growth factor 2 (FGF-2) and platelet derived growth factor BB (PDGF-BB). Our findings indicate that 0.3% rhFGF-2 and 0.3mg/ml rhPDGF-BB show a greater capacity for periodontal regeneration than other concentrations and superiority to control groups with statistical significance. In the case of patients suffering only from gingival recession, however, the application of rhPDGF-BB produces no significant regenerative advantage. The findings of this study can potentially endow clinicians with guidelines for the appropriate application of these two rhGFs.
INTRODUCTION: Poor oral hygiene is a major risk factor for oral diseases. Regular home-based care is essential to maintain good oral hygiene. In particular, mouthwashes can support conventional tooth brushing in reducing accumulation of oral plaque.

Areas covered: The most common molecules contained in mouthwashes (chlorhexidine, essential oils, cetyl pyridinium chloride, triclosan, octenidine, delmopinol, polivinylpyrrolidone, hyaluronic acid, natural compounds) are discussed, together with relevant clinical and in vitro studies, focusing on their effects on periodontal health. Currently, chlorhexidine is the most efficacious compound, with both antiplaque and antibacterial activities. Similar results are reported for essential oils and cetyl pyridinium chloride, although with a somewhat reduced efficacy. Considering the adverse effects of chlorhexidine and its time-related characteristics, this molecule may best be indicated for acute/short-term use, while essential oils and cetyl pyridinium chloride may be appropriate for long-term, maintenance treatment. Expert opinion: The literature has not clearly demonstrated which compound is the best for mouthwashes that combine good efficacy and acceptable side effects. Research should focus on substances with progressive antibacterial activity, prompting a gradual change in the composition of oral biofilm and mouthwashes that combine two or more molecules acting synergistically in the mouth.

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SHORT-TERM AND LONG-TERM EFFECTIVENESS OF POWERED TOOTHBRUSHES IN PROMOTING PERIODONTAL HEALTH DURING ORTHODONTIC TREATMENT: A SYSTEMATIC REVIEW AND META-ANALYSIS. [Review]

METHODS: Searches without restrictions for published and unpublished literature and hand searching took place up to August 2017. Oral-health relevant data from randomized controlled trials of at least 4-weeks duration comparing powered and manual tooth brushing without supervision were reviewed. Data were classified as short term (assessments at 1-3 months) and long term (assessments at >3 months), and the random-effects method was used to combine treatment effects. Individual study risk of bias was assessed using the Cochrane Risk of Bias Tool, and the quality of evidence was evaluated according to the Grades of Recommendation, Assessment, Development and Evaluation approach.

RESULTS: The initially identified articles were finally reduced to 9 randomized controlled trials investigating the periodontal health in 434 patients. Eight studies followed patients up to 3 months, and 1 up to 12 months during treatment. One study was at low and the rest at unclear risk of bias. Overall, in the short term, there was low-quality evidence that powered toothbrushes provide a statistically significant benefit compared with manual brushing with regard to the gingival index (weighted mean difference, -0.079; 95% confidence interval, -0.146 to -0.012; \( P = 0.021 \)) and indexes assessing gingival bleeding (standardized mean difference, -0.637; 95% confidence interval, -1.092 to -0.183; \( P = 0.006 \)). In the long term, only 1 available study showed a statistically significant benefit of powered over manual toothbrushes with regard to gingival index and bleeding. No differences were observed in probing pocket depth and relative attachment loss. For the rotation-oscillation brushes that involved the greatest body of evidence, statistically significant reductions in gingival index and bleeding were demonstrated only in the long-term study.

CONCLUSIONS: Overall, powered toothbrushes may promote gingival health better than manual toothbrushes in orthodontic patients. However, no type demonstrated clear superiority. Better study standardization and reporting in longer follow-up studies are necessary to elucidate the clinical relevance of these results.

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Periodontitis: a global disease and the primary care provider’s role. [Review]

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Cheever, Val Joseph. College of Dental Medicine, Roseman University of Health Sciences South Jordan Campus, South Jordan, Utah, USA.
Lipsky, Martin S. College of Dental Medicine, Roseman University of Health Sciences South Jordan Campus, South Jordan, Utah, USA.

Title
Periodontitis: a global disease and the primary care provider’s role. [Review]

Source

Abstract
Individuals who regularly visit a primary care provider (PCP) may not see a dentist, creating opportunities for PCPs to improve oral health. However, a lack of expertise among PCPs may limit their impact to improve public oral health. Using a non-systematic literature review, this article summarises the relevant literature about periodontitis. Periodontitis affects 10% to 15% of the world’s population. Caused by bacterial inflammation in gingival pockets, periodontal disease can destroy tissues surrounding the teeth. Factors linked to periodontal disease include diabetes, atherosclerosis and smoking. Good oral hygiene is important for both prevention and treatment. Mechanical removal of gingival irritants by scaling and root planing combined with adjunctive antimicrobial therapy are first-line treatment options. Surgery is indicated when healthy levels of gingival tissue are not attained from first-line treatments. By understanding the fundamentals of periodontitis the primary care provider can educate patients, promote healthy oral health behaviours and appropriately refer patients with signs and symptoms of periodontal disease.

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Effectiveness of Azadirachta indica (neem) mouthrinse in plaque and gingivitis control: a systematic review. [Review]

Dhingra, K; Vandana KL.

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Title
Effectiveness of Azadirachta indica (neem) mouthrinse in plaque and gingivitis control: a systematic review. [Review]

Source

Abstract
OBJECTIVES: The aim of this systematic review was to evaluate the effectiveness of Azadirachta indica (neem)-based herbal mouthrinse in improving plaque control and gingival health.

METHODS: Literature search was accomplished using electronic databases (PubMed, Cochrane Central Register of Controlled Trials and EMBASE) and manual searching, up to February 2015, for randomized controlled trials (RCTs) presenting clinical data for efficacy of neem mouthrinses when used alone or as an adjunct to mechanical oral hygiene as compared to chlorhexidine mouthrinses for controlling plaque and gingival inflammation in patients with gingivitis.

RESULTS: Of the total 206 articles searched, three randomized controlled trials evaluating neem-based herbal mouthrinses were included. Due to marked heterogeneity observed in study characteristics, meta-analysis was not performed. These studies reported that neem mouthrinse was as effective as chlorhexidine mouthrinse when used as an adjunct to toothbrushing in reducing plaque and gingival inflammation in gingivitis patients. However, the quality of reporting and evidence along with methods of studies was generally flawed with unclear risk of bias.

CONCLUSION: Despite the promising results shown in existing randomized controlled trials, the evidence concerning the clinical use of neem mouthrinses is lacking and needs further reinforcement with high-quality randomized controlled trials based on the reporting guidelines of herbal CONSORT statement.

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Periodontitis: a global disease and the primary care provider’s role. [Review]

Paskett, Keith Trevor. College of Dental Medicine, Roseman University of Health Sciences South Jordan Campus, South Jordan, Utah, USA.
Cheever, Val Joseph. College of Dental Medicine, Roseman University of Health Sciences South Jordan Campus, South Jordan, Utah, USA.
Lipsky, Martin S. College of Dental Medicine, Roseman University of Health Sciences South Jordan Campus, South Jordan, Utah, USA.

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Periodontal disease and women's health. [Review]

Abstract

BACKGROUND: Periodontal disease (PD) is a multifactorial inflammatory condition in which inappropriate interaction between the host immune response and specific groups of bacterial pathogens leads to destruction of connective and bone tissues supporting the tooth. Dissemination of pathogens, toxins, and immune complexes from and to periodontal lesions is at the basis of the increasingly recognized association between PD and various systemic diseases (SDs). Considering the growing attention of the medical community to "gender medicine", this review focuses on the association between PD and six systemic conditions heavily impacting women's health, with the aim of providing evidence in support of a joint effort between physicians and dentists to improve clinical management of these conditions.

METHODS: We considered systematic reviews, meta-analyses and narrative reviews evaluating all possible associations between periodontitis, systemic diseases and women.

RESULTS: Gender prevalence for PD is discordant, but the literature strongly supports an association between PD and female infertility and adverse pregnancy outcomes. Moreover, PD is bidirectionally linked to several systemic diseases characterized by an established female gender bias, i.e. osteoporosis (OP), cardiovascular diseases (CVD), autoimmunity, Alzheimer's disease (AD) and cancer.

CONCLUSIONS: Overall, the literature data reviewed here provides a strong foundation for further characterization of molecular and microbial drivers of PD and of several female-prevalent systemic diseases, highlighting the possible importance of a good oral condition in preventing or attenuating women's systemic diseases.
positive association between decreased testosterone levels in serum and CP. Increased levels of salivary testosterone among patients with CP were reported in one study; whereas one study reported no significant difference in the concentration of salivary testosterone between patients with and without CP. One study identified significant increase in the metabolism of testosterone in the gingiva of patients with CP. Within the limits of the evidence available, the relationship between low testosterone levels and CP remains debatable and further longitudinal studies and control trials are needed.

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Title: Periodontal disease, edentulism, and pancreatic cancer: a meta-analysis. [Review]


Abstract: Background: Periodontal disease (PD), now our commonest infectious disorder leads to tooth loss, and has been linked to various systemic diseases, including various types of cancer. The aim of this study is to provide a systematic review and a meta-analysis of the relationship between PD, edentulism, and pancreatic cancer (PC).

Patients and methods: From an initial review of 327 references we selected eight studies concerning periodontitis or edentulism with sufficient quantitative information to allow us to examine the risk of PC. We used relative risks (RRs), hazard ratios, or odds ratios to measure the association between periodontitis, edentulism, and PC. We employed random effects models to obtain summary risks, and we also provide measures of study differences and possible biases.

Results: The summary RR for periodontitis and PC was 1.74 [95% confidence interval (CI) 1.41-2.15] and 1.54 for edentulism (95% CI 1.16-2.05). There was no evidence of heterogeneity for either variable, and no evidence of publication bias. The studies included reports from three continents, suggesting that the association is generalizable. Most of the studies were adjusted for variables thought to be associated with PC, such as gender, smoking, BMI, diabetes, and alcohol.

Conclusions: Using meta-analysis, both periodontitis and edentulism appear to be associated with PC, even after adjusting for common risk factors. As yet, the mechanisms linking oral disease and PC are uncertain, but could be related to changes in the oral microbiome—an area of current research.

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AIMS: The aim of this systematic review was to assess the efficacy of bisphosphonate therapy as an adjunct to nonsurgical periodontal therapy in the management of periodontal disease: a systematic review.

METHODS: Databases (MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials and Cochrane Oral Health Group Trials Register databases) were searched up to and including July 2016. The primary outcome was probing depth (PD), and the secondary outcomes were changes in clinical attachment level (CAL) and bone defect (BD) fill. The mean differences (MD) of outcomes and 95% confidence intervals (CI) for each variable were calculated using random effect model.

RESULTS: Eight clinical studies were included. Seven studies used alendronate as an adjunct to SRP; of these, four studies used topical application and three used oral alendronate. Considering the effects of adjunctive bisphosphonates as compared to SRP alone, a high degree of heterogeneity for PD (Q value = 39.6, P < 0.0001, I^2 = 87.38%), CAL (Q value = 13.65, P = 0.2396, I^2 = 41.91%), and BD fill (Q value = 28.06, P = 0.0042, I^2 = 53.92%) was found. Significant differences in favor of bisphosphonate therapy were only found for PD (MD: 0.56 mm, 95% CI: 0.11, 1.01 mm) and BD fill (MD: 0.47 mm, 95% CI: 0.04, 0.90 mm). However, the clinical relevance of the differences observed is questionable given the observed heterogeneity. Clinical attachment level was not significantly affected.

CONCLUSIONS: The 3-year survival rate and peri-implant marginal bone loss was found statistically significantly lower in GAgP subjects (SR 97.98 % vs 100 %) in comparison to HP and CP individuals.

CLINICAL RELEVANCE: The outcome of implant therapy in terms of survival rate and marginal bone loss is considered very important for the clinician in decision making when placing implants in patients with a history of aggressive periodontitis.
P = 0.008, I^2 = 70.71%, and BD fill (Q value = 53.26, P < 0.0001, I^2 = 92.49%) was noticed among both the groups. Meta-analysis showed a statistically significant PD reduction (MD = -1.18, 95% CI = -1.91 to -0.44, P = 0.002), CAL gain (MD = -0.69, 95% CI = -1.20 to -0.18, P = 0.008) and BD fill (MD = -2.36, 95% CI = -3.64 to -1.08, P < 0.001) for SRP + bisphosphonate treatment vs. SRP alone.

CONCLUSIONS: Adjunctive bisphosphonate therapy appears to be effective in managing periodontitis, however, due to the potential risk of osteonecrosis of the jaws and short-term follow-up of the studies, their clinical application is debatable.
Herpesviruses in etiopathogenesis of aggressive periodontitis: A meta-analysis based on case-control studies.

**Abstract**

OBJECTIVE: Previous studies have found that herpesviruses are associated with aggressive periodontitis (AgP). However, these findings are controversial. This meta-analysis was aimed at clarifying the association between herpesviruses and AgP.

METHODS: We identified eligible case-control studies evaluating the association between herpesviruses and AgP from PubMed and Embase databases in October 2015. Original data were extracted and quality assessment was done. Overall odds ratios (ORs) and 95% confidence intervals (CIs) were estimated. Random-effects model was determined. The stability was evaluated by sensitivity analysis. Finally, Egger's funnel plot was used to investigate the publication bias.

RESULTS: Twelve case-control studies involving 322 patients and 342 controls were included in the present meta-analysis. The included case-control studies were assessed as high quality. The quantitative synthesis results for Epstein-Barr virus (EBV) showed significance (10 studies: p = 0.0008, OR = 6.11, 95% CI = 2.13-17.51); nevertheless, evidence of publication bias for EBV was considerable (EBV: Egger's test, p<0.001). Human cytomegalovirus (HCMV) and Herpes simplex virus type 1 (HSV-1) had significant association with AgP (12 studies for HCMV: p = 0.009, OR = 3.63, 95% CI = 2.15-6.13; 4 studies for HSV-1: p<0.001, OR = 19.19, 95% CI = 4.16-79.06). Sensitivity analyses showed the results yielded consistency, and no significant publication bias was observed for HCMV. The association between Herpes simplex virus type 2 (HSV-2) and AgP was inconclusive (2 studies: p = 0.20, OR = 3.46, 95% CI = 0.51-23.51).

CONCLUSION: This meta-analysis suggests that HCMV and HSV-1 are significantly associated with AgP. However, due to the heterogeneity among studies these conclusions should be cautiously interpreted. There is insufficient evidence to draw any conclusion between EBV, HSV-2 and AgP based on the currently limited data.

**Source**

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**Title**
Treating periodontal disease for preventing adverse birth outcomes in pregnant women. [Review]

**Source**
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**Abstract**

BACKGROUND: Periodontal disease has been linked with a number of conditions, such as cardiovascular disease, stroke, diabetes and adverse pregnancy outcomes, all likely through systemic inflammatory pathways. It is common in women of reproductive age and gum conditions tend to worsen during pregnancy. Some evidence from observational studies suggests that periodontal intervention may reduce adverse pregnancy outcomes. There is need for a comprehensive Cochrane review of randomised trials to assess the effect of periodontal treatment on perinatal and maternal health.

OBJECTIVES: To assess the effects of treating periodontal disease in pregnant women in order to prevent or reduce perinatal and maternal morbidity and mortality.

**SEARCH METHODS:** Cochrane Oral Health's Information Specialist searched the following databases: Cochrane Oral Health's Trials Register (to 6 October 2016), Cochrane Pregnancy and Childbirth's Trials Register (to 7 October 2016), the Cochrane
Previous studies have shown that patients with rheumatoid arthritis (RA) have a higher susceptibility to periodontitis, but the results of individual studies remain controversial. The aim of the present meta-analysis was to comprehensively evaluate the association between RA and periodontitis. A systematic literature search was conducted in PubMed and EMBASE. Data were extracted using standardized forms, and odds ratios (OR) with 95% confidence intervals (CI) were calculated for each study. Pooled data were estimated by fixed- and random-effects models if appropriate. Eight case-control studies were included in the present study. Study size ranged from 104 to 151,569 participants. The prevalence of periodontitis in RA patients ranged from 15.5% to 100%, compared with 10.0% to 82.1% in controls. In group 1 (control) and group 2, the heterogeneity was 38% and 11%, respectively. Using fixed-effects analysis, the overall pooled estimates of the ORs for periodontitis were 4.68 (95% CI: 3.11-7.05) and 1.28 (95% CI: 1.24-1.33) in groups 1 and 2, respectively. This meta-analysis indicates that RA was significantly associated with increased overall risk of periodontitis.
Clinical effectiveness of adjunctive antimicrobial photodynamic therapy for residual pockets during supportive periodontal therapy: A systematic review and meta-analysis. [Review]

METHOD: Bibliographic databases of MEDLINE and Cochrane Library were thoroughly searched up to July 2016 for eligible randomized controlled trials (RCTs). Mean differences (MD) and the corresponding 95% confidence intervals (CI) were synthesized for probing depth (PD) reduction and clinical attachment level (CAL) gain. The I² test and Q statistics were employed to assess inter-study heterogeneity. Subgroup analysis was performed based on the enrollment of smokers.

RESULT: Four RCTs fulfilling the eligibility criteria were included. Pooled estimates demonstrated statistically significant improvements in both PD reduction (MD=0.69, CI: 0.11-1.28, p=0.02) and CAL gain (MD=0.60, CI: 0.11-1.10, p=0.02) for SRP+aPDT versus SRP alone. Meta-analysis of studies with smokers failed to produce a significant additional effect in PD (MD=0.32, CI: -0.30 to 0.94, p=0.31) and CAL (MD=0.42, CI: -0.26 to 1.09, p=0.23) when SRP was associated with aPDT. However, significant enhancements in PD reduction (MD=1.23, CI: 0.74-1.72, p<0.001) and CAL gain (MD=0.96, CI: 0.31-1.62, p=0.004) were observed for studies excluding smokers.

CONCLUSION: Pooled evidence indicates an additional clinical improvement in the maintenance of residual pockets in favor of SRP+aPDT compared with SRP alone. Subgroup analysis demonstrates an adverse impact of smoking on clinical effect of the combined therapy. Substantial heterogeneity and the paucity of included studies undermine the statistical power of this meta-analysis. Future well-designed and large-scale clinical trials evaluating the adjunctive efficacy of aPDT in periodontal maintenance phase are critically needed.

Antimicrobial photodynamic therapy adjuvant to non-surgical periodontal therapy in patients with diabetes mellitus: A meta-analysis. [Review]

METHOD: Bibliographic databases of MEDLINE and Cochrane Library were thoroughly searched up to July 2016 for eligible randomized controlled trials (RCTs). Mean differences (MD) and the corresponding 95% confidence intervals (CI) were synthesized for probing depth (PD) reduction and clinical attachment level (CAL) gain. The I² test and Q statistics were employed to assess inter-study heterogeneity. Subgroup analysis was performed based on the enrollment of smokers.

RESULT: Four RCTs fulfilling the eligibility criteria were included. Pooled estimates demonstrated statistically significant improvements in both PD reduction (MD=0.69, CI: 0.11-1.28, p=0.02) and CAL gain (MD=0.60, CI: 0.11-1.10, p=0.02) for SRP+aPDT versus SRP alone. Meta-analysis of studies with smokers failed to produce a significant additional effect in PD (MD=0.32, CI: -0.30 to 0.94, p=0.31) and CAL (MD=0.42, CI: -0.26 to 1.09, p=0.23) when SRP was associated with aPDT. However, significant enhancements in PD reduction (MD=1.23, CI: 0.74-1.72, p<0.001) and CAL gain (MD=0.96, CI: 0.31-1.62, p=0.004) were observed for studies excluding smokers.

CONCLUSION: Pooled evidence indicates an additional clinical improvement in the maintenance of residual pockets in favor of SRP+aPDT compared with SRP alone. Subgroup analysis demonstrates an adverse impact of smoking on clinical effect of the combined therapy. Substantial heterogeneity and the paucity of included studies undermine the statistical power of this meta-analysis. Future well-designed and large-scale clinical trials evaluating the adjunctive efficacy of aPDT in periodontal maintenance phase are critically needed.
BACKGROUND: To determine whether treatment with antimicrobial photodynamic therapy (aPDT) as an adjunct to scaling and
root planing (SRP) improves periodontal clinical and glycemic outcomes in chronic periodontitis patients (CP) with type 2 diabetes
mellitus (DM).

METHODS: Databases (MEDLINE via PubMed; EMBASE; Cochrane Central Register of Controlled Trials and Cochrane Oral
Health Group Trials Register databases) were searched up to and including October 2016. The addressed PICO question was:
"What are the effects of aPDT as an adjunct to SRP in terms of periodontal and glycemic outcomes as compared to SRP alone in
individuals with DM?"

RESULTS: Four randomized clinical trials were included in the present review. All studies reporting clinical periodontal
and metabolic parameters, showed that aPDT was effective in the treatment of CP in DM subjects at follow up. Considering the effects
of aPDT as an adjunct as compared to SRP alone on clinical signs of CP in DM subjects, no difference could be observed for all
evaluated parameters (PD: \(Z=\) -0.61, \(P=0.54\); CAL: \(Z=0.27, P=0.78\); HbA1c: \(Z=0.138, P=0.89\)) CONCLUSION: It remains
debatable whether aPDT is effective as an adjunct to SRP than SRP alone in patients having CP with DM, given that the scientific
evidence is weak. In terms of periodontal parameters and glycemic levels, aPDT does not provide additional benefit in the
treatment of CP in DM patients. However, further randomized clinical trials with standard laser parameters and long follow up
periods are warranted to study periodontal and glycemic outcomes in this regard.

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Azithromycin as an adjunct to non-surgical periodontal therapy: a systematic review. [Review]
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Abstract
The aim of this study was to investigate the current published work relating to the clinical benefits of the use of systemic
azithromycin as an adjunct to non-surgical periodontal therapy. A published work search of PubMed, EMBASE and Cochrane
Register of Controlled Trials up to 27 April 2016 was undertaken. The large degree of heterogeneity in the types of studies,
treatment protocols, test subjects, sample size and exclusion criteria indicated that the use of narrative synthesis of all relevant
studies was a valid method of review. Of the 194 eligible studies, 15 were found to be of relevance. The majority of studies
demonstrated an additional clinical benefit when azithromycin is used as an adjunct to non-surgical periodontal therapy,
particularly in deeper pockets (\(>=6\) mm). In conclusion, the current body of research on the adjunctive use of systemic
azithromycin in non-surgical periodontal therapy suggests there is a clinical benefit and that this benefit is greatest in deeper initial
pockets (\(>=6\) mm). The findings also suggest that future studies need to be more careful in subject selection to identify susceptible
patients or at risk sites, both the immunoregulatory effects and antibiotic resistance of azithromycin needs to be reported, and that
study populations need to be more homogeneous.

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