Meta-analysis of the association between serum and gingival crevicular fluid matrix metalloproteinase-9 and periodontitis.

BACKGROUND: The authors of this meta-analysis evaluated whether there is a difference in the levels of serum and gingival crevicular fluid matrix metalloproteinase-9 (MMP-9) between patients with periodontitis and periodontally healthy control participants.

TYPES OF STUDIES REVIEWED: The authors searched PubMed, Embase, the Cochrane Library, and the China Biology Medicine disk databases for eligible studies in which the investigators reported the relationships between MMP-9 levels in serum and GCF and periodontitis. The authors pooled the standardized mean differences (SMDs) and 95% confidence intervals (CIs) from each study to evaluate the difference in the serum and GCF MMP-9 levels between patients with periodontitis and periodontally healthy control participants.

RESULTS: Results of a meta-analysis of 6 case-control studies including a total of 923 healthy control participants and 557 patients with periodontitis indicated that serum MMP-9 levels were significantly higher in patients with periodontitis than in periodontally healthy control participants (SMD, 1.60; 95% CI, 0.17 to 3.03; P < .05). Results of a separate meta-analysis of 6 case-control studies including a total of 153 healthy control participants and 189 patients with periodontitis indicated that GCF MMP-9 levels were significantly higher in patients with periodontitis than in periodontally healthy control participants (SMD, 1.96; 95% CI, 0.76 to 3.16; P < .01).

CONCLUSIONS AND PRACTICAL IMPLICATIONS: The results of the meta-analysis revealed statistically significant differences in the MMP-9 levels in serum and GCF between patients with periodontitis and periodontally healthy control participants. These results cannot be used to confirm causality because the included studies were all case-control studies in which the investigators reported associations. Moreover, readers should view the results with caution because of the considerable heterogeneity among the studies included in the meta-analysis.

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Interleukin-10 polymorphisms (rs1800871, rs1800872 and rs1800896) and periodontitis risk: A meta-analysis.

**OBJECTIVE:** The objective of this meta-analysis was to assess the association between three interleukin-10 (IL-10) promoter single nucleotide polymorphisms (rs1800871, rs1800872, and rs1800896) and periodontitis risk.

**METHODS:** A systematic search was conducted in PubMed, Embase, and China National Knowledge Infrastructure databases and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed.

**RESULTS:** Twenty-six studies met the inclusion criteria. The pooled analysis showed that rs1800871 was associated with an increased periodontitis risk under dominant model (CT + TT vs. CC: p = 0.004, OR = 1.79, 95% CI: 1.21-2.65) in Latin American populations but not in Asian (CT + TT vs. CC: p = 0.229, OR = 0.81, 95% CI: 0.58-1.14) and Caucasian (CT + TT vs. CC: p = 0.910, OR = 1.02, 95% CI: 0.75-1.39) populations. Similarly, rs1800872 conferred an increased risk of periodontitis only in Latin American populations (CA + AA vs. CC: p = 0.012, OR = 2.32, 95% CI: 1.20-4.47; A allele vs. C allele: p = 0.001, OR = 1.61, 95% CI: 1.02-2.41). No significant association was observed between rs1800896 and periodontitis risk. Subgrouping data according to periodontitis type revealed that rs1800872 was associated with both chronic periodontitis (A allele vs. C allele: p = 0.011, OR = 1.72, 95% CI: 1.13-2.62) and aggressive periodontitis (A allele vs. C allele: p = 0.038, OR = 1.32, 95% CI: 1.02-1.72).

**CONCLUSION:** The studies reviewed support that the IL-10 rs1800871 and rs1800872 polymorphisms may represent a potential genetic biomarker for periodontitis risk in Latin American populations.

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BACKGROUND/AIMS: The best treatment for an avulsed tooth is immediate replantation. If this is not possible, a proper transport medium is required for the maintenance of viability of the periodontal ligament cells (PDL). The aim was to systematically review the efficacy of different storage media used for the survival of PDL cells of avulsed teeth in the in vitro setting.

METHODS: The search strategy was based on the MeSH keywords in PubMed/MEDLINE: "Transport media for avulsed teeth," "Storage media for avulsed teeth," "Knocked out teeth," "Tooth avulsion," "Biological transport of avulsed tooth," "Cell survival of avulsed tooth," "Cell viability of avulsed tooth," "Tooth replantation," and "Periodontal ligament in avulsed teeth." The "AND" and "OR" Boolean operators were applied to combine keywords. Each study was evaluated for eight criteria, including use of human PDL, in vitro cell culture models, the number of passages, types of storage media, percentages of surviving PDL cells, pH and osmolality of storage media, and the type of test used to assess PDL viability.

RESULTS: In 15 selected studies, nine storage media (HBSS, tap water, DMEM, milk, saliva, 10% and 20% propolis, Gatorade, and Viaspan) were analyzed at six time points. For storage up to 2 hours, HBSS, DMEM, milk, 10% propolis, 20% propolis, and Viaspan conserved more than 80% of PDL viability. For storage at 24 hours, Viaspan showed best cell survival at 88.4%, followed by DMEM (70.9%) and 10% propolis (68.3%). Milk and HBSS showed similar PDL survival at 24 hours (57.2% and 57.3%, respectively).

CONCLUSIONS: Milk remains the most convenient, cheapest, and readily available solution in most situations while also being capable of keeping PDL cells alive. Further studies are required to evaluate the efficacy of more commonly found storage media besides milk.

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Title: Periodontal treatment on patients with cardiovascular disease: Systematic review and meta-analysis.

BACKGROUND: Atherosclerotic cardiovascular disease is the main cause of mortality in developed countries. It is a chronic and systemic inflammatory disease with a multifactorial etiology. Periodontal disease is one of the many factors that contribute to its development.

OBJECTIVE: To analyze the effects of periodontal treatment on cardiovascular risk parameters in patients with atherosclerotic cardiovascular disease.

METHODS: A systematic research was conducted in the Pubmed/Medline databases for clinical trials published up to and including the year 2017.

RESULTS: Ten articles were included for analysis. Periodontal treatment reduced C-reactive protein levels (77.8% of clinical trials), tumor necrosis factor-alpha (66.7%), interleukin-6 (100%) and leukocytes (50%). Fibrinogen levels also improved considerably (66.7%). Effects on lipid parameters were more limited, whereby only oxidized low density lipoprotein and very low density lipoprotein cholesterol decreased significantly. Meta-analysis showed a statistically significant decreased in C-reactive protein and leukocytes values when patients were submitted to non-surgical periodontal treatment in contrast to receiving no treatment at all (mean difference 1.199 mg/L, 95% confidence interval: 1.100-1.299, p<0.001; and mean difference 0.79 g/L, 95% confidence interval: 0.717-0.879, p<0.001, respectively).

Title: Effect of adjuvant use of metformin on periodontal treatment: a systematic review and meta-analysis.
OBJECTIVE: The aim of the study was to perform a systematic review of the literature regarding the adjuvant effects of metformin on the results of mechanical periodontal treatment.

METHODS: First, a search on the PubMed, EMBASE, and Scopus databases was performed up to March 2018. Randomized clinical trials with at least 3 months of follow-up and using metformin associated with mechanical periodontal treatment were included in the review. As comparison group, mechanical or periodontal therapy alone or in combination with placebo. The studies should involve adults with at least 30 years of age diagnosed with chronic periodontitis. For the evaluation of the risk of bias of the articles, the Cochrane Collaboration tool was used.

RESULTS: Studies (1912) were retrieved and 4 were included in the review. The articles are all from the same research center. The majority of included studies presented low risk of bias. A linear meta-analysis was conducted for probing depth and clinical attachment loss outcomes. The results showed a weighted mean difference of 2.12 mm (95% CI 1.83-2.42) and 2.29 mm (95% CI 1.72-2.86) for probing depth and clinical attachment level, respectively, favoring the group exposed to 1% adjunct metformin.

CONCLUSION: The adjuvant use of metformin may promote an additional benefit to the results of mechanical periodontal therapy.

CLINICAL SIGNIFICANCE: The metformin as an adjuvant on periodontal treatment shows potential to reduce needs of additional interventions and also reduces the inflammatory burden in patients.
Evidence was found regarding chronic periodontitis. CI = 0.41, 0.01; CC + GC vs. GG: OR = 0.57, 95% CI = 0.37. In addition, the G/C variation was likely to be protective against moderate (allele C vs. allele G: OR = 0.61, 95% CI = 0.43). Syntheses were performed using Stata 9.0.

RESULTS: Six cross-sectional studies were included, with 258 participants with chronic periodontitis and 72 with aggressive periodontitis, in a total of 573 participants. Overall results showed that aggressive periodontitis patients have, on average, 53% higher salivary cortisol levels than healthy controls 1.53 (1.11-2.12). Meta-regression exploring the relationship among salivary cortisol levels and periodontal measures, i.e., periodontitis severity, showed a global neutral effect, although this result requires future confirmation due to the low power of the model.

CONCLUSION: Observational studies results suggest that subjects with aggressive periodontitis have higher salivary cortisol levels than healthy ones or patients with chronic periodontitis. Such salivary cortisol response difference may have a negative impact on the periodontium, contributing to worse the burden of aggressive periodontitis disease. In the future, wide and well-designed longitudinal studies should be carried out in order to extensively confirm this possible effect, considering the complex nature of periodontitis and its many confounders factors that may contribute to this outcome.

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Abstract

OBJECTIVE: This meta-analysis aims to systematically assess whether periodontitis has a meaningful effect on salivary cortisol, reflecting changes on free blood cortisol levels.

RESULTS: There were inverse associations of IL6-174 G/C polymorphism with both general periodontitis and overall periodontitis. In CC vs. GG inheritance model, whose effect was the most profound, the genetic polymorphism reduced the risks of general and overall periodontitis by 60% (95% CI = 0.25-0.65, P < 0.01) and 31% (95% CI = 0.38-0.97, P = 0.04) respectively. In addition, the G/C variation was likely to be protective against moderate (allele C vs. allele G: OR = 0.61, 95% CI = 0.43-0.87, P = 0.01; CC + GC vs. GG: OR = 0.57, 95% CI = 0.37-0.89, P = 0.01) and severe periodontitis (allele C vs. allele G: OR = 0.58, 95% CI = 0.41-0.84, P < 0.01; CC vs. GG: OR = 0.33, 95% CI = 0.13-0.82, P = 0.02) exclusively in Brazilian people. No reliable evidence was found regarding chronic periodontitis.
CONCLUSION: This meta-analysis suggests that IL6 -174 G/C polymorphism may be negatively associated with risk of periodontitis.

Differences in the subgingival microbial population of chronic periodontitis in subjects with and without type 2 diabetes mellitus-a systematic review. [Review]

OBJECTIVES: The purpose of this systematic review was to evaluate the available evidence in the literature in regard to the subgingival microbial population of chronic periodontitis in subjects with type 2 diabetes mellitus (T2DM+PD) compared to non-diabetic subjects (NDM+PD).

MATERIALS AND METHODS: A literature search was conducted at Ovid MEDLINE and EMBASE database from 1980 to 2016, supplemented by hand searching as needed. Studies presenting with at least one of the primary outcomes (presence of any subgingival microorganisms, proportion and/or the amount of any subgingival plaque bacteria in T2DM+PD versus NDM+PD) were included. Screening, data extraction and quality assessment were conducted independently and in duplicate.

RESULTS: From 611 citations, 19 full-text papers were screened and 11 articles were included for critical appraisal by both reviewers. Some evidence of a difference in the microbial profile between chronic PD subjects with and without T2DM was identified. The strength of evidence is strongest in Tannerella forsythia (T. forsythia) which was reported to be less frequent in the diabetic (T2DM+PD) group in five of the studies, followed by a weaker strength of evidence for other periodontal pathogens such as Porphyromonas gingivalis (P. gingivalis) and Aggregatibacter actinomycetemcomitans (A. actinomycetemcomitans), which were also found less frequent in the diabetic (T2DM+PD) group.

CONCLUSION: Only few studies have compared T2DM+PD with NDM+PD. It is therefore strongly recommended that further studies which include four distinct groups of participants (NDM+PD, T2DM+PD, NDM+NPD, T2DM+NPD) instead of using intra-subject comparisons between healthy and diseased sites of the same subjects.

CLINICAL RELEVANCE: Differences in bacterial populations of T2DM+PD in comparison to NDM+PD subjects may indicate the need of different protocols for the treatment of the diabetic patients with periodontal disease.

Specialized pro-resolving lipid mediators in experimental periodontitis: A systematic review. [Review]

OBJECTIVES: The purpose of this systematic review was to evaluate the available evidence in the literature in regard to the subgingival microbial population of chronic periodontitis in subjects with type 2 diabetes mellitus (T2DM+PD) compared to non-diabetic subjects (NDM+PD).

MATERIALS AND METHODS: A literature search was conducted at Ovid MEDLINE and EMBASE database from 1980 to 2016, supplemented by hand searching as needed. Studies presenting with at least one of the primary outcomes (presence of any subgingival microorganisms, proportion and/or the amount of any subgingival plaque bacteria in T2DM+PD versus NDM+PD) were included. Screening, data extraction and quality assessment were conducted independently and in duplicate.

RESULTS: From 611 citations, 19 full-text papers were screened and 11 articles were included for critical appraisal by both reviewers. Some evidence of a difference in the microbial profile between chronic PD subjects with and without T2DM was identified. The strength of evidence is strongest in Tannerella forsythia (T. forsythia) which was reported to be less frequent in the diabetic (T2DM+PD) group in five of the studies, followed by a weaker strength of evidence for other periodontal pathogens such as Porphyromonas gingivalis (P. gingivalis) and Aggregatibacter actinomycetemcomitans (A. actinomycetemcomitans), which were also found less frequent in the diabetic (T2DM+PD) group.

CONCLUSION: Only few studies have compared T2DM+PD with NDM+PD. It is therefore strongly recommended that further studies which include four distinct groups of participants (NDM+PD, T2DM+PD, NDM+NPD, T2DM+NPD) instead of using intra-subject comparisons between healthy and diseased sites of the same subjects.

CLINICAL RELEVANCE: Differences in bacterial populations of T2DM+PD in comparison to NDM+PD subjects may indicate the need of different protocols for the treatment of the diabetic patients with periodontal disease.
The purpose of the meta-analysis was to investigate the potential association of interleukin-10 (IL-10) polymorphisms with susceptibility to chronic periodontitis (CP). A total of 33 studies involving 3487 cases and 4356 controls were identified through a search of multiple electronic databases (last search was updated on 19 July 2018). Three single nucleotide polymorphisms (SNPs) were included in the meta-analysis: -1082A>G(rs1800896), -819C>T(rs1800871), and -592C>A(rs1800872). Odds ratios (ORs) and their 95% confidence intervals (CIs) using allele, dominant, and recessive genetic models were computed to assess the strength of the association. The -1082A>G(rs1800896) polymorphism was found to be associated with decreased CP risk in both Caucasians and Latinos under the allele and dominant models. The -819C>T(rs1800871) and -592C>A(rs1800872) polymorphisms were both associated with increased CP risk in Latinos under the allele and dominant models. In Asians, no associations were observed for any of the polymorphisms under all comparison models. The present meta-analysis suggests that the -1082A>G(rs1800896) polymorphism might be a protective factor for CP in both Caucasians and Latinos, but the -819C>T(rs1800871) and -592C>A(rs1800872) polymorphisms might contribute to CP pathogenesis in Latinos.
Lasers in non-surgical periodontal treatment - a review.

**Source**

**Authors**
Sumra N; Kulshrestha R; Umale V; Chandurkar K.

**Institution**
Sumra, Nida; Kulshrestha, Rohit; Umale, Vinay; Chandurkar, Kshama.

**Abstract**
AIM: Aim of this review was to present a comprehensive outline of the use of hard tissue lasers in Periodontics with respect to non-surgical periodontal treatment.

MATERIALS AND METHOD: Electronic databases of PubMed and Cochrane Library were searched from 1992 to 2018. 18 clinical studies were evaluated after the inclusion, exclusion criteria.

RESULTS: It was deduced that Er:YAG laser is a feasible option for non-surgical periodontal therapy if proper parameters are followed i.e. the energy in the range of 140-160 mJ and frequency of 10 Hz. None of the studies favoured the use of Nd:YAG and CO<sub>2</sub> laser because of their prospective adverse effects.

CONCLUSION: It can be concluded that Er:YAG laser application in non-surgical periodontal therapy is valuable. In combination with mechanical debridement, the results are similar or better with significant gains in clinical attachment level as compared to other various lasers. It is an excellent alternative to control the proliferation of micro-organisms. Nd:YAG, diode and other low power lasers can be used but with caution since they offer no additional advantage over conventional treatment modalities.

**Authors Full Name**
Sumra, Nida; Kulshrestha, Rohit; Umale, Vinay; Chandurkar, Kshama.

**Institution**
Sumra, Nida. a Consulting Periodontist, Private Practice, Mumbai, India.
Kulshrestha, Rohit. b Consulting Orthodontist, Private Practice, Mumbai, India.
Umale, Vinay. c Senior Lecturer, Department of Orthodontics, Yogita Dental College, Khed, Maharashtra, India.
Chandurkar, Kshama. d Senior Lecturer, Yogita Dental College, Khed, Maharashtra, India.

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Journal Article.

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PURPOSE: The purpose of this study was to assess which regenerative techniques are most effective for preventing periodontal defects after extraction of the third molars, as well as to compare these procedures with spontaneous healing of the socket.

MATERIALS AND METHODS: Five electronic databases were searched to identify randomized clinical trials that fulfilled the eligibility criteria. Two independent reviewers conducted literature screening, article selection, and data extraction. The outcome measures were mean clinical attachment level (CAL) gain, mean probing depth (PD) reduction, mean alveolar bone level (ABL) gain, and adverse events. The influence of several variables of interest on the outcomes of periodontal regenerative therapy was explored via subgroup analyses.

RESULTS: Among 1,205 potentially eligible articles, 21 randomized clinical trials were included. Eighteen trials assessed periodontal regenerative therapy as an alternative to extraction alone. Statistically significant differences were found in CAL gain (1.98 mm; 95% confidence interval [CI], 1.44 to 2.52 mm; P < .001), PD reduction (1.76 mm; 95% CI, 1.20 to 2.31 mm; P < .001), and ABL gain (1.21 mm; 95% CI, 0.21 to 2.21 mm; P = .018). The risk of complications developing at treated sites did not increase with the regenerative procedures (odds ratio, 1.49; 95% CI, 0.71 to 3.14; P = .290). There was no evidence of any regenerative procedure being better than any other. However, osseous grafting techniques were associated with a significantly higher adverse event rate.

CONCLUSIONS: Regenerative periodontal therapy, in comparison with spontaneous healing of the wound, is more effective regarding initial improvement in CAL gain, PD reduction, and ABL gain, without increasing the risk of postoperative complications.

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This study identified novel risk loci of periodontitis, adding to the genetic basis of AgP and CP.
INTRODUCTION: The association between the oral microbiome and periodontal diseases is still unclear. We performed a systematic review and meta-analysis to quantify the association between the specific pathogens and periodontitis.

EVIDENCE ACQUISITION: A computerized medical search was performed using MEDLINE and SCOPUS database between 1950 and May 2017 to identify all case-control studies that evaluated the association between specific pathogens and periodontitis. The pooled Odds Ratio with relative 95% confidence interval (95% CI) was calculated and plotted in the forest plot.

EVIDENCE SYNTHESIS: 11 RCTs involving 2111 patients were included. The retrieved case-control studies evaluated the presence or absence of different targeted pathogens. Among the microorganisms evaluated Porphyromonas gengivalis [OR (95% CI) 2.93(0.98,8.87); P= 0.0001] and Streptococcus mutans [OR (95% CI) 1.77 (0.89-3.54); P=0.03] were found to be risk factors for the development of periodontitis, while Aggregatibacter actinomycetemcomitans [OR (95% CI) 0.52 (0.33-0.83)] played a protective role for periodontitis.

CONCLUSIONS: It seems that changes in the taxonomic composition of the microbiome rather than single targeted pathogens is the key determinant of periodontitis.
Due to their osteoconductive and osteoinductive abilities, bioglasses (BGs) have attracted attention in tissue engineering, especially for mineralized tissue. The aim of this study is to review the current state of the art on the effects of BGs produced by sol-gel on cells for dental and periodontal regeneration. The study also discusses associated antibacterial properties. The research was performed by considering the Preferred Reporting Items for Systematic Reviews and the Meta-Analyses (PRISMA) statement. The research ranged 5 years’ window time (from January, 01, 2012, to August, 31, 2017) and the relevant studies were identified based on the inclusion/exclusion criteria. A total of 45 articles were selected from 244 initial returns, plus seven further articles coming from other sources were selected for the same purpose. From this systematic study, it is revealed that only 13 of the 52 articles have proved both the ability of BGs to differentiate dental cells at genetic level and their ability of triggering cell-mediated mineralization, but only six of them showed, along with cells, the antibacterial properties of the glasses. This review shows that sol-gel BGs are not toxic, can sustain cell proliferation and differentiation at a genetic level, and can keep the bacterial population under control. Moreover, a standard methodology and an ideal material are suggested. © 2018 Wiley Periodicals, Inc. J. Biomed. Mater. Res. Part B, 2018.
BACKGROUND: Considering the increasing number of elderly people, dementia has gained an important role in today's society. Although the contributing factors for dementia have not been fully understood, chronic periodontitis (CP) seems to have a possible link to dementia.

METHODS: Electronic searches were conducted in MEDLINE, EMBASE, Thesis database, and the Cochrane Library databases. Gray literature and the main journals of both specialties were also reviewed. Only cross-sectional and prospective studies focusing on bleeding on probing, pocket depth, and clinical attachment levels were selected.

RESULTS: After a thorough screening of 651 studies, 10 studies were selected by 2 independent reviewers. Four (n=250) and 3 studies (n=191) were included in the meta-analysis at 6- and 12-month follow-up, respectively. At 6-month follow-up increased periodontal inflammation (P=.03) and periodontal destruction were observed. However, 12 months after baseline, the difference between bariatric patients and control was no longer significant.

CONCLUSION: The present systematic review and meta-analysis suggests that deterioration of periodontal status may be observed in the first 6 months after surgery. Consequently, periodontal screening and management of the patient's request for bariatric surgery should be recommended to avoid further deterioration of periodontal status after bariatric surgery.
AIM: To conduct a systematic review including meta-analysis in order to assess potential differences in clinical periodontal variables between patients with dementia and non-demented individuals.

METHODS: The following focused question was evaluated: is periodontitis associated with dementia? Electronic searches in two databases, MEDLINE and EMBASE, were conducted. Meta-analysis was performed with the collected data in order to find a statistically significant difference in clinical periodontal variables between the group of dementia and the cognitive normal controls.

RESULTS: Forty-two articles remained for full text reading. Finally, seven articles met the inclusion criteria and only five studies provided data suitable for meta-analysis. Periodontal probing depth (PPD), bleeding on probing (BOP), gingival bleeding index (GBI), clinical attachment level (CAL), and plaque index (PI) were included as periodontal variables in the meta-analysis. Each variable revealed a statistically significant difference between the groups. In an attempt to reveal an overall difference between the periodontal variables in dementia patients and non-demented individuals, the chosen variables were transformed into units that resulted in a statistically significant overall difference (p < 0.00001).

CONCLUSION: The current findings indicate that compared to systemically healthy individuals, demented patients show significantly worse clinical periodontal variables. However, further epidemiological studies including a high numbers of participants, the use of exact definitions both for dementia and chronic periodontitis and adjusted for cofounders is warranted.

CLINICAL RELEVANCE: These findings appear to support the putative link between CP and dementia. Consequently, the need for periodontal screening and treatment of elderly demented people should be emphasized.
BACKGROUND: Several epidemiological studies have determined the relationship between diabetes and the incidence and/or prevalence of recently identified comorbid conditions (cancer, periodontal disease, fracture, cognitive impairment, and depression).

METHODS: Electronic searches were performed in PubMed, Scopus and Embase. Search strategy included MeSH and free terms: periodontitis, periodontal diseases, smoking, tobacco use, tobacco, tobacco products, cigarette, pipe and cigar. Only original prospective longitudinal observational and interventional studies that investigated the association between smoking and periodontitis onset or progression were included. Meta-analyses were conducted to summarize the evidence.

RESULTS: 2,743 articles were identified in electronic searches; out of which only six were included in the meta-analysis. Pooled estimates showed that the risk of periodontitis incidence or progression among those who quitted smoking was not significantly different from the risk for never-smokers (RR 0.97; 95% CI 0.87-1.08). Smokers had approximately 80% higher risk of periodontitis than quitters (RR 1.79; 95%CI 1.36-2.36) and never-smokers (RR 1.82; 95%CI 1.43-2.31). Periodontal therapy resulted in up to 0.2 mm (95%CI -0.32;0.08) higher gain in attachment level and extra 0.32 mm (95%CI 0.07;0.52) reduction in pocket depth among quitters over non-quitters after short follow-up (12-24 months).

Conclusions: Few studies on the topic were identified. Smoking cessation reduced the risk for periodontitis onset and progression, and improved the outcomes of nonsurgical periodontal therapy.

Implications: This review provides the first quantitative evidence of the impact of smoking cessation on the risk for periodontitis onset and progression. The findings have demonstrated that the risk for periodontitis becomes comparable to that of never-smokers (RR 0.97; 95% CI 0.87-1.08). Smokers had approximately 80% higher risk of periodontitis than quitters (RR 1.79; 95%CI 1.36-2.36) and never-smokers (RR 1.82; 95%CI 1.43-2.31). Periodontal therapy resulted in up to 0.2 mm (95%CI -0.32;0.08) higher gain in attachment level and extra 0.32 mm (95%CI 0.07;0.52) reduction in pocket depth among quitters over non-quitters after short follow-up (12-24 months).

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These relationships may vary by country or race/ethnicity. We aimed to systematically review studies in this field conducted with the Japanese population because such a review in the Japanese population has never been undertaken.

METHODS: We conducted systematic literature searches in PubMed and Ichushi-Web databases for studies published until December 2016. Studies comparing the incidence and/or prevalence of the comorbidities among the Japanese population were included. The studies were classified as integrated analyses, cohort studies, case-control studies, or cross-sectional studies.

RESULTS: We identified 33 studies (cancer: 17, periodontal disease: 5, fracture: 5, cognitive impairment: 4, and depression: 2). Although several cohort studies and meta-analyses had assessed the development of cancer in diabetes, there was scant epidemiological evidence for the other conditions. Indeed, only one cohort study each had been conducted for periodontal disease, fracture, and cognitive impairment, whereas other evidence was cross-sectional, some of which was induced from baseline characteristic tables of studies designed for other purposes.

CONCLUSION: In Japan, there is insufficient evidence about the relationship between diabetes and the incidence/prevalence of periodontal disease, fracture, cognitive impairment, and depression. By contrast, several cohort studies and integrated analyses have been conducted for the relationship with cancer. Further studies should be undertaken to estimate the contribution of diabetes on the incidence/prevalence of comorbidities that may be specific to the Japanese population.

Abstract
The aim of the present systematic review was to evaluate the efficacy of antimicrobial photodynamic therapy (aPDT) that is used as an adjunctive therapy with scaling and root planing (SRP) in deep periodontal pockets (>=5 mm). The addressed Patients, Intervention, Comparators, Outcomes, and Study design question was: In patients with advanced periodontitis (population), what is the effect of aPDT as adjunct to SRP (intervention) in comparison to SRP alone (comparison) on deep probing depths (outcome)? Electronic and manual literature searches were conducted using the following databases: MEDLINE, Embase, Cochrane Central Register of Controlled Trials, and Cochrane Oral Health Group Trials Register, up to and including February 2018. Six randomized trials were included. All studies used the combined approach aPDT+SRP and SRP in the test and control groups, respectively. The follow-up period ranged from 12 to 48 weeks. Wavelengths, power density, and duration of irradiation used were 670 nm, 500 mW cm<sup>-2</sup>, and 60 seconds, respectively. All studies showed significant reduction of probing depth (PD) >=5 mm with aPDT at follow up. Considering the effects of adjunctive aPDT compared to SRP, only two studies showed additional benefit of adjunctive aPDT in reducing PD >=5 mm compared to SRP alone at follow up. The overall mean difference for PD reduction (weighted mean difference = 0.31, 95% confidence interval [CI] = -0.03 to -0.66, P = .08) was also not significant between the aPDT and SRP groups at follow up. Whether aPDT as an adjunct to SRP is efficacious in the reduction of PD >=5 mm compared to SRP alone in periodontal disease remains debatable, given that the available scientific evidence is weak.

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Abstract
Locally delivered metformin as adjunct to scaling and root planing in the treatment of periodontal defects: A systematic review and meta-analysis. [Review]

Source
This study aimed to evaluate the efficacy of metformin as an adjunct to scaling and root planing (SRP) in the treatment of chronic periodontitis. Electronic searches were conducted in databases (MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials and Cochrane Oral Health Group Trials Register databases) up to August 2017. Randomized clinical trials with data in comparison between adjunctively delivered metformin use to SRP and placebo in each group and a follow-up period of at least 6 months, were included. Primary outcomes included clinical attachment level, while secondary outcomes were bone defect (BD) fill and reduction in probing depth. The weighted mean differences (WMD) of outcomes and 95% confidence intervals (CI) for each variable were calculated using the random effects model. Five clinical studies were included in the qualitative synthesis and 3 studies were included for meta-analysis. All the included studies showed significant BD fill, probing depth reduction and clinical attachment level gain with adjunctive locally delivered metformin compared to SRP alone. Considering the effects of adjunctive metformin as compared to SRP, a high degree of heterogeneity for BD fill (Q value = 7.03, P = .02, I² = 71.55%) was noticed among both the groups. Meta-analysis showed a statistically significant clinical attachment level gain (WMD = -2.83, 95% CI = -3.32 to -2.34, P < .001), BD fill (WMD = -2.96, 95% CI = -3.99 to -1.93, P < .001) and probing depth reduction (WMD = -3.11, 95% CI = -3.63 to -2.59, P < .001) for SRP + metformin treatment vs SRP. Adjunctive use of metformin delivery in periodontal treatment appears to be effective in BD fill, reducing probing depth and gain in clinical attachment level. Further multicentered randomized clinical trials are warranted in future to prove additional benefits of metformin as an adjunct to SRP in the treatment of chronic periodontitis.
Periodontal and chronic kidney disease association: a systematic review and meta-analysis.

AIM: Chronic kidney disease (CKD) and kidney failure is increasing globally and evidence from observational studies suggest periodontal disease may contribute to kidney functional decline.

METHODS: Electronic searches of the PubMed, EMBASE, Web of Science, Scopus and Cochrane Library databases were conducted for the purposes of conducting a systematic review. Hand searching of reference lists was also performed. Meta-analysis of observational studies involving periodontal disease and chronic kidney disease in adults was performed.

RESULTS: A total of 17 studies were selected from an initial 4,055 abstracts. Pooled estimates indicated the odds of having CKD were 60% higher among patients with periodontitis: pooled OR 1.60 (95% CI 1.44 - 1.79, I<sup>2</sup> 35.2%, P=0.11) compared to those without. Conversely, a similar magnitude but non-significant higher odds of having periodontal disease was found among people with CKD 1.69 (95% CI: 0.84, 3.40, I<sup>2</sup> =89.8%, P<0.00) versus non-CKD. Meta-regression revealed study quality based on the Newcastle-Ottawa Scale and statistical adjustment for potential confounders explained almost 35% of the heterogeneity in the studies investigating the association between CKD and periodontitis.

CONCLUSIONS: Moderate evidence for a positive association between periodontitis and CKD exists. Evidence for the opposite direction is extremely weak based on significant heterogeneity between studies.
Institution
Wong, Hey Chiann. School of Dentistry, International Medical University, Kuala Lumpur, Malaysia.
Ooi, Yuxuan. School of Dentistry, International Medical University, Kuala Lumpur, Malaysia.
Pulikkotil, Shaji Jacob. School of Dentistry, International Medical University, Kuala Lumpur, Malaysia.
Naing, Cho. Institute for Research, Development and Innovation (IRDI). International Medical University, 5700, Kuala Lumpur, Malaysia. cho3699@gmail.com.
Naing, Cho. Division of Tropical Health and Medicine, James Cook University, Townsville, Australia. cho3699@gmail.com.

Abstract
BACKGROUND: Periodontitis is a major oral health problem and it is considered as one of the reasons for tooth loss in developing and developed nations. The objective of the current review was to investigate the association between IL10 polymorphisms -1082 A > G (rs1800896), -819 C > T (rs1800871), -592 A > C (rs1800872) and the risk of either chronic periodontitis or aggressive periodontitis.

METHODS: This is a meta-analysis study, following the preferred reporting items for systematic reviews and meta-analyses (PRISMA). Relevant studies were searched in the health related electronic databases. Methodological quality of the included studies were assessed using the Newcastle-Ottawa Scale. For individual studies, odds ratio (OR) and its 95% confidence interval (CI) were calculated to assess the strength of association between IL10 polymorphisms (-1082 A > G, -819 C > T, -592 A > C) and the risk of periodontitis. For pooling of the estimates across studies included, the summary OR and its 95% CIs were calculated with random-effects model. The pooled estimates were done under four genetic models such as the allelic contrast model, the recessive model, the dominant model and the additive model. Trial sequential analysis (TSA) was done for estimation of the required information size for this meta-analysis study.

RESULTS: Sixteen studies were identified for this review. The included studies were assessed to be of moderate to good methodological quality. A significant association between polymorphism of IL10-1082 A > G polymorphism and the risk of chronic periodontitis in the non-Asian populations was observed only in the recessive model (OR, 1.42; 95% CI:1.11, 1.8, I²=sup=2<0<sup>=43%). The significant associations between -592 A > C polymorphism and the risk of aggressive periodontitis in the non-Asian populations were observed in particular genetic models such as allele contrast (OR, 4.34; 95% CI:1.87,10.07, I²=sup=2<0<sup>=65%) and recessive models (OR, 2.1; 95% CI:1.16, 3.82, I²=sup=2<0<sup>=0%). The TSA plot revealed that the required information size for evidence of effect was sufficient to draw a conclusion.

CONCLUSIONS: This meta-analysis suggested that the IL10-1082 A > G polymorphism was associated with chronic periodontitis CP risk in non-Asians. Thus, in order to further establish the associations between IL10 (-1082 C > T, -592 A > C) in Asian populations, future studies should include larger sample sizes with multi-ethnic groups.

Materials and Methods: PubMed, Embase, Web of Science, and WANFAN were searched for studies performed prior to January 31, 2018, to collect data for our research. Meta-analysis was performed using RevMan 5.3 or STATA 14.0.

Results: In total, 18 studies that met our criteria were included. Overall or HWE subgroup analysis of individuals with this polymorphism revealed that in terms of CP susceptibility, there was a significant difference between case groups and control groups in the A allele versus C allele model (OR = 1.38, 95% CI = 1.17-1.64 or OR = 1.38, 95% CI = 1.12-1.70), in the AA versus CC+CA model (OR = 1.49, 95% CI =1.06-2.10 or OR = 1.42, 95% CI = 1.13-1.78), and in the CC versus CA+AA model (OR = 0.69, 95% CI = 0.51-0.92 or OR = 0.68, 95% CI = 0.49-0.93); subgroup analysis based on a nonsmoking population also displayed significance in the A allele versus C allele model (OR = 1.43, 95% CI = 1.15-1.79) and CC versus CA+AA model (OR = 0.62, 95% CI = 0.44-0.87). For this polymorphisms and AgP susceptibility, our analyses revealed a significant association in both the A allele versus C allele model (OR = 1.29, 95% CI = 1.01-1.63) and the AA versus CC+CA model (OR = 1.93, 95% CI = 1.30-2.89).
Conclusions: IL-10-592 (-590, -597) A allele and the associated AA genotype may be risk factors for the onset of CP or AgP, particularly for the AA genotype and the increased risk of AgP in Caucasian or nonsmoking populations. Conversely, the CC genotype may act as a protective factor against the onset of CP.

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Clinical Effectiveness of Er: YAG Lasers Adjunct to Scaling and Root Planing in Non-Surgical Treatment of Chronic Periodontitis: A Meta-Analysis of Randomized Controlled Trials.
Source
Medical Science Monitor. 24:7090-7099, 2018 Oct 05.
VI 1
Status
In-Process
Authors
Ma L; Zhang X; Ma Z; Shi H; Zhang Y; Wu M; Cui W.
Institution
Ma, Lei. College and Hospital of Stomatology, Hebei Medical University, Shijiazhuang, Hebei, China (mainland).
Zhang, Xiaolin. Department of Epidemiology and Statistics, School of Public Health, Hebei Medical University; Hebei Province Center for Disease Prevention and Control, Shijiazhuang, Hebei, China (mainland).
Ma, Zhe. College and Hospital of Stomatology, Hebei Medical University, Shijiazhuang, Hebei, China (mainland).
Shi, Hong. College and Hospital of Stomatology, Hebei Medical University, Shijiazhuang, Hebei, China (mainland).
Zhang, Yanning. College and Hospital of Stomatology, Hebei Medical University, Shijiazhuang, Hebei, China (mainland).
Wu, Mingxuan. College and Hospital of Stomatology, Hebei Medical University, Shijiazhuang, Hebei, China (mainland).
Cui, Wei. Department of Stomatology, No. 2 Hospital of Baoding, Baoding, Hebei, China (mainland).
Abstract
BACKGROUND Er: YAG lasers (ERLs) show suitable characteristics for scaling and root planing, but previous studies have drawn conflicting conclusions. This meta-analysis aimed to systematically appraise the available evidence concerning the effectiveness of ERLs as an adjunct to scaling and root planing (SRP) for non-surgical periodontal treatment. MATERIAL AND METHODS Randomized controlled trials (RCTs) comparing ERLs+SRP with SRP alone for the treatment of chronic periodontitis were searched in 9 electronic biomedical databases up to January 2018. The weighted mean differences (WMDs) and 95% confidence intervals (CIs) were counted for probing depth (PD) reduction, clinical attachment level (CAL) gain, and visual analog scale (VAS) score. Heterogeneity was evaluated with the I2 statistic for interstudy comparisons and the chi2-based Q statistic for intra-study comparisons. Sensitivity analysis was conducted by switching to a random or fixed effect model based on the heterogeneity. Publication bias was measured by Begg's test. RESULTS Ten related RCTs met the inclusion criteria. There were statistically significant differences in the assessed clinical parameters at the three-month follow-up: PD reduction (WMD=0.32, 95% CI range from 0.14 to 0.51, p<0.001; I2=69.7%); CAL gain (WMD=0.31, 95% CI range from 0.22 to 0.40, p<0.001; I2=28.8%); and VAS scores (WMD=-1.38, 95% CI range from -2.45 to -0.31, p<0.001; I2=44%). There were no statistically significant differences at the six- and twelve-month follow-ups. Sensitivity analysis revealed that the results were consistent. No evidence of publication bias was detected. CONCLUSIONS This systematic analysis demonstrated that ERLs+SRP provides additional short-term effectiveness and that patients experience less pain compared to SRP. There were no significant differences at the medium-term and long-term follow-ups. Long-term well-designed RCTs are required.
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The effect of periodontal therapy on oxidative stress biomarkers: A systematic review. [Review]
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Authors
da Silva JC; Muniz FWMG; Oballe HJR; Andrades M; Rosing CK; Cavagni J.
Author NameID
Muniz, Francisco Wilker Mustafa Gomes; ORCID: http://orcid.org/0000-0002-3945-1752
Authors Full Name
da Silva, Julia Christ; Muniz, Francisco Wilker Mustafa Gomes; Oballe, Harry Juan Rivera; Andrades, Michael; Rosing, Cassiano Kuchenbecker; Cavagni, Juliano.
Institution
BDA LIBRARY MEDLINE SEARCH

RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

Muniz, Francisco Wilker Mustafa Gomes. Department of Periodontology, Federal University Pelotas, Pelotas, Brazil.
Oballe, Harry Juan Rivera. Department of Periodontology, Federal University Rio Grande do Sul, Porto Alegre, Brazil.
Andrades, Michael. Experimental Research Center, Hospital de Clinicas de Porto Alegre, Porto Alegre, Brazil.
Rosing, Cassiano Kuchenbecker. Department of Periodontology, Federal University Rio Grande do Sul, Porto Alegre, Brazil.
Calvagni, Juliano. Department of Periodontology, Federal University Rio Grande do Sul, Porto Alegre, Brazil.

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Abstract

AIM: To systematically review the literature about the effect of periodontal treatment on oxidative stress (OxS) biomarkers.

MATERIAL AND METHODS: Three databases (PubMed, EMBASE, and Scopus) were searched up to February 2018. Clinical trials with a follow-up of at least 6 weeks after mechanical periodontal treatment were included. Due to the high heterogeneity among the units and indices of measurements used in the studies, a meta-analysis was not performed.

RESULTS: Overall, 3,199 studies were retrieved, of which 20 were included. Four studies were randomized clinical trials (RCT), and 16 studies were non-RCTs. The most common OxS biomarkers used were 8-hydroxydeoxiguanosine (8-OHdG), total oxidant status (TOS), and total antioxidant status (TAS). After treatment, most of the studies reported a decrease in 8-OHdG concentration in the gingival crevicular fluid (GCF) and saliva. In addition, the salivary concentration of this biomarker was similar to periodontally healthy patients. Periodontal therapy was effective in reducing TOS in GCF, saliva, and serum in most studies. TAS, however, responded inconsistently to the periodontal intervention.

CONCLUSION: Periodontal therapy reduces the levels of OxS biomarkers, even to values similar to those found in periodontally healthy individuals. Additional RCTs are warranted, as the information is mainly based on nonrandomized studies.

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Local drug delivery in periodontitis treatment: A review of contemporary literature. [Review]

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Authors
Szulc M; Zakrzewska A; Zborowski J.

Authors Full Name
Szulc, Malgorzata; Zakrzewska, Aneta; Zborowski, Jacek.

Institution
Szulc, Malgorzata. Department of Periodontology, Wroclaw Medical University, Poland.
Zakrzewska, Aneta. Department of Periodontology, Wroclaw Medical University, Poland.
Zborowski, Jacek. Department of Periodontology, Wroclaw Medical University, Poland.

Abstract
Traditional methods of non-surgical treatment of periodontitis, including mechanical scaling/root planing (SRP), do not guarantee remission of the disease. Local delivery of antimicrobial agents in periodontitis entails antimicrobial therapy placed directly in periodontal pockets. The advantage of this form of treatment is that the concentration of the drug after application significantly exceeds the minimum inhibitory concentration (MIC) and persists for up to several weeks. Therefore, many systems of locally applied devices, using a variety of antibiotics or antiseptics have been developed. There is continuous research aimed at introducing new forms of locally administered drugs, some of which have not proved to be effective, while others are promising. For almost 30 years such systems have been used for treatment as an adjuvant to SRP, and their efficacy has been evaluated. The aim of this article is to systematically review the contemporary literature regarding the currently available chemotherapeutics locally administered in the treatment of periodontitis.

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Title
Behavioural interventions that have the potential to improve self-care in adults with periodontitis: a systematic review.

Source

Status
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BACKGROUND: To review and discuss important topics regarding periodontal treatment pre- and post-radiotherapy for head and neck cancer in human patients; to discuss the references for adequate techniques, motivation interviewing and a client self-care commitment model. The control group in each study was described receiving conventional information. The outcomes of the interventions were classified into three categories: 1) clinical findings 2) self-reported self-care and 3) patient evaluations of the intervention. The behavioural intervention groups seemed to perform slightly better than the control groups when clinical outcome measures such as the presence of plaque or number of periodontal pockets were used. Furthermore, behavioural interventions increased patient reported compliance (e.g. effectiveness of self-care and frequency of interdental cleaning). The different behavioural techniques all seemed to work more effectively than conventional instruction. No behavioural technique could be identified superior to the other.

CONCLUSIONS: The behavioural interventions seem to be beneficial for patient adherence and may therefore improve periodontal treatment success. However, there is a need to further explore the use of different methods in studies with larger sample sizes, longer follow-up times and both behavioural and clinical outcome measures.

METHODS: A systematic electronic search of empirical studies that were published up to June 2017 using the MEDLINE database was performed. The reference lists of all of the included studies and articles from six separate journals were manually searched.

RESULTS: A total of 1806 articles were identified. Six articles fulfilled the inclusion and exclusion criteria. The interventions used in periodontal treatment had theoretical backgrounds of cognitive behavioural approach, self-regulation theory of Leventhal, motivational interviewing and a client self-care commitment model. The control group in each study was described receiving conventional information. The outcomes of the interventions were classified into three categories: 1) clinical findings 2) self-reported self-care and 3) patient evaluations of the intervention. The behavioural intervention groups seemed to perform slightly better than the control groups when clinical outcome measures such as the presence of plaque or number of periodontal pockets were used. Furthermore, behavioural interventions increased patient reported compliance (e.g. effectiveness of self-care and frequency of interdental cleaning). The different behavioural techniques all seemed to work more effectively than conventional instruction. No behavioural technique could be identified superior to the other.

CONCLUSIONS: The behavioural interventions seem to be beneficial for patient adherence and may therefore improve periodontal treatment success. However, there is a need to further explore the use of different methods in studies with larger sample sizes, longer follow-up times and both behavioural and clinical outcome measures.

MATERIAL AND METHODS: Thirty-nine studies including original studies, randomized clinical trials (RCTs) and reviews were searched in online databases MEDLINE (PubMed) and the Cochrane library. No year of publication restriction was applied.

RESULTS: Language was restricted to English, and the following Medical Subject Heading terms were used: radiotherapy, radiation therapy and periodontal treatment. Studies regarding periodontal treatment and tooth extraction that involved clinical management of irradiated patients were selected.

CONCLUSIONS: The treatment of periodontal diseases before radiotherapy is mainly required to avoid future dental extraction and to reduce the development of osteoradionecrosis. Periodontal treatment in irradiated patients mostly includes scaling and root planing, extraction of condemned teeth and topical and systemic antimicrobial therapy. Tooth removal should be planned at least 14 days before the first day of radiation treatment. Particular care and mouthwashes should be taken during and after radiation.
CLINICAL SIGNIFICANCE: The management of irradiated patients represents a challenge for health professionals, including dentists. It is important to establish recommendations for clinicians concerning dental and periodontal management in irradiated patients before, during and after treatment.

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Journal Article.

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2018

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**Title**
Effects of smoking on tooth loss among individuals under periodontal maintenance therapy: a systematic review and meta-analysis.

**Source**
Cadernos de Saude Publica. 34(9):e00024918, 2018 Sep 21.

**Abstract**
Dental mortality has been reported by longitudinal studies on periodontal maintenance therapy (PMT), but the independent effect of smoking on tooth loss (TL), adjusted for important confounding variables, has been poorly evaluated. This systematic review aimed to assess and analyze the isolated effect of smoking TL among individuals undergoing PMT. Electronic, manual, grey literature, and recent articles (from April 2018) were searched, with no restriction regarding language; respective dates of publication were included. Epidemiological clinical studies reporting TL data among smokers undergoing PMT in comparison to nonsmoker control groups were selected. Methodological quality was assessed using the Newcastle-Ottawa Scale. Meta-analysis was performed, as well as I2 heterogeneity and sensitivity tests. Evidence quality was assessed using GRADE (Grading of Recommendations, Assessment, Development and Evaluation). Eleven papers were included in the systematic review: four case-control and seven cohort studies. Ten out of the 11 studies concluded that smoking was an important risk factor for the occurrence of TL. Meta-analysis of four of the cohort studies found that smokers had 3.24 times the chance of occurrence of TL than nonsmokers undergoing PMT (95%CI: 1.33-7.90). Overall, studies' risk of bias was low. The quality of the scientific evidence moderately supports that smokers undergoing PMT have a greater chance of TL than nonsmokers.

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**Title**

**Source**
Cochrane Database of Systematic Reviews. 9:CD010136, 2018 09 27.

**Abstract**
BACKGROUND: Dental pain can have a detrimental effect on quality of life. Symptomatic apical periodontitis and acute apical abscess are common causes of dental pain and arise from an inflamed or necrotic dental pulp, or infection of the pulpless root canal system. Clinical guidelines recommend that the first-line treatment for teeth with these conditions should be removal of the source of inflammation or infection by local, operative measures, and that systemic antibiotics are currently only recommended for situations where there is evidence of spreading infection (cellulitis, lymph node involvement, diffuse swelling) or systemic involvement (fever, malaise). Despite this, there is evidence that dentists frequently prescribe antibiotics in the absence of these signs. There is concern that this could contribute to the development of antibiotic-resistant bacterial colonies within both the individual and the community. This review is an update of the original version that was published in 2014.
OBJECTIVES: To evaluate the effects of systemic antibiotics provided with or without surgical intervention (such as extraction, incision and drainage of a swelling, or endodontic treatment), with or without analgesics, for symptomatic apical periodontitis and acute apical abscess in adults.

SEARCH METHODS: Cochrane Oral Health's Information Specialist searched the following databases: Cochrane Oral Health's Trials Register (to 26 February 2018), the Cochrane Central Register of Controlled Trials (CENTRAL; 2018, Issue 1) in the Cochrane Library (searched 26 February 2018), MEDLINE Ovid (1946 to 26 February 2018), Embase Ovid (1980 to 26 February 2018), and Cinahl EBSCO (1937 to 26 February 2018). The US National Institutes of Health Ongoing Trials Register (ClinicalTrials.gov) and the World Health Organization International Clinical Trials Registry Platform were searched for ongoing trials. A grey literature search was conducted using OpenGrey (to 26 February 2018) and ZETOC Conference Proceedings (1993 to 26 February 2018). No restrictions were placed on the language or date of publication when searching the electronic databases.

SELECTION CRITERIA: Randomised controlled trials of systemic antibiotics in adults with a clinical diagnosis of symptomatic apical periodontitis or acute apical abscess, with or without surgical intervention (considered in this situation to be extraction, incision and drainage or endodontic treatment) and with or without analgesics.

DATA COLLECTION AND ANALYSIS: Two authors screened the results of the searches against inclusion criteria, extracted data and assessed risk of bias independently and in duplicate. We calculated mean differences (MD) (standardised mean difference (SMD) when different scales were reported) and 95% confidence intervals (CI) for continuous data. A fixed-effect model was used in the meta-analysis as there were fewer than four studies. We contacted study authors to obtain missing information.

MAIN RESULTS: We included two trials in this review, with 62 participants included in the analyses. Both trials were conducted in university dental schools in the USA and compared the effects of oral penicillin V potassium (penicillin VK) versus a matched placebo when provided in conjunction with a surgical intervention (total or partial pulpectomy) and analgesics to adults with acute apical abscess or symptomatic necrotic tooth. The patients included in these trials had no signs of spreading infection or systemic involvement (fever, malaise). We assessed one study as having a high risk of bias and the other study as having unclear risk of bias. The primary outcome variables reported in both studies were participant-reported pain and swelling (one trial also reported participant-reported percussion pain). One study reported the number of analgesics taken by participants. One study recorded the incidence of postoperative endodontic flare-ups (people who returned with symptoms that necessitated further treatment). Adverse effects, as reported in one study, were diarrhoea (one participant, placebo group) and fatigue and reduced energy postoperatively (one participant, antibiotic group). Neither study reported quality of life measurements. Objective 1: systemic antibiotics versus placebo with surgical intervention and analgesics for symptomatic apical periodontitis or acute apical abscesses. Two studies provided data for the comparison between systemic antibiotics (penicillin VK) and a matched placebo for adults with acute apical abscess or a symptomatic necrotic tooth when provided in conjunction with a surgical intervention. Participants in one study all underwent a total pulpectomy of the affected tooth, while participants in the other study had their tooth treated by either partial or total pulpectomy. Participants in both trials received oral analgesics. There were no statistically significant differences in participant-reported measures of pain or swelling at any of the time points assessed within the review. The MD for pain (short ordinal numerical scale 0 to 3) was -0.03 (95% CI -0.53 to 0.47) at 24 hours; 0.32 (95% CI -0.22 to 0.86) at 48 hours; and 0.08 (95% CI -0.38 to 0.54) at 72 hours. The SMD for swelling was 0.27 (95% CI -0.23 to 0.78) at 24 hours; 0.04 (95% CI -0.47 to 0.55) at 48 hours; and 0.02 (95% CI -0.49 to 0.52) at 72 hours. The body of evidence was assessed as of very low quality. Objective 2: systemic antibiotics without surgical intervention for adults with symptomatic apical periodontitis or acute apical abscesses. We found no studies that compared the effects of systemic antibiotics with a matched placebo delivered without a surgical intervention for symptomatic apical periodontitis or acute apical abscess in adults.

AUTHORS' CONCLUSIONS: There is very low-quality evidence that is insufficient to determine the effects of systemic antibiotics on adults with symptomatic apical periodontitis or acute apical abscess.

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Relationship between oral microbiota and periodontal disease: a systematic review.
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European Review for Medical & Pharmacological Sciences. 22(18):5775-5788, 2018 Sep.
Volume
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Status
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Authors
Patini R; Staderini E; Lajolo C; Lopetuso L; Mohammed H; Rimondini L; Rocchetti V; Franceschi F; Cordaro M; Gallenzi P.
Authors Full Name
Patini, R; Staderini, E; Lajolo, C; Lopetuso, L; Mohammed, H; Rimondini, L; Rocchetti, V; Franceschi, F; Cordaro, M; Gallenzi, P.
Institution
Patini, R. Institute of Dentistry and Maxillofacial Surgery, Fondazione Policlinico Universitario A. Gemelli IRCCS, Roma, Universita Cattolica del Sacro Cuore. edoardo.staderini@yahoo.it.
Abstract
OBJECTIVE: In recent years metagenomic analysis has become more accessible for the characterization of biological specimens. There has been an important increase of studies using this technique for subgingival human samples. To date, there are no updated systematic reviews on the relationship between oral microbiota and periodontal disease. The aim of the present systematic review was to update data about studies concerning the influences of changes in oral microbiota composition on the periodontal status in human subjects.
MATERIALS AND METHODS: An electronic search was conducted in four databases (MEDLINE, Scopus, CENTRAL and Web of Science) for articles published in English from January 2014 to April 2018. In vitro or animal studies, case reports, case series, retrospective studies, review articles, abstracts and discussions were excluded. Also, studies that evaluated less than 5 microbial species, only viruses or already known periodontal pathogens were excluded. Two independent researches selected the studies and extracted the data. The quality of evidence was assessed as high, moderate or low for each microorganism.

RESULTS: Eight studies and three additional publications recovered from the bibliography search of the selected articles were included in the review. The Bacteria domain was the main detected among the others and it included 53 species. The review confirmed the presence of recognized periodontal pathogens such as the members of the red complex but also identified, with high weight of evidence, the presence of new pathogens.

CONCLUSIONS: The results of this systematic review support high evidence for the association of 3 new species/genera with the etiology of periodontitis. Future investigations on the actual role of these new pathogens in the onset and progression of the disease are needed.
OBJECTIVES: To investigate the effect of bariatric surgery on periodontal status through a systematic review.

METHODS: Electronic search was conducted in PubMed, VHL, Web of Science, Science direct, Scopus, and Cochrane databases through May 2017. Manual search, gray literature, and counter-reference of included articles were also conducted. Eligibility criteria included observational studies that reported periodontal outcomes before and after bariatric surgery.

RESULTS: Search strategy resulted in 1878 articles. Following the selection process, nine studies were included in the qualitative analysis and five in the meta-analysis. Three cross-sectional studies showed risk of bias score ranging from 5 to 6 stars, and Cohort studies scored from 6 to 9 stars out of 9 possible stars on the Newcastle-Ottawa scale. The quantitative analysis showed that clinical attachment level (MD: 0.07; CI95% -0.17 to 0.31), gingival index (MD: -0.28; CI95% -1.68 to 1.11), percentage of bleeding sites (MD: -0.21; CI95% -0.77 to 0.35), and pocket probing depth (MD: 0.48 CI95% -0.14 to 0.31) were not different before and after bariatric surgery. However, the plaque index was lower after than before bariatric surgery (MD: -1.29; CI95% -2.34 to -0.24).

CONCLUSIONS: Plaque index can be improved after bariatric surgery. The present systematic review investigated the association between bariatric surgery and periodontal status from cross-sectional and longitudinal studies. A systematic search strategy was developed until May 2017. The results of this systematic review allowed the conclusion that the plaque index can be improved after bariatric surgery.

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RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

Authors
Maria de Souza G; Willya Douglas de Oliveira D; Santos Lages F; Andrade Fernandes I; Gabriel Moreira Falci S.

Authors Full Name
Maria de Souza, Gliciele; Willya Douglas de Oliveira, Dhelfeson; Santos Lages, Frederico; Andrade Fernandes, Ighor; Gabriel Moreira Falci, Saulo.

Institution
Maria de Souza, Gliciele. Department of Dentistry, Section of Oral and Maxillofacial Surgery, Federal University of Jequitinhonha e Mucuri Valleys, Diamantina, Brazil.
Willya Douglas de Oliveira, Dhelfeson. Department of Dentistry, Section of Oral and Maxillofacial Surgery, Federal University of Jequitinhonha e Mucuri Valleys, Diamantina, Brazil; Department of Periodontology, Federal University of Minas Gerais, Belo Horizonte, Brazil.
Santos Lages, Frederico. Department of Dental Prosthesis, University Center Newton Paiva, Belo Horizonte, Brazil.
Andrade Fernandes, Ighor. Department of Dentistry, Section of Oral and Maxillofacial Surgery, Federal University of Jequitinhonha e Mucuri Valleys, Diamantina, Brazil.

Abstract
BACKGROUND: The effects of bariatric surgery can reflect in the oral cavity and can cause alterations in oral health. This high prevalence of oral alterations in the pre and post-operative periods has been highlighted in different studies.

OBJECTIVES: To investigate the effect of bariatric surgery on periodontal status through a systematic review.

METHODS: Electronic search was conducted in PubMed, VHL, Web of Science, Science direct, Scopus, and Cochrane databases through May 2017. Manual search, gray literature, and counter-reference of included articles were also conducted. Eligibility criteria included observational studies that reported periodontal outcomes before and after bariatric surgery.

RESULTS: Search strategy resulted in 1878 articles. Following the selection process, nine studies were included in the qualitative analysis and five in the meta-analysis. Three cross-sectional studies showed risk of bias score ranging from 5 to 6 stars, and Cohort studies scored from 6 to 9 stars out of 9 possible stars on the Newcastle-Ottawa scale. The quantitative analysis showed that clinical attachment level (MD: 0.07; CI95% -0.17 to 0.31), gingival index (MD: -0.28; CI95% -1.68 to 1.11), percentage of bleeding sites (MD: -0.21; CI95% -0.77 to 0.35), and pocket probing depth (MD: 0.48 CI95% -0.14 to 0.31) were not different before and after bariatric surgery. However, the plaque index was lower after than before bariatric surgery (MD: -1.29; CI95% -2.34 to -0.24).

CONCLUSIONS: Plaque index can be improved after bariatric surgery. The present systematic review investigated the association between bariatric surgery and periodontal status from cross-sectional and longitudinal studies. A systematic search strategy was developed until May 2017. The results of this systematic review allowed the conclusion that the plaque index can be improved after bariatric surgery.
Abstract
External apical root resorption (EARR) induced by orthodontic treatment and chronic periodontitis (CP) are complex phenotypes dependent on the interaction of multiple genetic and non-genetic risk factors. Apart from different environmental triggers, these phenotypes are caused by antagonistic biological mechanisms involving local immunoinflammatory reaction and alveolar bone metabolism, for which IL1 have a prominent role. Whereas EARR benefits from bone remodelling, CP is characterized by osteolytic damaged. Our aim was to verify if these two phenotypes have opposite genetic profiles, considering the most frequently analysed polymorphisms for both diseases. A review of the literature was performed searching for the association of rs1800587 from Interleukin-1 alpha (IL1A) gene and rs1143634 from interleukin-1 beta (IL1B) gene with EARR and CP. The electronic search included MEDLINE/PubMed, EBSCOhost, Cochrane and Web of Science databases. Twenty four articles met the inclusion and exclusion criteria. For IL1B polymorphism, two out of seven studies found a significant statistical association between EARR and CC genotype, whether for CP, there were eight out of fifteen references describing a statistically significant associations with T allele. For IL1A variant, no significant association with EARR was described. In conclusion, literature review suggests that for IL1B SNP rs1143634, EARR and CP have an opposite genetic profile. For IL1A SNP, our hypothesis could not be confirmed.

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Abstract
The aim of this review was to assess the contribution of herpesviruses in the subgingival oral biofilm in the progression of periodontal and peri-implant diseases in systemically healthy individuals. The literature review was customized to summarize the pertinent information for the following reasons: (1) A systematic review regarding the role of herpesviruses in the etiopathogenesis of periodontal disease has recently been published and (2) a limited number of studies have assessed the association of herpesviruses with peri-implant diseases. To date, five observational studies have assessed the presence of herpesviruses in the subgingival oral biofilm of individuals with peri-implant diseases. In these studies, dental implants were in place for up to approximately 8 years. In two studies, human cytomegalovirus (HCMV) was more often isolated from the peri-implant sulci of sites with than without peri-implantitis. In one study, a low prevalence of HCMV compared with Epstein-Barr virus (EBV) was associated with the progression of peri-implantitis. In previous studies, the presence of EBV in the subgingival oral biofilm was associated with the onset of peri-implantitis and peri-implant mucositis, respectively. Major limitations of the studies assessed were the absence of blinding and lack of power analysis for sample size estimation. In conclusion, the presence of herpesviruses in the periodontal and peri-implant subgingival oral biofilm is an indicator of periodontal and peri-implant diseases in systemically healthy individuals; however, further studies with a statistically justified sample-size are needed to understand and refine this association.

Source
VI 1
Status
In-Data-Review
Authors
Mendes V; Dos Santos GO; Moraschini V.
Authors Full Name
Mendes, Vivian; Dos Santos, Gustavo Oliveira; Moraschini, Vittorio.
Institution
Mendes, Vivian. Department of Integrated Clinics, School of Dentistry, Fluminense Federal University, Niteroi, Rio de Janeiro, Brazil.
Dos Santos, Gustavo Oliveira. Department of Integrated Clinics, School of Dentistry, Fluminense Federal University, Niteroi, Rio de Janeiro, Brazil.
Moraschini, Vittorio. Department of Periodontology, School of Dentistry, Fluminense Federal University, Niteroi, Rio de Janeiro, Brazil. Electronic address: vittoriomf@terra.com.br.

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Title
Is there an Association Between Periodontitis and Atherosclerosis in Adults? A Systematic Review.
Source
VI 1
Status
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Authors
Almeida APCPSC; Fagundes NCF; Maia LC; Lima RR.
Authors Full Name
Almeida, Anna P C P S C; Fagundes, Nathalia C F; Maia, Lucianne C; Lima, Rafael R.
Institution
Almeida, Anna P C P S C. Laboratory of Functional and Structural Biology, Institute of Biological Sciences, Federal University of Para, Belem, Brazil.
Fagundes, Nathalia C F. Laboratory of Functional and Structural Biology, Institute of Biological Sciences, Federal University of Para, Belem, Brazil.
Maia, Lucianne C. Department of Pediatric Dentistry and Orthodontics, School of Dentistry, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil.
Lima, Rafael R. Laboratory of Functional and Structural Biology, Institute of Biological Sciences, Federal University of Para, Belem, Brazil.

Abstract
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.
<table>
<thead>
<tr>
<th>Authors Full Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Munz, Matthias</td>
<td>Institute for Cardiogenetics, University of Lubeck, 23562, Lubeck, Germany.</td>
</tr>
<tr>
<td>Richter, Gesa M</td>
<td>University Medicine Berlin, corporate member of Freie Universitat Berlin, Humboldt-Universitat zu Berlin, and Berlin Institute of Health, Institute for Dental and Craniofacial Sciences, Department of Periodontology and Synoptic Dentistry, Berlin, Germany.</td>
</tr>
<tr>
<td>Richter, Gesa M</td>
<td>Department of Periodontology, School of Dentistry, University of North Carolina at Chapel Hill, Chapel Hill, USA.</td>
</tr>
<tr>
<td>Loos, Bruno G</td>
<td>Department of Periodontology and Oral Biochemistry, Academic Centre for Dentistry Amsterdam (ACTA), University of Amsterdam and Vrije Universiteit Amsterdam, Amsterdam, The Netherlands.</td>
</tr>
<tr>
<td>Jepsen, Soren</td>
<td>Department of Periodontology, Operative and Preventive Dentistry, University of Bonn, Bonn, Germany.</td>
</tr>
<tr>
<td>Dietrich, Steven</td>
<td>Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, USA.</td>
</tr>
<tr>
<td>Teumer, Alexander</td>
<td>Institute for Community Medicine, University Medicine Greifswald, Greifswald, Germany.</td>
</tr>
<tr>
<td>Kocher, Thomas</td>
<td>Department of Restorative Dentistry, Periodontology, Endodontology, Preventive Dentistry and Pedodontics, Dental School, University Medicine Greifswald, Greifswald, Germany.</td>
</tr>
<tr>
<td>Kocher, Thomas</td>
<td>Unit of Periodontology, Department of Restorative Dentistry, Periodontology, Endodontology, Preventive Dentistry and Pedodontics, Dental School, University Medicine Greifswald, Greifswald, Germany.</td>
</tr>
<tr>
<td>Bruckmann, Corinna</td>
<td>Department of Conservative Dentistry and Periodontology, Medical University Vienna, School of Dentistry, Vienna, Austria.</td>
</tr>
<tr>
<td>Jockel-Schneider, Yvonne</td>
<td>Department of Periodontology, Clinic of Preventive Dentistry and Periodontology, University Medical Center of the Julius-Maximilians-University, Wurzburg, Germany.</td>
</tr>
<tr>
<td>Graetz, Christian</td>
<td>Department of Conservative Dentistry, Unit of Periodontology, University Medical Center Schleswig-Holstein, Campus Kiel, Germany.</td>
</tr>
<tr>
<td>Munoz, Loreto</td>
<td>Institute for Cardiogenetics, University of Lubeck, 23562, Lubeck, Germany.</td>
</tr>
<tr>
<td>Teumer, Alexander</td>
<td>Institute for Community Medicine, University Medicine Greifswald, Greifswald, Germany.</td>
</tr>
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</tr>
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</tr>
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<td>Institute for Community Medicine, University Medicine Greifswald, Greifswald, Germany.</td>
</tr>
<tr>
<td>Kocher, Thomas</td>
<td>Department of Restorative Dentistry, Periodontology, Endodontology, Preventive Dentistry and Pedodontics, Dental School, University Medicine Greifswald, Greifswald, Germany.</td>
</tr>
<tr>
<td>Bruckmann, Corinna</td>
<td>Department of Conservative Dentistry and Periodontology, Medical University Vienna, School of Dentistry, Vienna, Austria.</td>
</tr>
</tbody>
</table>

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**RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY**

<table>
<thead>
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<th>Unique Identifier</th>
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<td>30209331</td>
<td>Genome-wide association meta-analysis of coronary artery disease and periodontitis reveals a novel shared risk locus.</td>
</tr>
</tbody>
</table>

**Source**

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van der Velde, Nathalie. Department of Internal Medicine section of Geriatrics, Amsterdam Medical Center, Amsterdam, The Netherlands.
Uitterlinden, Andre G. Department of Internal Medicine, Erasmus Medical Center, Rotterdam, The Netherlands.
de Groot, Lisette C P G M. Wageningen University, Division of Human Nutrition, Wageningen, The Netherlands.
Wellmann, Jurgen. Institute of Epidemiology and Social Medicine, University Munster, Munster, Germany.
Berger, Klaus. Institute of Epidemiology and Social Medicine, University Munster, Munster, Germany.
Krone, Bastian. Institute of Medical Informatics, Biometry and Epidemiology, University Clinic Essen, Essen, Germany.
Hoffmann, Per. Institute of Human Genetics, University of Bonn, Bonn, Germany.
Hoffmann, Per. Human Genomics Research Group, Department of Biomedicine, University Hospital of Basel, Basel, Switzerland.
Laudes, Matthias. Department of Medicine 1, University of Kiel, Kiel, Germany.
Lieb, Wolfgang. Institute of Epidemiology, Christian-Albrechts-University, Kiel, Germany.
Franke, Andre. Institute of Epidemiology, Christian-Albrechts-University, Kiel, Germany.
Dommisch, Henrik. Charite - University Medicine Berlin, corporate member of Freie Universitat Berlin, Humboldt-Universitat zu Berlin, and Berlin Institute of Health, Institute for Dental and Craniofacial Sciences, Department of Periodontology and Synoptic Dentistry, Berlin, Germany.
Erdmann, Jeanette. Institute for Cardiogenetics, University of Lubeck, 23562, Lubeck, Germany.
Erdmann, Jeanette. DZHK (German Research Centre for Cardiovascular Research), partner site Hamburg/Lubeck/Kiel, Lubeck, 23562, Germany.
Erdmann, Jeanette. University Heart Center Lubeck, 23562, Lubeck, Germany.
Schaefer, Arne S. Charite - University Medicine Berlin, corporate member of Freie Universitat Berlin, Humboldt-Universitat zu Berlin, and Berlin Institute of Health, Institute for Dental and Craniofacial Sciences, Department of Periodontology and Synoptic Dentistry, Berlin, Germany. arne.schaefer@charite.de.

Abstract

Evidence for a shared genetic basis of association between coronary artery disease (CAD) and periodontitis (PD) exists. To explore the joint genetic basis, we performed a GWAS meta-analysis. In the discovery stage, we used a German aggressive periodontitis sample (AgP-Ger; 680 cases vs 3,973 controls) and the CARDIoGRAMplusCAD CAD meta-analysis dataset (60,801 cases vs 123,504 controls). Two SNPs at the known CAD risk loci ADAMTS7 (rs11634042) and VAMP8 (rs1561198) passed the pre-assigned selection criteria (P<AgP-Ger<sub>CAD</sub> < 0.05; P<sub>CAD</sub> < 5 x 10<sup>-8</sup>; concordant effect direction) and were replicated in an independent GWAS meta-analysis dataset of PD (4,415 cases vs 5,935 controls). SNP rs1561198 showed significant association (PD [Replication]: P = 0.0002, OR = 1.11, 95% CI = [1.05-1.17]; for the associated haplotype block, allele specific cis-effects on VAMP8 expression were reported. Our data adds to the shared genetic basis of CAD and PD and indicate that the observed association of the two disease conditions cannot be solely explained by shared environmental risk factors. We conclude that the molecular pathway shared by CAD and PD involves VAMP8 function, which has a role in membrane vesicular trafficking, and is manipulated by pathogens to corrupt host immune defense.

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Title
A Proteomic Analysis of the Virulence Factors of Three Common Bacterial Species Involved in Periodontitis and Consequent Possible Atherosclerosis: A Narrative Review.
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VI 1
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In-Process
Authors
Minejad R; Razeghian-Jahromi I; Sepehrimanesh M; Zibaeenezhad MJ; Lopez-Jornet P.
Authors Full Name
Minejad, Reza; Razeghian-Jahromi, Iman; Sepehrimanesh, Masood; Zibaeenezhad, Mohammad Javad; Lopez-Jornet, Pia.
Institution
Minejad, Reza. Molecular Biology Research Center, Systems Biology and Poisoning Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran.
Razeghian-Jahromi, Iman. Cardiovascular Research Center, Shiraz University of Medical Sciences, Shiraz, Iran.
Sepehrimanesh, Masood. Gastrointestinal and Liver Diseases Research Center, Guilan University of Medical Sciences, Rasht, Iran.
Zibaeenezhad, Mohammad Javad. Cardiovascular Research Center, Shiraz University of Medical Sciences, Shiraz, Iran.
Lopez-Jornet, Pia. Faculty of Medicine and Dentistry, University of Murcia, Murcia, Spain.
Abstract
The incidence of cardiovascular disorders, especially coronary artery disease and atherosclerosis, is increasing alarmingly. Clarifying the underlying causes is of the utmost importance and should be elucidated in order to reduce this growing trend. Periodontitis is known as a chronic destructive disease with sophisticated pathophysiological mechanisms that slowly impose negative effects not only on the oral tissues but also on distant organs. Additionally, it has been shown in many studies that atherosclerosis and periodontitis utilized common inflammatory signaling pathways and mediators. Several lines of evidence have demonstrated the signatures of periodontitis-related bacteria in atherosclerotic plaque specimens. It is proposed that virulent proteins of these bacteria probably accelerate the initiation or development of plaque formation on the inner walls of the coronary arteries. Proteomics techniques are very sensitive and have a global point of view. They can help to discover host factors and pathogenrelated biomarkers. This review summarizes the studies focused on the three most important bacterial species involved...
in both diseases and presents recent findings about the proteomic evaluation of virulence factors of these bacteria. The known mechanisms of action of the virulence factors are also described.

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Publication Type
Journal Article.
Year of Publication
2018

Title
The Periodontium as a Potential Cause of Orofacial Pain: A Comprehensive Review. [Review]
Source
The open dentistry journal. 12:520-528, 2018.

Abstract
Introduction: Orofacial pain of periodontal origin has a wide range of causes, and its high prevalence and negative effect on patients' quality of life make intervention mandatory. This review provides a periodontological overview of the field of orofacial pain, focusing on the entities which involve the periodontal tissues and may be the cause of this pain or discomfort.

Methods: The study comprised a literature search of these pathologies conducted in the MEDLINE/PubMed Database. Acute infectious entities such as gingival and periodontal abscesses are emergencies that require a rapid response. Periodontitis associated with endodontic processes, necrotizing periodontal disorders, desquamative gingivitis, gingival recession, and mucogingival herpetic lesions, cause mild to severe pain due to tissue destruction and loss. Other lesions that lead to periodontal discomfort include gingival enlargement and periodontal ligament strains associated with occlusal trauma, parafunctional habit and the impaction of food or foreign bodies.

Conclusion: A range of therapeutic, pharmacological and surgical alternatives are available for the management of these injuries. However, the wide variety of causes of orofacial pain or periodontal discomfort may confuse the clinician during diagnosis and may lead to the wrong choice of treatment.

Title
Serum vitamin D levels and chronic periodontitis in adult, Caucasian population-a systematic review. [Review]
Source

Abstract
Introduction: The vitamin D status is known to be associated with the incidence of periodontal diseases. However, the number of studies performed in the general population in the Mediterranean area is limited, and a recent meta-analysis demonstrated the existence of a significant association between vitamin D and periodontal disease in the Mediterranean region. The aim of the present study was to conduct a systematic review and meta-analysis to evaluate the association between serum vitamin D levels and chronic periodontitis in adult, Caucasian population.

Methods: A systematic electronic search of PubMed, Web of Science, and Cochrane Library databases was conducted. Controlled vocabulary and free text terms were used to search for articles in English and without any language restriction. The search was restricted to human studies. The inclusion criteria were articles published in English, studies conducted in Caucasian population, and studies that measured serum vitamin D levels. The exclusion criteria were studies that did not measure serum vitamin D levels, studies that measured vitamin D levels in diseases other than periodontitis, and studies that did not measure periodontitis.

Conclusion: The results of the present systematic review and meta-analysis suggest a significant association between serum vitamin D levels and chronic periodontitis in adult, Caucasian population. Further research is needed to confirm these findings and to better understand the underlying mechanisms.
This systematic review aimed to assess the current evidence on the directional and non-directional associations of periodontitis with chronic kidney disease (CKD). The review performed MEDLINE, EMBASE, PubMed, Open GREY and Cochrane library up to June 5, 2017. Two reviewers conducted study selection, data collection and assessment of methodological quality using the original and modified Newcastle-Ottawa Scale. Cohort, case-control and cross-sectional studies were included, which clearly defined periodontitis and CKD or reported acceptable clinical parameters of these 2 diseases in adults. Meta-analysis was employed to estimate the pooled odds ratio on the non-directional association and the incidence rate ratio (IRR) for the directional association. Among 2530 potential eligible articles, 47 were finally included. Most of them investigated a non-directional association of periodontitis with CKD, including 7 case-control studies and 38 cross-sectional studies; 24 studies had statistical analysis on the non-directional association and 75% of them reported significant results, which were supported further by the meta-analysis (random: odds ratio = 2.12, P < .001; chi²-sup=2/c suprem = 25.74, I²-sup=2/c suprem = 83.3%). None of the studies focused on the directional association of CKD (as the exposure) with periodontitis (as the outcome), whereas 2 retrospective cohort studies explored a directional association of periodontitis (as the exposure) with CKD (as the outcome) (random: IRR=2.10, P > .05; fixed: IRR=1.76, P < .05; chi²-sup=2/c suprem = 4.65, I²-sup=2/c suprem = 78.3%). Overall, the high heterogeneity of studies limits the significance of these results. There is substantial evidence on the non-directional association of periodontitis with CKD, while there are limited studies on the directional association. Well-designed prospective studies with longer follow-ups in representative communities are needed to clarify the directional association and enhance the quality of the evidence on this topic.
The purpose of this paper was to identify and summarize current evidence describing periodontal complications associated with obesity. Electronic searches supplemented with manual searches were carried out to identify relevant systematic reviews. Identification, screening, eligibility, and inclusion of studies were performed independently by two reviewers. A MeaSurement Tool to Assess systematic Reviews (AMSTAR) was used to assess the quality and risk of bias of the included reviews. From 430 titles and abstracts screened, 14 systematic reviews were considered as eligible for inclusion in this meta-review. Eight reviews reported on cross-sectional studies investigating the association of obesity and periodontal diseases, 4 included longitudinal studies, 5 addressed response to periodontal therapy, 5 reported on studies investigating biomarkers, and only 2 were related to pediatric population samples. Systematic review summaries in the various study design domains (cross-sectional, longitudinal and experimental) report that obese individuals are more likely to have periodontal diseases, with more severe periodontal conditions, than nonobese individuals, with cross-sectional evidence congruent with longitudinal studies showing that obesity or weight gain increases the risk of periodontitis onset and progression. Published research on the effect of obesity on responses to periodontal therapy, or systemic or local biomarkers of inflammation, is variable and therefore inconclusive based on the evidence currently available, which suggests that overweight/obesity contributes to periodontal complications independently of other risk factors, such as age, gender, smoking, or ethnicity. This evidence supports the need for risk assessments for individual patients to facilitate personalized approaches in order to prevent and treat periodontal diseases.

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This report provides a comprehensive overview of the adverse effects of hyperglycemia on the periodontium. It combines data from literature reviews of original data from two large, population-based epidemiologic studies with comprehensive periodontal health assessment. Emphasis is placed on the exploration of hitherto sparsely reported effects of prediabetes and poorly controlled (uncontrolled) diabetes, in contrast to the umbrella term “diabetes.” This stems from the realization that it is not simply having a diagnosis of diabetes that may adversely affect periodontal health. Rather, it is the level (severity) of hyperglycemia that is the determining factor, not the case definition of the diagnosis of diabetes or the type of diabetes in question. Importantly, based on existing evidence this paper also attempts to estimate the improvements in periodontal probing depth and clinical attachment level that can be expected upon successful nonsurgical periodontal treatment in people with chronic periodontitis, with and without diabetes, respectively. This exploration includes the implantation of new systematic reviews and meta-analyses that allow comparison of such intervention outcomes between hyperglycemic and normoglycemic subjects. Based on both existing literature and original analyses of population-based studies, we try to answer questions such as: Is there a glycated hemoglobin concentration threshold for periodontitis risk? Does short-term periodontal probing depth reduction and clinical attachment level gain after scaling and root planing depend on glycemic control in type 2 diabetes? Are short-term scaling and root planing outcomes in people with hyperglycemia/diabetes inferior to those in people without diabetes? Do periodontitis patients with diabetes benefit more from the use of adjuvant antibiotics with nonsurgical periodontal treatment than people without diabetes? Does hyperglycemia lead to greater tooth loss in patients in long-term post-periodontal treatment maintenance programs? Throughout this review, we compare our new findings with previous data and report whether the results of these new analyses corroborate, or are in discord with, similar scientific reports in the literature. We also explore the potential role of dental health-care professionals in helping patients control the risk factors that are identical for periodontitis and diabetes. Finally, we suggest various topics that still need exploration in future research.
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RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

VI 1
Status
In-Process
Authors
Ikram S; Hassan N; Raffat MA; Mirza S; Akram Z.
Author NameID
Akram, Zohaib; ORCID: http://orcid.org/0000-0001-9618-8818
Authors Full Name
Ikram, Sana; Hassan, Nuzhat; Raffat, Muhammad A; Mirza, Sana; Akram, Zohaib.
Institution
Ikram, Sana. Department of Oral Biology, Faculty of Dentistry, Ziauddin University, Karachi, Pakistan.
Hassan, Nuzhat. Department of Anatomy, Faculty of Basic Health Sciences, Ziauddin University, Karachi, Pakistan.
Raffat, Muhammad A. Department of Oral Pathology, Faculty of Dentistry, Ziauddin University, Karachi, Pakistan.
Mirza, Sana. Department of Oral Pathology, Faculty of Dentistry, Ziauddin University, Karachi, Pakistan.
Akram, Zohaib. Department of Periodontology, Faculty of Dentistry, Ziauddin University, Karachi, Pakistan.
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.
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 are warranted.

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**Title**
Periodontal disease and susceptibility to breast cancer: A meta-analysis of observational studies. [Review]

**Source**

**Authors**
Shi T; Min M; Sun C; Zhang Y; Liang M; Sun Y.

**Institution**
Shi, Tingting. Department of Epidemiology and Health Statistics, School of Public Health, Anhui Medical University, Hefei, Anhui, China.
Min, Min. Department of Epidemiology and Health Statistics, School of Public Health, Anhui Medical University, Hefei, Anhui, China.
Sun, Chenyu. The First Affiliated Hospital of Anhui Medical University, Hefei, Anhui, China.
Zhang, Yun. Department of Epidemiology and Health Statistics, School of Public Health, Anhui Medical University, Hefei, Anhui, China.
Liang, Mingming. Department of Epidemiology and Health Statistics, School of Public Health, Anhui Medical University, Hefei, Anhui, China.
Sun, Yehuan. Center for Evidence-Based Practice, Anhui Medical University, Hefei, Anhui, China.

**Abstract**
OBJECTIVE: While some individual studies have suggested an association between periodontal disease and breast cancer, there has not been a formal meta-analysis that collates the existing evidence supporting the hypothesis that periodontal disease leads to a higher risk of developing breast cancer. Accordingly, this meta-analysis was conducted.

METHODS: Relevant studies published until April 2018 were retrieved and were screened according to established inclusion criteria. Risk ratios (RRs) with 95% confidence intervals (CIs) were calculated to assess the association between periodontal disease and breast cancer, and fixed effect models were used according to the results of the heterogeneity test.

RESULTS: Eight studies, involving 168,111 individuals, were identified as having explored the association between periodontal disease and breast cancer. Summary estimates in view of adjusted data showed that periodontal disease did increase susceptibility to breast cancer (RR = 1.18, 95%CI: 1.11-1.26, I² = 17.6%), with robust results confirmed by sensitivity analysis.

CONCLUSION: Our results provided evidence of a modest positive association between periodontal disease and breast cancer. Implementation of practical measures to prevent and treat periodontal disease is of great public health significance. Moreover, additional studies are recommended to explore this topic in more detail.

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BACKGROUND: This systematic review evaluates the efficacy of antimicrobial photodynamic therapy (aPDT), as an adjunct to surgical or surgical therapy, on clinical and patient-centered outcomes in patients with periodontitis or peri-implantitis.

Purpose: The present study was conducted to estimate prevalence of P. gingivalis in patients with periodontal diseases by using meta-analysis method.

Methods and Materials: Different databases including PubMed, Embase, Scopus, the Institute for Scientific Information (ISI) Web of Science, and the Cochrane Library were searched to identify original English-language studies addressing prevalence of P. gingivalis in periodontal diseases up to December 2014. The random effects model was applied in the meta-analysis and the heterogeneity between studies was assessed using a Cochran test and the I^2 index. Funnel plots and Egger test were used to examine publication bias. Statistical analyses were performed using STATA version 12.

Results: Forty-two eligible studies published during 1993-2016 were selected for meta-analysis. Considering all the included studies, the total sample size was 5,884 individuals containing 2,576 healthy people with a mean age of 37.21±7.45 years and 3,308 periodontal patients with a mean age of 44.16±8.35 years. Overall, the prevalence of P. gingivalis was 78% [95% CI: 74-81] in periodontal diseases group and 34% [95% CI: 26-41] in healthy individuals. There was a significantly higher prevalence of P. gingivalis in individuals with periodontal diseases compared to healthy subjects [78% versus 34%, respectively].

Conclusion: This study indicates that P. gingivalis is highly present in subjects with periodontal diseases and it also appears in periodontally healthy people, although to a lesser extent. Thus, the presence of P. gingivalis increases the chance of periodontal disease and it can be considered as a main potential risk factor.

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Authors: Chambrone L; Wang HL; Romanos GE.
Authors Full Name: Chambrone, Leandro; Wang, Hom-Lay; Romanos, Georgios E.
Institution: Chambrone, Leandro. School of Dentistry, Ibirapuera University (Unib), Sao Paulo, Brazil. Chambrone, Leandro. Unit of Basic Oral Investigation (UIBO), School of Dentistry, El Bosque University, Bogota, Colombia. Wang, Hom-Lay. Department of Periodontics and Oral Medicine, School of Dentistry, University of Michigan, Ann Arbor, MI. Romanos, Georgios E. Department of Periodontology, School of Dental Medicine, Stony Brook University, Stony Brook, NY.

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Abstract:
BACKGROUND: This systematic review evaluates the efficacy of antimicrobial photodynamic therapy (aPDT), as an adjunct to non-surgical or surgical therapy, on clinical and patient-centered outcomes in patients with periodontitis or peri-implantitis.

METHODS: Randomized controlled trials (RCTs) with a follow-up duration >= 3 months that evaluated mechanical root/implant surface debridement (i.e., scaling and root planing [SRP] or implant surface scaling [ISS]) versus SRP or ISS plus aPDT for the
treatment of adult patients (≥ 18 years old) with moderate-to-severe chronic (CP)/aggressive periodontitis (AgP) or peri-
implantitis, respectively, were considered eligible for inclusion. The MEDLINE, EMBASE, and CENTRAL databases were
searched for articles published up to and including March 2017. 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
with their associated 95% confidence intervals. 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 729 potentially eligible articles, 28 papers (26 studies) were included in the review. Individual study outcomes and
four sets of meta-analysis showed potential statistical significant benefit of aPDT in improving clinical attachment level (CAL) (non-
surgical treatment of AgP) and probing depth (PD) (non-surgical treatment of AgP and CP). 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 strengths of clinical recommendations of aPDT were guided by the expert opinion.

CONCLUSIONS: aPDT may provide similar clinical improvements in PD and CAL when compared with conventional periodontal
therapy for both periodontitis and peri-implantitis patients. The restricted base of evidence for some treatment approaches and
conditions precludes additional conclusions.

Method: An electronic search of three databases and a hand search of peer-reviewed journals for relevant articles published
in English (from January 1980 to June 2016) was performed. Human clinical trials of ≥ 10 patients with peri-implant diseases,
treated with surgical or non-surgical approaches and laser therapy, and a follow-up period of ≥ 6 months, were included.
Random-effects meta-analyses were performed to analyze weighted mean difference (WMD) and confidence interval for the
recorded variables according to PRISMA guidelines. Risk of bias assessment was also performed for randomized controlled trials
included.

RESULTS: From 22 articles selected, 11 were included in the meta-analyses. The outcomes of using lasers as a monotherapy
could not be evaluated since no controlled studies were identified. Therefore, all reported results were the outcomes of applying
lasers as an adjunct to surgical/non-surgical treatment. For the non-surgical approach, WMD of probing depth (PD), clinical
attachment level (CAL), bleeding on probing (BOP), plaque index (PI), marginal bone level (MBL) and recession (REC) was 0.15
(P = 0.50), -0.10 mm (P = 0.32), 21.08% (P = 0.02), -0.07 (P = 0.002), -0.22 mm (P = 0.04) and -0.11 mm (P = 0.34),
respectively. For the surgical approach with a long-term follow up, WMD of PD, CAL, BOP, and PI was 0.45 mm (P = 0.11), 0.22
mm (P = 0.56), 7.26% (P = 0.76) and -0.09 (P = 0.84), respectively.

CONCLUSIONS: Current evidence shows laser therapy in combination with surgical/non-surgical therapy provided minimal
benefit in PD reduction, CAL gain, amount of REC improvement, and PI reduction in the treatment of peri-implant diseases. Lasers
when used as an adjunct to non-surgical therapy might result in more BOP reduction in the short term. However, current evidence
allowed for analysis of only Er:YAG, CO<sub>2</sub>, and diode lasers. Studies on others failed to have controlled evidence
supporting their evaluation.
BACKGROUND: 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 CAL. However, these gains are relatively small (< 1 mm) and provide modest clinical relevance compared with SRP alone.
Authors Full Name
Souto, Maria Luisa S; Rovai, Emanuel S; Ganhito, Juliana A; Holzhausen, Marinella; Chambrone, Leandro; Pannuti, Claudio M.

Institution
Souto, Maria Luisa S. Division of Periodontics, School of Dentistry, University of Sao Paulo, Sao Paulo, Brazil.
Rovai, Emanuel S. Division of Periodontics, School of Dentistry, University of Sao Paulo, Sao Paulo, Brazil.
Ganhito, Juliana A. Division of Periodontics, School of Dentistry, University of Sao Paulo, Sao Paulo, Brazil.
Holzhausen, Marinella. Division of Periodontics, School of Dentistry, University of Sao Paulo, Sao Paulo, Brazil.
Chambrone, Leandro. Unit of Basic Oral Investigations, El Bosque University, Bogota, Colombia.
Pannuti, Claudio M. Division of Periodontics, School of Dentistry, University of Sao Paulo, Sao Paulo, Brazil.

Local Messages
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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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Use of Autologous Stem Cells for the Regeneration of Periodontal Defects in Animal Studies: a Systematic Review and Meta-Analysis. [Review]

Physiological and clinical characteristics of periodontal tissue complex regeneration purposes. Studies had to be published between 2007.09.01 and 2017.09.01 in the English language.

Objectives: To overview preclinical animal trials and quantify the effect size that stem cell therapy has on the regeneration of periodontal tissue complex.

Material and Methods: A systematic MEDLINE (PubMed) online library search was conducted for preclinical animal studies - in vivo in vitro - , using autologous periodontal ligament, dental pulp, cementum, alveolar periosteal, gingival margin or adipose stem cell types for periodontal tissue complex regeneration purposes. Studies had to be published between 2007.09.01 and 2017.09.01 in the English language.

Results: Online library search yielded 2099 results. After the title, abstract and full-text screening ten studies fit inclusion criteria and were pooled into meta-analysis. Overall the stem cell regenerative therapy had a statistically significant positive influence on the periodontal tissue regeneration when compared to the control groups. The biggest influence was made to the regeneration of cementum (standardised mean difference [SMD] 2.25 [95% confidence interval [CI] = 1.31 to 3.2]) while the smallest influence was made to the alveolar bone (SMD 1.47 [95% CI = 0.7 to 2.25]) the effect size for periodontal ligament regeneration was (SMD 1.8 [95% CI = 1 to 2.59]). Subgroup analysis showed statistically significant (P < 0.05) differences between different cell types in the alveolar bone and cementum regeneration groups and in alveolar bone group in relation to scaffold materials.

Conclusions: Stem cell therapy has a positive impact on periodontal tissue complex regeneration. Such therapy has the biggest influence on cementum regeneration meanwhile alveolar bone regeneration is influenced by the least amount. However more and less diverse preclinical studies are needed to have a greater statistical power in future meta-analyses.
**OBJECTIVE:** This review aimed at evaluating the effects of chronic periodontitis (CP) treatment with local statins as adjuncts to scaling and root planing (SRP), compared with SRP alone or with placebo.

**METHODS:** Electronic and hand searches were conducted in three databases to select randomized controlled trials (RCTs) comparing SRP + statins versus SRP alone. Random effects models were conducted to determine the clinical attachment level (CAL) gain as the primary outcome variable, and probing pocket depth (PPD) reduction, modified sulcus bleeding index (mSBI), and intrabony defect depth (IBD) as the secondary outcomes.

**RESULTS:** Of the 526 papers identified, 15 articles met the criteria for inclusion in this systematic review, and 13 in the meta-analysis. The meta-analysis showed a statistically significant CAL gain (mean differences [MD] = 1.84 mm, 95% confidence interval [CI] = 1.45 to 2.23; p = 0.000), PPD reduction (MD = 1.69 mm, 95% CI = 1.37 to 2.04; p = 0.000), mSBI change (MD = 0.70, 95% CI = 0.57 to 0.84; p = 0.000), and IBD (MD = 1.48, 95% CI = 1.30 to 1.67; p = 0.000) attributed to SRP + statin treatment (6 months).

**CONCLUSION:** Within the limitations of this study, the collective evidence emerging from this systematic review and meta-analysis may support the use of locally applied statins as adjuncts to SRP in CP treatment, based on being an easy, low-cost alternative, with lesser adverse effects on bacterial resistance. These results should be interpreted with caution.

**CLINICAL RELEVANCE:** Clinicians might consider the use of SRP + statins as an adjunct over other alternative approaches, based on the results of the present review. The informed decision should be taken, considering the patient’s values and preferences, and the intervention to be implemented by the clinician.

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**Title**
Locally applied statins as adjuvants to non-surgical periodontal treatment for chronic periodontitis: a systematic review and meta-analysis. [Review]

**Source**

**Authors**
Meza-Mauricio J; Soto-Penaloza D; Penarrocha-Oltra D; Montiel-Company JM; Peruzzo DC.

**Authors Full Name**
Meza-Mauricio, Jonathan; Soto-Penaloza, David; Penarrocha-Oltra, David; Montiel-Company, Jose Maria; Peruzzo, Daiane Cristina.

**Institution**
Meza-Mauricio, Jonathan. Department of Periodontology, Guarulhos University, Rua Nilo Pecanha, 68, Guarulhos, SP, Brazil.
Soto-Penaloza, David. Stomatology Department School of Medicine and Dentistry, University of Valencia, Valencia, Spain.
Penarrocha-Oltra, David. Stomatology Department School of Medicine and Dentistry, University of Valencia, Valencia, Spain.
Montiel-Company, Jose Maria. Stomatology Department School of Medicine and Dentistry, University of Valencia, Valencia, Spain.
Peruzzo, Daiane Cristina. Sao Leopoldo Mandic Dental Institute and Research Centre, Campinas, SP, Brazil.
Periodontal Disease and Risk of Bladder Cancer: A Meta-Analysis of 298476 Participants.

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.
The Use of Amoxicillin (500 Mg) Plus Metronidazole (500 Mg) for 7 Days Adds Adjunctive Benefits for Nonsurgical Periodontal Therapy, but Limited Evidence Supports Higher/Longer Dose.

Wang JC.


OBJECTIVE: In the recent years, efforts have been made to reduce epidemiologic indicators of periodontal disease in pregnant women. This umbrella review aims to analyze the systematic reviews/meta-analyses investigating the effect of periodontal therapy in pregnant women on the frequency of obstetric complications (low birth weight, preterm delivery, and preeclampsia) and to identify the gaps in the scientific literature.

METHODS: A systematic review of systematic reviews with and without meta-analysis of intervention studies was conducted. Quality evaluation and qualitative analysis of the reviews were performed.

RESULTS: A total of 223 articles were obtained, and 18 of them were included in the analysis, 13 articles included meta-analysis, where 11 were of high quality and 7 of medium quality according to the Assessing the Methodological Quality of Systematic Reviews (AMSTAR) guide. These systematic reviews/meta-analyses included a total of 19 studies (17 randomized clinical trials). Descriptive systematic reviews showed that periodontal therapy has positive effects on reducing the frequency of adverse pregnancy outcomes. In systematic reviews with meta-analysis, overall effect estimators were not significant, although a reduction in the incidence of obstetric complications was observed. Subgroup analysis resulted in significant effects, depending on sociodemographic conditions.

CONCLUSIONS: Differential findings are not enough to demonstrate that there is a significant reduction in the frequency of adverse pregnancy outcomes in pregnant women receiving periodontal therapy. Possible explanations are related to factors such
RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

as the type of studies analyzed, indicator of obstetric complication considered, and specific variables included in the analysis. Many systematic reviews did not address publication bias and did identify gaps in knowledge that require further clarification.

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Intrapocket and/or Topical Anesthetic Options Offer an Alternative to Injected Anesthesia During Scaling and Root Planing in Patients With Shallow to Moderate Periodontal Pockets.
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Status
In-Data-Review
Authors
Derman SHM.
Authors Full Name
Derman, Sonja H M.
Abstract

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

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Title
Periodontal health during orthodontic treatment with clear aligners and fixed appliances: A meta-analysis. [Review]
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Status
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Authors
Jiang Q; Li J; Mei L; Du J; Levrini L; Abbate GM; Li H.
Authors Full Name
Jiang, Qian; Li, Jialing; Mei, Li; Du, Jing; Levrini, Luca; Abbate, Gian Marco; Li, Huang.
Abstract
BACKGROUND: Clear aligners have become increasingly popular because of their esthetics and comfort. The authors' aim in this systematic review was to compare periodontal health in patients undergoing orthodontic treatment with clear aligners with that of those undergoing orthodontic treatment with fixed appliances.

TYPES OF STUDIES REVIEWED: The authors systematically searched the PubMed, Web of Science, Cochrane Library, and Embase databases to collect related studies. After extracting data and assessing quality, the authors performed a meta-analysis and trial sequential analysis. The authors used the Grading of Recommendations Assessment, Development and Evaluation system to assess the quality of the evidence.

RESULTS: The authors included 9 studies in the quantitative synthesis analysis. Clear aligners were better for periodontal health, including plaque index (mean difference [MD], -0.53; 95% confidence interval [CI], -0.85 to -0.20; P = .001), gingival index (MD, -0.27; 95% CI, -0.37 to -0.17; P < .001), and probing depth (MD, -0.35; 95% CI, -0.67 to -0.03; P = .03), than were fixed appliances. However, the trial sequential analysis outcome indicated a false-positive meta-analysis result for probing depth. The authors downgraded the level of the evidence because of the risk of bias and inconsistency.

CONCLUSIONS AND PRACTICAL IMPLICATIONS: Clear aligners were better for periodontal health than fixed appliances and might be recommended for patients at high risk of developing gingivitis. However, high-quality studies still are required.
Efficacy of Hank's balanced salt solution compared to other solutions in the preservation of the periodontal ligament. A systematic review and meta-analysis.

*Source*  

*Authors*
Fagundes NCF; Bittencourt LO; Magno MB; Marques MM; Maia LC; Lima RR.

*Authors Full Name*
Fagundes, Nathalia Carolina Fernandes; Bittencourt, Leonardo Oliveira; Magno, Marcela Barauna; Marques, Marcia Martins; Maia, Lucianne Cople; Lima, Rafael Rodrigues.

*Institution*
Fagundes, Nathalia Carolina Fernandes. Laboratory of Functional and Structural Biology, Institute of Biological Sciences, Universidade Federal do Para, Belem-Para, Brazil.

Fagundes, Nathalia Carolina Fernandes. School of Dentistry, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Canada.

Bittencourt, Leonardo Oliveira. Laboratory of Functional and Structural Biology, Institute of Biological Sciences, Universidade Federal do Para, Belem-Para, Brazil.

Magno, Marcela Barauna. Department of Pediatric Dentistry and Orthodontics, School of Dentistry, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil.

Marques, Marcia Martins. Department of Restorative Dentistry, School of Dentistry, Universidade de Sao Paulo, Sao Paulo, Brazil.

Maia, Lucianne Cople. School of Dentistry, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Canada.

Lima, Rafael Rodrigues. Laboratory of Functional and Structural Biology, Institute of Biological Sciences, Universidade Federal do Para, Belem-Para, Brazil.

*Abstract*
This systematic review and meta-analysis (MA) aimed to verify the capacity of different storage media to preserve viability of periodontal ligament cells in comparison to Hank's Balanced Salt Solution. The searches, selection process, data extraction and Risk of Bias control were conducted according to Preferred Reporting Items for Systematic Review and Meta-Analysis guidelines. Five MA were conducted to compare the cell viability between milk versus Hank's balanced salt solution (HBSS) in a dichotomous (1) or continuous (2) data model; tap water versus HBSS (3); medicinal herbals versus HBSS (4); and saline solution versus HBSS (5). 693 potentially studies were identified, with 18 studies included in the qualitative and 8 studies included in the quantitative analysis. Most of the articles presented a low risk of bias. HBSS medium showed a superior ratio of cell viability compared to tap water (RR 0.26; 95% CI [0.21, 0.32]; p < 0.00001; I² = 96%) and saline solution versus HBSS (RR 0.76; 95% CI [0.69, 0.84]; p < 0.0001; I² = 99%). Herbal medicines showed a similar ratio of cell viability when compared to HBSS (RR 0.97; 95% CI [0.94, 1.00]; p = 0.08; I² = 50%). Mixed results were observed between milk and HBSS: a superior ratio of HBSS was observed in an overall evaluation (RR 0.26; 95% CI [0.21, 0.32]; p < 0.000001; I² = 96%), and a similar ratio was achieved when periodontal ligament (PDL) cells were removed prior to immersion in the solution (RR 0.94; 95% CI [0.87, 1.01]; p = 0.10; I² = 0%) or rinsed in tap water or maintained in open air prior to immersion (RR 0.63; 95% CI [0.35, 1.12]; p = 0.11; I² = not applicable). This systematic review and MA suggests that milk and herbal medicines could represent an alternative to HBSS. However, more studies are necessary to obtain a reliable conclusion.

*Title*
Relationship between sjogren syndrome and periodontal status: A systematic review. [Review]

*Source*

*Authors*
de Goes Soares L; Rocha RL; Bagordakis E; Galvao EL; Douglas-de-Oliveira DW; Falci SGM.

*Authors Full Name*
de Goes Soares, Luana; Rocha, Ricardo Lopes; Bagordakis, Elizabete; Galvao, Endi Lanza; Douglas-de-Oliveira, Dhelfeson Willya: Falci, Saulo Gabriel Moreira.

*Institution*
Periodontitis, which is a chronic infection and disease of the periodontium, is a significant global health burden and is linked to other chronic health conditions such as diabetes and cardiovascular diseases. Dietary polyphenols present in a wide variety of plant-based foods, herbs, and botanicals have been shown to exert antimicrobial, anti-inflammatory, and reduced osteoclast and alveolar bone loss activities in animal models of periodontitis. Polyphenol-containing beverages and foods especially green tea and its active catechin epigallocatechin-3-gallate, cranberries, pomegranates, and fruit and vegetable extracts have reported bacteriostatic/bactericidal activity against microbial species such as P. gingivalis and shown total bacterial burden in clinical studies. These polyphenols also exhibit anti-inflammatory and antioxidant effects, which have the potential to impact various biological mechanisms for reducing the initiation and progression of periodontitis. The main objective of this mini-review is to focus on the mechanisms of action of dietary polyphenols in improving the pathophysiology underlying chronic inflammatory diseases like periodontitis based on pre-clinical and clinical models.

Abstract

Periodontitis, which is a chronic infection and disease of the periodontium, is a significant global health burden and is linked to other chronic health conditions such as diabetes and cardiovascular diseases. Dietary polyphenols present in a wide variety of plant-based foods, herbs, and botanicals have been shown to exert antimicrobial, anti-inflammatory, and reduced osteoclast and alveolar bone loss activities in animal models of periodontitis. Polyphenol-containing beverages and foods especially green tea and its active catechin epigallocatechin-3-gallate, cranberries, pomegranates, and fruit and vegetable extracts have reported bacteriostatic/bactericidal activity against microbial species such as P. gingivalis and shown total bacterial burden in clinical studies. These polyphenols also exhibit anti-inflammatory and antioxidant effects, which have the potential to impact various biological mechanisms for reducing the initiation and progression of periodontitis. The main objective of this mini-review is to focus on the mechanisms of action of dietary polyphenols in improving the pathophysiology underlying chronic inflammatory diseases like periodontitis based on pre-clinical and clinical models.
LANAP, Periodontics and Beyond: A Review.


Laser has emerged as an adjunct in several treatment modalities in dentistry in the past few decades. This less invasive bladeless technique is bringing revolutionary outcomes in a plethora of periodontal treatment procedures as well. A unique ameliorative approach termed LANAP, described as laser-assisted new attachment procedure was developed by Gregg and McCarthy. In 1990 they introduced an innovative treatment for diseases of gums incorporating pulsed neodymium yttrium aluminum garnet (Nd: YAG) 1064 nm wavelength laser (PerioLase MVP7). The LANAP concept was endorsed by Yukna et al who conducted a study according to the protocol reinforced at the 1996 world workshop in periodontics, which established specific histologic criteria to prove regeneration. Yukna's histological study found that regeneration of the periodontally compromise root could be achieved by Nd: YAG laser. LANAP facilitates refurbishing of new tissues from supporting structures of the periodontium wherein the unhealthy surface of the roots exhibit pristine attachments in human beings. This paper is a review providing a detailed report of LANAP from its inception to recent advances.

Improving the Quality of Dentistry (IQuaD): a cluster factorial randomised controlled trial comparing the effectiveness and cost-benefit of oral hygiene advice and/or periodontal instrumentation with routine care for the prevention and management of periodontal disease in dentate adults attending dental primary care.

Ramsay CR; Clarkson JE; Duncan A; Lamont TJ; Heasman PA; Boyers D; Goulao B; Bonetti D; Bruce R; Gouick J; Heasman L; Lovelock-Hemplen Laura A; Macpherson LE; McCracken GI; McDonald AM; McLaren-Neil F; Mitchell FE; Norrie JD; van der Pol M; Sim K; Steele JG; Sharp A; Watt G; Worthington HV; Young L.

Ramsay, Craig R. Health Services Research Unit, University of Aberdeen, Aberdeen, UK.
Clarkson, Jan E. Dental Health Services Research Unit, University of Dundee, Dundee, UK.
Duncan, Anne. Health Services Research Unit, University of Aberdeen, Aberdeen, UK.
Lamont, Thomas J. Dental School, University of Dundee, Dundee, UK.
Heasman, Peter A. The Dental School, Newcastle University, Newcastle upon Tyne, UK.
Boyers, Dwayne. Health Economics Research Unit, University of Aberdeen, Aberdeen, UK.
Goulao, Beatriz. Health Services Research Unit, University of Aberdeen, Aberdeen, UK.
Bonetti, Debbie. Dental Health Services Research Unit, University of Dundee, Dundee, UK.
Bruce, Rebecca. Health Services Research Unit, University of Aberdeen, Aberdeen, UK.
Gouick, Jill. Dental Health Services Research Unit, University of Dundee, Dundee, UK.
Heasman, Lynne. The Dental School, Newcastle University, Newcastle upon Tyne, UK.
Lovelock-Hemplen Laura A. Dental Health Services Research Unit, University of Dundee, Dundee, UK.
Macpherson, Lorna E. Dental Health Services Research Unit, University of Dundee, Dundee, UK.
McCracken, Giles I. The Dental School, Newcastle University, Newcastle upon Tyne, UK.
McDonald, Alison M. Health Services Research Unit, University of Aberdeen, Aberdeen, UK.
McLaren-Neil, Fiona. Dental Health Services Research Unit, University of Dundee, Dundee, UK.
Mitchell, Fiona E. Dental Health Services Research Unit, University of Dundee, Dundee, UK.
BACKGROUND: Periodontal disease is preventable but remains the most common oral disease worldwide, with major health and economic implications. Stakeholders lack reliable evidence of the relative clinical effectiveness and cost-effectiveness of different types of oral hygiene advice (OHA) and the optimal frequency of periodontal instrumentation (PI).

OBJECTIVES: To test clinical effectiveness and assess the economic value of the following strategies: personalised OHA versus routine OHA; 12-monthly PI (scale and polish) compared with 6-monthly PI, and no PI compared with 6-monthly PI.

DESIGN: Multicentre, pragmatic split-plot, randomised open trial with a cluster factorial design and blinded outcome evaluation with 3 years’ follow-up and a within-trial cost-benefit analysis. NHS and participant costs were combined with benefits [willingness to pay (WTP)] estimated from a discrete choice experiment (DCE).

SETTING: UK dental practices.

PARTICIPANTS: Adult dentate NHS patients, regular attenders, with Basic Periodontal Examination (BPE) scores of 0, 1, 2 or 3.

INTERVENTION: Practices were randomised to provide routine or personalised OHA. Within each practice, participants were randomised to the following groups: no PI, 12-monthly PI or 6-monthly PI (current practice).

MAIN OUTCOME MEASURES: Clinical - gingival inflammation/bleeding on probing at the gingival margin (3 years). Patient - oral hygiene self-efficacy (3 years). Economic - net benefits (mean WTP minus mean costs).

RESULTS: A total of 63 dental practices and 1877 participants were recruited. The mean number of teeth and percentage of bleeding sites was 24 and 33%, respectively. Two-thirds of participants had BPE scores of <= 2. Under intention-to-treat analysis, there was no evidence of a difference in gingival inflammation/bleeding between the 6-monthly PI group and the no-PI group [difference 0.87%, 95% confidence interval (CI) -1.6% to 3.3%; p=0.481] or between the 6-monthly PI group and the 12-monthly PI group (difference 0.11%, 95% CI -2.3% to 2.5%; p=0.929). There was also no evidence of a difference between personalised and routine OHA (difference -2.5%, 95% CI -8.3% to 3.3%; p=0.393). There was no evidence of a difference in self-efficacy between the 6-monthly PI group and the no-PI group (difference -0.028, 95% CI -0.119 to 0.063; p=0.543) and no evidence of a clinically important difference between the 6-monthly PI group and the 12-monthly PI group (difference -0.097, 95% CI -0.188 to -0.006; p=0.037). Compared with standard care, no PI with personalised OHA had the greatest cost savings: NHS perspective -15 (95% CI -34 to 4) and participant perspective -64 (95% CI -112 to -16). The DCE shows that the general population value these services greatly. Personalised OHA with 6-monthly PI had the greatest incremental net benefit [48 (95% CI 22 to 74)]. Sensitivity analyses did not change conclusions.

LIMITATIONS: Being a pragmatic trial, we did not deny PIs to the no-PI group; there was clear separation in the mean number of PIs between groups.

CONCLUSIONS: There was no additional benefit from scheduling 6-monthly or 12-monthly PIs over not providing this treatment unless desired or recommended, and no difference between OHA delivery for gingival inflammation/bleeding and patient-centred outcomes. However, participants valued, and were willing to pay for, both interventions, with greater financial value placed on PI than on OHA.

FUTURE WORK: Assess the clinical effectiveness and cost-effectiveness of providing multifaceted periodontal care packages in primary dental care for those with periodontitis.

TRIAL REGISTRATION: Current Controlled Trials ISRCTN56465715.

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Periodontitis is characterized by inflammation of the periodontium and leads to loss of teeth if untreated. Although a number of surgical and pharmacological options are available for the management of periodontitis, it still affects a large proportion of population. Recently, metformin (MF), an oral hypoglycemic, has been used to treat periodontitis. The aim of this review is to systematically evaluate the efficacy of MF in the treatment of periodontitis. An electronic search was carried out using the keywords ‘metformin’, ‘periodontal’ and ‘periodontitis’ via the PubMed/Medline, ISI Web of Science and Google Scholar databases for relevant articles published from 1949 to 2016. The addressed focused question was: ‘Is metformin effective in reducing bone loss in periodontitis? Critical review and meta-analysis were conducted of the results obtained in the selected studies. Following the removal of the duplicate results, the primary search resulted in 17 articles and seven articles were excluded based on title and abstract. Hence, 10 articles were read completely for eligibility. After exclusion of four irrelevant studies, six articles were included. The topical application of MF resulted in improved histological, clinical and radiographic outcomes. Additionally, results from the meta-analysis indicated that application of metformin improved the clinical and radiographic outcomes of scaling and root-planing, but at the same time heterogeneity was evident among the results. However, because of a lack of histological and bacterial studies, in addition to short follow-up periods and risk of bias, the long-term efficacy of MF in the treatment of bony defects is not yet ascertained. Further studies are needed to envisage the long-term efficacy of MF in the management of periodontitis.
Abstract

BACKGROUND AND OBJECTIVES: Long non-coding 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. Gene Ontology enrichment analysis and pathway analysis were performed using the Gene Ontology website and Kyoto Encyclopedia of Genes and Genomes. A protein-protein interaction network was constructed based on the Search Tool for the retrieval of interacting Genes/Proteins. Transcription factors (TFs) of differentially expressed genes were identified based on TRANSPATH database and then a regulatory network was constructed.

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, FGDS5-AS1) were found to target both miR-125a-3p and miR-142-3p in this ceRNA network. Protein-protein interaction network analysis identified several hub genes, including VCAM1, ITGAA4, UBC, LYN and SSX2IP. Three pathways (cytokine-cytokine receptor, cell adhesion molecules, chemokine signaling pathway) were identified to be overlapping results with the previous bioinformatic 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 mRNAs (HSPA4L, PANK3, YOD1, CTNNBIP1, EVI2B, ITGAL), 3 miRNAs (hsa-miR-125a-3p, hsa-miR-200a, hsa-miR-142-3p) and 3 lncRNAs (MALAT1, TUG1, FGDS5-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

ABSTRACT

BACKGROUND AND OBJECTIVES: Long non-coding 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.

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Journal Article.

Year of Publication

2018

Abstract

BACKGROUND AND OBJECTIVES: Long non-coding 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.

METHODS: PubMed, Embase, and the Cochrane Library were searched for observational studies of the association between periodontitis and PAD in February 2018. Risk ratios (RRs) and their 95% confidence intervals (CIs) from included studies were pooled to evaluate the strength of the association between periodontitis and PAD. Weighted mean differences (WMDs) and their 95% CIs were pooled to compare the difference in periodontal-related parameters between PAD and non-PAD patients.

RESULTS: Seven studies including a total of 4307 participants were included in the meta-analysis. The pooled analysis showed that there was a significant difference in the risk of periodontitis between PAD patients and non-PAD participants (RR=1.70, 95% CI=1.25-2.29, P=0.01). There was also a significant difference in number of missing teeth between PAD patients and non-PAD patients.
participants (WMD=3.75, 95% CI=1.31-6.19, P=0.003). No significant difference was found in clinical attachment loss between PAD patients and non-PAD participants (WMD=0.05, 95% CI=-0.03-0.19, P=0.686).

CONCLUSION: In conclusion, the results of this meta-analysis revealed a significant relationship between periodontitis and PAD. Moreover, our study indicated that PAD patients had more missing teeth than control subjects did. Further high-quality and well-designed studies with specific inclusion and exclusion criteria are required to strengthen the conclusions of this study.

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Journal Article.
Year of Publication
2018
**BDA LIBRARY MEDLINE SEARCH**

**RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY**

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**Unique Identifier**
29963478

**Title**
Comparison of conventional imaging techniques and CBCT for periodontal evaluation: A systematic review. [Review]

**Source**

**Status**
PubMed-not-MEDLINE

**Authors**
Choi IGG; Cortes ARG; Arita ES; Georgetti MAP.

**Authors Full Name**
Choi, Isabela Goulart Gil; Cortes, Arthur Rodriguez Gonzalez; Arita, Emiko Saito; Georgetti, Marco Antonio Pauperio.

**Institution**
Choi, Isabela Goulart Gil. Department of Oral Radiology, School of Dentistry, University of Sao Paulo, Sao Paulo, SP, Brazil. Cortes, Arthur Rodriguez Gonzalez. Department of Oral Radiology, School of Dentistry, University of Sao Paulo, Sao Paulo, SP, Brazil. Arita, Emiko Saito. Department of Oral Radiology, School of Dentistry, University of Sao Paulo, Sao Paulo, SP, Brazil. Georgetti, Marco Antonio Pauperio. Department of Periodontics, School of Dentistry, University of Sao Paulo, Sao Paulo, SP, Brazil.

**Abstract**

**Purpose:** This study aimed to carry out a systematic review of studies in the literature comparing conventional imaging techniques with cone-beam computed tomography in terms of the role of these techniques for assessing any of the following periodontal conditions and parameters: infrabony defects, furcation involvement, height of the alveolar bone crest, and the periodontal ligament space.

**Materials and Methods:** Interventional and observational studies comparing conventional imaging techniques with cone-beam computed tomography were considered eligible for inclusion. The MEDLINE and Embase databases were searched for articles published through 2017. The PRISMA statement was followed during data assessment and extraction.

**Results:** The search strategy yielded 351 publications. An initial screening of the publications was performed using abstracts and key words, and after the application of exclusion criteria, 13 studies were finally identified as eligible for review.

**Conclusion:** These studies revealed cone-beam computed tomography to be the best imaging technique to assess infrabony defects, furcation lesions, the height of the alveolar bone crest, and the periodontal ligament space.

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**Unique Identifier**
29951095

**Title**
Corrigendum to "Biological Effects of Medicinal Plants on Induced Periodontitis: A Systematic Review". [Erratum for Int J Dent. 2016;2016:3719879; PMID: 27738432]

**Source**

**Status**
In-Data-Review

**Authors**
Soares de Oliveira J; Conceicao Pinto MES; Santana LAB; Pinto ASB; Lenardo DD; Vasconcelos DFP.

**Authors Full Name**
Soares de Oliveira, Jefferson; Conceicao Pinto, Moara E Silva; Santana, Lucas de Araujo de Bastos; Pinto, Antonione Santos Bezerra; Lenardo, David di; Vasconcelos, Daniel Fernando Pereira.

**Institution**
Soares de Oliveira, Jefferson. Laboratory of Biology and Biochemistry Plants (BIOqPLANT), Federal University of Piaui, Parnaiba, PI, Brazil. Conceicao Pinto, Moara E Silva. Laboratory of Histological Analysis and Prepare (LAPHIS), Federal University of Piaui, Parnaiba, PI, Brazil. Santana, Lucas de Araujo de Bastos. Laboratory of Biology and Biochemistry Plants (BIOqPLANT), Federal University of Piaui, Parnaiba, PI, Brazil. Pinto, Antonione Santos Bezerra. Department of Morphology, LABICONTE, Federal University of Ceara, Fortaleza, CE, Brazil. Lenardo, David di. Laboratory of Biology and Biochemistry Plants (BIOqPLANT), Federal University of Piaui, Parnaiba, PI, Brazil. Vasconcelos, Daniel Fernando Pereira. Laboratory of Histological Analysis and Prepare (LAPHIS), Federal University of Piaui, Parnaiba, PI, Brazil.

**Abstract**

This corrects the article DOI: 10.1155/2016/3719879.

**Publication Type**
Journal Article. Review.
Periodontal disease in patients with Down syndrome: A systematic review. [Review]

Authors: Scalioni FAR; Carrada CF; Martins CC; Ribeiro RA; Paiva SM.

BACKGROUND: The authors systematically reviewed the scientific evidence of an association between periodontal disease and Down syndrome (DS).

TYPES OF STUDIES REVIEWED: In this systematic review, the authors included observational studies in which the investigators assessed the prevalence, incidence, or experience of periodontal disease in patients with DS compared with that in healthy patients. The authors used the Population, Exposure, Comparison, Outcome structure. The population was patients of any age, the exposure was the presence of DS, the comparison was the absence of DS, and the outcome was the presence of periodontal disease. The authors conducted an electronic search in 5 databases through March 2017. Two independent reviewers assessed the risk of bias by using the Fowkes and Fulton scale. The authors performed a meta-analysis to compare periodontal disease among patients with DS and those without DS. The authors calculated a summary effect measure-standard mean difference-when evaluating the means of the oral hygiene index. The authors assessed the strength of evidence from the selected studies by using a modified Grading of Recommendations Assessment, Development and Evaluation system.

RESULTS: The authors included 23 case-control studies in the systematic review and submitted 3 to meta-analysis. In the qualitative analysis, results from most studies showed that the prevalence of some periodontal parameters was higher among patients with DS than among those without DS. Evaluations of the Fowkes and Fulton scale point to many methodological problems in the studies evaluated. Results of the meta-analysis revealed no differences between groups with regard to the oral hygiene index (standard mean difference, 0.05; 95% confidence interval, -0.55 to 0.65; I² = 0%).

CONCLUSIONS AND PRACTICAL IMPLICATIONS: Further research is required, in particular well-designed studies that avoid the deficiencies identified in the studies in this review.

Association of vitamin D receptor BsmI, TaqI, FokI, and ApaI polymorphisms with susceptibility of chronic periodontitis: A systematic review and meta-analysis based on 38 case-control studies. [Review]

Authors: Mashhadiabbas F; Neamatzadeh H; Nasiri R; Foroughi E; Farahnak S; Piroozmand P; Mazaheri M; Zare-Shehneh M.

BACKGROUND: The authors systematically reviewed the scientific evidence of an association between periodontal disease and Down syndrome (DS).

TYPES OF STUDIES REVIEWED: In this systematic review, the authors included observational studies in which the investigators assessed the prevalence, incidence, or experience of periodontal disease in patients with DS compared with that in healthy patients. The authors used the Population, Exposure, Comparison, Outcome structure. The population was patients of any age, the exposure was the presence of DS, the comparison was the absence of DS, and the outcome was the presence of periodontal disease. The authors conducted an electronic search in 5 databases through March 2017. Two independent reviewers assessed the risk of bias by using the Fowkes and Fulton scale. The authors performed a meta-analysis to compare periodontal disease among patients with DS and those without DS. The authors calculated a summary effect measure-standard mean difference-when evaluating the means of the oral hygiene index. The authors assessed the strength of evidence from the selected studies by using a modified Grading of Recommendations Assessment, Development and Evaluation system.

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CONCLUSIONS AND PRACTICAL IMPLICATIONS: Further research is required, in particular well-designed studies that avoid the deficiencies identified in the studies in this review.
Although anaerobic infections such as Fusobacterium most often occur in immunocompromised individuals, clinicians should have a high index of suspicion in immunocompetent patients with periodontal disease or chronic stomatitis.

Abstract

Materials and Methods: The PubMed, Google Scholar, and Web of Science database were systemically searched to determine all the eligible studies about VDR polymorphisms and risk of chronic periodontitis up to April 2017. Odds ratio (OR) and 95% confidence interval (CI) were used to evaluate the associations between VDR polymorphisms and chronic periodontitis risk. All the statistical analyses were performed by Comprehensive Meta-Analysis. All P values were two-tailed with a significant level at 0.05.

Results: Finally, a total of 38 case-control studies in 19 publications were identified which met our inclusion criteria. There are ten studies with 866 chronic periodontitis cases and 786 controls for BsmI, 16 studies with 1570 chronic periodontitis cases and 1676 controls for TaqI, five studies with 374 chronic periodontitis cases and 382 controls for FokI, and seven studies with 632 chronic periodontitis cases and 604 controls for ApaI. Overall, no significant association was observed between VDR gene BsmI, TaqI, FokI, and Apa polymorphisms and risk of chronic periodontitis in any genetic model. Subgroup analysis stratified by ethnicity suggested a significant association between BsmI polymorphism and chronic periodontitis risk in the Caucasian subgroup under allel model (A vs. G: OR = 1.747, 95% CI = 1.099-2.778, P = 0.018). Further, no significant associations were observed when stratified by Hardy-Weinberg equilibrium status for BsmI, TaqI, and Apa.

Conclusion: Our results suggest that BsmI, TaqI, FokI, and Apa polymorphisms in the VDR gene might not be associated with risk of chronic periodontitis in overall population.

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Year of Publication: 2018

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Unique Identifier: 29915637
Status: PubMed-not-MEDLINE

Authors: Hammami MB; Noonan EM; Chhaparia A; Khatib FA; Bassuner J; Hachem C.

Abstract

Pyogenic liver abscesses (PLA) develop from the spread of infection through the portal circulation, biliary infections or arterial hematogenous seeding in the setting of systemic infections. PLA are often poly-microbial and are uncommonly reported to be due to anaerobic species. We report the case of a previously healthy, immunocompetent 63-year-old man with hepatic abscesses as a result of Fusobacterium nucleatum periodontal disease. In addition, a systemic review of the literature is performed. Fusobacterium is a very rare cause of PLA in immunocompetent hosts with only a handful of cases reported in the literature. Although anaerobic infections such as Fusobacterium most often occur in immunocompromised individuals, clinicians should have a high index of suspicion in immunocompetent patients with periodontal disease or chronic stomatitis.
Polycystic ovary syndrome (PCOS) is the most common endocrine disorder among women of reproductive age, which negatively affects various health systems. There is an extensive literature regarding the association of PCOS and other systemic conditions such as diabetes mellitus, cardiovascular disease, and psychological disorders. However, there is a lack of literature in associating PCOS and periodontal disease. Hence, PubMed search was done for various articles related to PCOS and its association with other comorbidities, including periodontal diseases. Analysis was done and data were synthesized and compiled in a sequential and presentable paradigm. This literature review of the pathophysiological mechanisms linking the two diseases suggests a positive relation between the two comorbidities. However, multicenter studies, with larger sample sizes, are to be conducted to establish a clearer and stronger association.
Effect of orthodontic treatment on periodontal clinical attachment: a systematic review and meta-analysis.

Source

Abstract
Background: Insertion of orthodontic fixed appliances has been known 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.

Search methods: Seven databases were searched from inception to February 2017.

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.

Publication Type: Journal Article.

Year of Publication: 2018

Title: Assessment of genotyping tools applied in genetic susceptibility studies of periodontal disease: A systematic review. [Review]


Abstract

OBJECTIVE: A systematic review to evaluate the various genotyping tools and study strategies employed to define genetic susceptibility to periodontitis.

METHODS: The review was performed in accordance with Preferred Reporting Items for Systematic Review and Meta-Analysis guidelines. The search for publications referring to the genetic bases of periodontal disease was performed on the MEDLINE-PubMed and Cochrane Library databases, on trials registers, and on the web pages of regulatory agencies.

RESULTS: We found 2439 potentially eligible articles, of which only 25 satisfied the established inclusion criteria and were processed for data extraction. The review revealed marked heterogeneity between studies, caused in part by the lack of a universally accepted definition for periodontitis phenotypes and by the variety of genotyping tools available. The most commonly used technique was genotyping candidate genes.

CONCLUSION: The few rigorous studies that have been published on genetic susceptibility to periodontitis are subject to severe methodological bias due to their design and the genotyping tools employed. Despite their limitations, candidate gene studies continue to be the predominant methodological approach, rather than genome-wide association studies. Further studies must be designed using a universally accepted, validated diagnostic criterion for periodontitis, analysing multiple genes and polymorphisms in combination with rare variants.

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Publication Type: Journal Article. Review.

Year of Publication: 2018

Title: Assessment of genotyping tools applied in genetic susceptibility studies of periodontal disease: A systematic review. [Review]
Pulpal and Periodontal Tissues Changes Associated with Le Fort I and Sagittal Split Ramus Osteotomies: A review. [Review]

Source

Authors
Lazaridis K; Lazaridou M; Athanasiou AE.

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.

Prevalence of diabetes mellitus in people clinically diagnosed with periodontitis: A systematic review and meta-analysis of epidemiologic studies. [Review]

Authors
Ziukaite L; Slot DE; Van der Weijden FA.

Abstract
OBJECTIVES: Diabetes mellitus and periodontitis are complex chronic diseases with an established bidirectional relationship. This systematic review evaluated in subjects with professionally diagnosed periodontitis the prevalence and odds of having diabetes.
BACKGROUND: To assess the impact of scaling and root planing (SRP) with and without adjunct photodynamic therapy (PDT) in the treatment of periodontal disease in hyperglycemic patients?

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

RESULTS: From the 803 titles and abstracts that came out of the search, 27 papers met the initial criteria. Prevalence of diabetes was 13.1% among subjects with periodontitis and 9.6% among subjects without periodontitis. Based on subanalysis, for subjects with periodontitis, the prevalence of diabetes was 6.2% 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 = 18,002) and the lowest in studies describing populations from Europe (4.3%, n = 7,858). The overall odds ratio for patients with diabetes to be among subjects with periodontitis as compared to those without periodontitis was 2.27 (95% CI [1.90;2.72]). 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 are 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.

Javed, Fawad; Salehpoor, Danial; Al-Dhafeeri, Talal; Yousuf, Muhammad; Malmstrom, Hans; Khan, Junad; Akram, Zohaib. Department of General Dentistry, Eastman Institute for Oral Health, University of Rochester, NY, 14620, USA. Akram, Zohaib. Department of Periodontology, Faculty of Dentistry, Ziauddin University, Karachi, Pakistan. Electronic address: zohaib.akram@zu.edu.pk.
BDA LIBRARY MEDLINE SEARCH

RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

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Unique Identifier
29656920
Title
Effect of Smoking on Periodontitis: A Systematic Review and Meta-regression. [Review]
Source
VI 1
Status
In-Data-Review
Authors
Leite FRM; Nascimento GG; Scheutz F; Lopez R.
Authors Full Name
Leite, Fabio R M; Nascimento, Gustavo G; Scheutz, Flemming; Lopez, Rodrigo.
Institution
Leite, Fabio R M. Section of Periodontology, Department of Dentistry and Oral Health, Aarhus University, Aarhus, Denmark.
Electronic address: fabio@dent.au.dk.
Nascimento, Gustavo G. Section of Periodontology, Department of Dentistry and Oral Health, Aarhus University, Aarhus, Denmark.
Scheutz, Flemming. Section of Periodontology, Department of Dentistry and Oral Health, Aarhus University, Aarhus, Denmark.
Lopez, Rodrigo. Section of Periodontology, Department of Dentistry and Oral Health, Aarhus University, Aarhus, Denmark.
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
Salivary Levels of Hemoglobin for Screening Periodontal Disease: A Systematic Review. [Review]
Source
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Status
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Authors
Nomura Y; Okada A; Tamaki Y; Miura H.
Author NameID
Nomura, Yoshiaki; ORCID: https://orcid.org/0000-0002-0814-0572
Miura, Hiroko; ORCID: https://orcid.org/0000-0003-0897-0768
Authors Full Name
Nomura, Yoshiaki; Okada, Ayako; Tamaki, Yoh; Miura, Hiroko.
Institution
Nomura, Yoshiaki. Department of Translational Research, School of Dental Medicine, Tsurumi University, 2-1-3 Tsurumi, Tsurumi-ku, Yokohama 230-8501, Japan.
Okada, Ayako. Department of Translational Research, School of Dental Medicine, Tsurumi University, 2-1-3 Tsurumi, Tsurumi-ku, Yokohama 230-8501, Japan.
Abstract
Periodontal disease is a common inflammatory disease. It affects about 20-50% of global population in both developed and developing countries. Early detection of slight changes of periodontal tissue plays an important role in prevention of onset and progression of periodontal disease. Hence, there is a need of a screening test to assess periodontal tissue for health check-ups. Salivary levels hemoglobin (Hb) has been proposed to assess the conditions of the inflammation of gingiva. The aim of this systematic review was to evaluate and summarize critically the current evidences for Hb as periodontal screening test. We performed a literature search of report published using PubMed databases. A total of 55 articles were retrieved and 16 were selected. Our review focuses on correlation coefficient with periodontal clinical parameters or sensitivity and specificity. As a result, fourteen studies calculated sensitivity and specificity of Hb. Six studies measured salivary levels hemoglobin at laboratory: three studies used polyclonal antibody reactions and other studies used colorimetric tests. Eight studies used paper strip method: 4 studies used monoclonal antibody reaction and 4 studies used colorimetric tests. Youden's indexes by antibody reaction were better than those of colorimetric methods. Evidences are described above and further studies are necessary to set the cut off values stratified by gender, age and number of remaining teeth.

**Title**: The efficacy of air polishing devices in supportive periodontal therapy: A systematic review and meta-analysis.


**Objective**: This systematic review analyzes existing literature on the clinical efficacy of air polishing devices (APDs), discussing the evidence-based data available for justifying their use as an alternative to conventional periodontal debridement in supportive periodontal therapy. The main objective of the review was to assess whether APD was as equally efficient or superior in obtaining successful treatment outcomes when compared with conventional methods.

**Data Sources**: Following PRISMA guidelines, a systematic literature search of articles in English, up to December 2016, was conducted using PubMed, Cochrane, and Medline. Relevant articles were selected based on specific criteria. Seven studies were selected for the final assessment. One more study was added after a manual search of the literature. Due to considerable heterogeneity in study designs and outcome variables measured, only clinical parameters (probing depth, bleeding on probing, and clinical attachment level) were selected for meta-analysis.

**Conclusion**: The studies selected for this systematic review provide some evidence that APDs as monotherapy could be an alternative to conventional debridement of single- and multi-rooted teeth with no furcation involvement, during supportive periodontal therapy. Comparing clinical and microbiologic outcomes, APDs seem to be as effective as conventional treatments. The primary advantage for the use of APDs in supportive periodontal therapy seems to be their ability to efficiently remove biofilm, without causing damage to the periodontal soft tissues or tooth and root structure. There may also be an advantage regarding patient comfort and time consumed.

**Title**: Vitamin D levels and risk for periodontal disease: A systematic review.


**Objective**: This systematic review analyzes existing literature on the clinical efficacy of air polishing devices (APDs), discussing the evidence-based data available for justifying their use as an alternative to conventional periodontal debridement in supportive periodontal therapy. The main objective of the review was to assess whether APD was as equally efficient or superior in obtaining successful treatment outcomes when compared with conventional methods.

**Data Sources**: Following PRISMA guidelines, a systematic literature search of articles in English, up to December 2016, was conducted using PubMed, Cochrane, and Medline. Relevant articles were selected based on specific criteria. Seven studies were selected for the final assessment. One more study was added after a manual search of the literature. Due to considerable heterogeneity in study designs and outcome variables measured, only clinical parameters (probing depth, bleeding on probing, and clinical attachment level) were selected for meta-analysis.

**Conclusion**: The studies selected for this systematic review provide some evidence that APDs as monotherapy could be an alternative to conventional debridement of single- and multi-rooted teeth with no furcation involvement, during supportive periodontal therapy. Comparing clinical and microbiologic outcomes, APDs seem to be as effective as conventional treatments. The primary advantage for the use of APDs in supportive periodontal therapy seems to be their ability to efficiently remove biofilm, without causing damage to the periodontal soft tissues or tooth and root structure. There may also be an advantage regarding patient comfort and time consumed.

**Institution**: Pinto, J P N S. Periodontology, Faculty of Dentistry, Federal University of Rio Grande do Sul, Porto Alegre, Brazil.
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?

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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The cholesterol-lowering drugs, statins, possess anti-inflammatory, antimicrobial and pro-osteogenic properties, and thus have been tested as an adjunct to periodontal treatment. The present systematic review aimed to answer the following focused research question: What is the effect of local and/or systemic statin use on periodontal tissues in preclinical in vivo studies of experimentally induced periodontitis (EIP) and/or acute/chronified periodontal defect (ACP) models? A literature search (of Medline/PubMed, Embase/Ovid, CENTRAL/Ovid) using the following main eligibility criteria was performed: (i) English or German language; (ii) controlled preclinical in vivo trials; (iii) local and/or systemic statin use in EIP and/or ACP models; and (iv) quantitative evaluation of periodontal tissues (i.e., alveolar bone level/amount, attachment level, cementum formation, periodontal ligament formation).

Sixteen studies in EIP models and 7 studies in ACP models evaluated simvastatin, atorvastatin or rosuvastatin. Thirteen of the EIP (81%) and 2 of the ACP (29%) studies presented significantly better results in terms of alveolar bone level/amount in favor of statins. Meta-analysis based on 14 EIP trials confirmed a significant benefit of local and systemic statin use (P < .001) in terms of alveolar bone level/amount; meta-regression revealed that statin type exhibited a significant effect (P = .014) in favor of atorvastatin. Three studies reported a significantly higher periodontal attachment level in favor of statin use (P < .001). Complete periodontal regeneration was never observed; furthermore, statins did not exert any apparent effect on cementum formation. Neither local nor systemic use of statins resulted in severe adverse effects. Statin use in periodontal indications has a positive effect on periodontal tissue parameters, supporting the positive results already observed in clinical trials. Nevertheless, not all statins available have been tested so far, and further research is needed to identify the maximum effective concentration/dose and optimal carrier.

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Inappropriate epidemiological diagnostic measures of periodontitis showed no significant association between obesity and periodontal attachment loss, calculus, oral hygiene index and community periodontal index. Two prospective cohort studies in the review were significantly associated with measures of 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.
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.
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.

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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Authors
Vivares-Builes AM; Rangel-Rincon LJ; Botero JE; Agudelo-Suarez AA.
Authors Full Name
Vivares-Builes, Annie M; Rangel-Rincon, Leidy Johana; Botero, Javier Enrique; Agudelo-Suarez, Andres A.
Institution
Vivares-Builes, Annie M. Faculty of Dentistry, Universidad de Antioquia, Medellin, Colombia.
Rangel-Rincon, Leidy Johana. Faculty of Dentistry, Universidad de Antioquia, Medellin, Colombia.
Botero, Javier Enrique. Faculty of Dentistry, Universidad de Antioquia, Medellin, Colombia.
Agudelo-Suarez, Andres A. Faculty of Dentistry, Universidad de Antioquia, Medellin, Colombia. Electronic address: oleduga@gmail.com.
Abstract
OBJECTIVES: Scientific literature has established that the periodontal condition during pregnancy could be associated with obstetric/neonatal morbidity, and these effects have an important relationship with problems during childhood and cardiovascular disease in adulthood. This umbrella review aimed to summarize the results about the association between maternal periodontitis and obstetric complications (low birth weight, preterm delivery, and preeclampsia) and identify the gaps in the scientific literature.
METHODS: 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. The magnitude and statistical significance of this relationship are influenced by the context in which the studies have been conducted. Gaps were identified in the definition/evaluation of periodontal disease, criteria of gestational age for study purposes, and potential confounders, among others.
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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Title
Association between Apical Periodontitis and Interleukin Gene Polymorphisms: A Systematic Review and Meta-analysis.

[Review] Source

<table>
<thead>
<tr>
<th>Authors</th>
<th>Salles AG; Antunes LAA; Kuchler EC; Antunes LS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors Full Name</td>
<td>Salles, Alessandro G; Antunes, Livia A A; Kuchler, Erika Calvano; Antunes, Leonardo S.</td>
</tr>
</tbody>
</table>

Institution
Salles, Alessandro G. Postgraduate Program, School of Dentistry, Fluminense Federal University, Niteroi, Rio de Janeiro, Brazil.
Antunes, Livia A A. Department of Specific Formation, School of Dentistry, Fluminense Federal University, Nova Friburgo, Rio de Janeiro, Brazil.
Kuchler, Erika Calvano. Department of Pediatric Dentistry, School of Dentistry of Ribeirao Preto, University of Sao Paulo, Ribeirao Preto, Sao Paulo, Brazil.
Antunes, Leonardo S. Department of Specific Formation, School of Dentistry, Fluminense Federal University, Nova Friburgo, Rio de Janeiro, Brazil. Electronic address: leonardoantunes@id.uff.br.

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.

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

[Review] Source

<table>
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<th>Authors</th>
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</tr>
</thead>
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<td>Authors Full Name</td>
<td>Shi, Quan; Zhang, Bin; Xing, Helin; Yang, Shuo; Xu, Juan; Liu, Hongchen.</td>
</tr>
</tbody>
</table>

Institution
Shi, Quan. Department of Stomatology, Chinese PLA General Hospital, Beijing, China.
Zhang, Bin. Department of Stomatology, Chinese PLA General Hospital, Beijing, China.
Xing, Helin. Department of Stomatology, Chinese PLA General Hospital, Beijing, China.
Yang, Shuo. Department of Stomatology, Chinese PLA General Hospital, Beijing, China.
Xu, Juan. Department of Stomatology, Chinese PLA General Hospital, Beijing, China.
Liu, Hongchen. Department of Stomatology, Chinese PLA General Hospital, Beijing, China.

Abstract
The background and objective of the study were to assess the association between chronic obstructive pulmonary disease (COPD) and periodontitis. 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.
<b>Methods:</b> 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.

<b>Results:</b> 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), 6.878 (5.489-8.266), 0.364 (0.036-0.692), and -3.726 (-5.120 to -2.331), respectively.

<b>Conclusion:</b> 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.
In-Data-Review
Authors
Madianos PN; Koromantzos PA.
Author NameID
Madianos, Phoebus N; ORCID: http://orcid.org/0000-0002-5990-5723
Authors Full Name
Madianos, Phoebus N; Koromantzos, Panagiotis A.
Institution
Madianos, Phoebus N. Department of Periodontology, School of Dentistry, National and Kapodistrian University of Athens, Athens, Greece.
Koromantzos, Panagiotis A. Department of Periodontology, School of Dentistry, National and Kapodistrian University of Athens, Athens, Greece.
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Abstract
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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McGowan K; McGowan T; Ivanovski S.
Author NameID
McGowan, Kelly; ORCID: http://orcid.org/0000-0002-8603-6527
Ivanovski, Saso; ORCID: http://orcid.org/0000-0001-5339-0936
Authors Full Name
McGowan, Kelly; McGowan, Troy; Ivanovski, Saso.
Institution
McGowan, Kelly. School of Dentistry and Oral Health, Griffith University, Southport, Qld, Australia.
McGowan, Troy. School of Dentistry and Oral Health, Griffith University, Southport, Qld, Australia.
Ivanovski, Saso. School of Dentistry, University of Queensland, Herston, Qld, Australia.
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McGowan, Kelly; ORCID: http://orcid.org/0000-0002-8603-6527
Ivanovski, Saso; ORCID: http://orcid.org/0000-0001-5339-0936
Authors Full Name
McGowan, Kelly; McGowan, Troy; Ivanovski, Saso.
Institution
McGowan, Kelly. School of Dentistry and Oral Health, Griffith University, Southport, Qld, Australia.
McGowan, Troy. School of Dentistry and Oral Health, Griffith University, Southport, Qld, Australia.
Ivanovski, Saso. School of Dentistry, University of Queensland, Herston, Qld, Australia.
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Author NameID
McGowan, Kelly; ORCID: http://orcid.org/0000-0002-8603-6527
Ivanovski, Saso; ORCID: http://orcid.org/0000-0001-5339-0936
Authors Full Name
McGowan, Kelly; McGowan, Troy; Ivanovski, Saso.
Institution
McGowan, Kelly. School of Dentistry and Oral Health, Griffith University, Southport, Qld, Australia.
McGowan, Troy. School of Dentistry and Oral Health, Griffith University, Southport, Qld, Australia.
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and longer duration groups were minimally greater (0.04 and 0.05, respectively), and there was one report of anaphylaxis; 1.3% of patients were not fully compliant.

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.
Cowden Syndrome Associated with Severe Periodontal Disease: A Short Literature Review and a Case Report. [Review]


Peric M; Toma S; Lasserre JF; Brecx M.

PURPOSE: The aim of this literature review and case report was to point out the relationship between Cowden Syndrome (CS) and severe periodontitis. CS is a rare autosomal dominant disorder characterised by skin and oral hamartomas, and is associated with an increased risk of cancer development.

CASE REPORT: The case of a 43-year old male patient affected by Cowden syndrome and presenting severe periodontitis was reported.

RESULTS: It can be suggested that the specific gingival morphology of the patient with CS might be a risk factor for the development of periodontal disease, as described in the present case report.

CONCLUSION: Early diagnosis is crucial in patients affected by CS. The dentist may be the first to notice any atypical changes in the oral cavity and refer the patient for further examinations. Moreover, the mucosal and skin changes have a tendency to appear prior to the malignancies associated with the syndrome. This highlights the responsibility of the dentist in the early diagnosis of this progressive pathological syndrome.

Interferon Crevicular Fluid Profile and Correlation with Periodontal Disease and Wound Healing: A Systemic Review of Recent Data. [Review]


Fiorillo L; Cervino G; Herford AS; Lauritano F; D'Amico C; Lo Giudice R; Laino L; Troiano G; Crimi S; Cicciu M.

INTERFERON CREVICULAR FLUID PROFILE AND CORRELATION WITH PERIODONTAL DISEASE AND WOUND HEALING: A SYSTEMIC REVIEW OF RECENT DATA.

Fiorillo, Luca. Department of Biomedical and Dental Sciences and Morphological and Functional Imaging, Messina University, 98122 Messina, Italy. lucafiorillo@live.it.

Cervino, Gabriele. Department of Biomedical and Dental Sciences and Morphological and Functional Imaging, Messina University, 98122 Messina, Italy. gcervino@unime.it.

Herford, Alan Scott. Department of Maxillofacial Surgery, Loma Linda University, Loma Linda, CA 92354, USA. aherford@llu.edu.
The effect of orthodontic treatment on periodontal tissue inflammation: A systematic review. [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 elements.

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.

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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.
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 mechanical periodontal therapy and a placebo gel (2.90 +/- 0.35, 3.90 +/- 0.77, 3.06 +/- 0.71 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.

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.
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.
RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

MATERIALS AND METHODS: Electronic and manual searches of observational studies of implants with loading of more than 6 months were conducted. The quality of the studies was evaluated, and finally, a description (qualitative analysis) and a meta-analysis (quantitative analysis) of the available studies were performed.

RESULTS: Fifty-five studies were included in this systematic review, 32 of which met the criteria for evaluation of disease based on PPD and BOP. A total of 2,734 subjects and 7,849 implants were evaluated. The prevalence of peri-implantitis, defined by PPD and BOP, was 17% when the unit of analysis was the subject, and 11% when it was the implant. If the clinical criterion was PPD >= 4 mm, the prevalence by subject was 34% and by implant 11%. If PPD was >= 5 mm, the prevalence by subject was 12% and by implant 10%. Finally, if the clinical criterion was PPD >= 6 mm, the prevalence by subject was 18% and by implant 10%.

CONCLUSION: The prevalence of peri-implantitis is influenced by the criteria used for the case definition, and the true prevalence may currently be incorrectly estimated.
Nutraceuticals in Periodontal Health: A Systematic Review on the Role of Vitamins in Periodontal Health Maintenance. [Review]

Abstract
A systematic literature review was performed regarding the accuracy and usefulness of cone beam computed tomography (CBCT) in the field of periodontology. A total of 580 articles were identified, of which 13 met the inclusion criteria. Results showed a high accuracy of CBCT in visualizing periodontal structures and the demonstrated the usefulness of CBCT in regenerative periodontal surgery of maxillary molars. It remains questionable whether this gain of additional information actually leads to a better clinical outcome in periodontal treatment. Currently, the use of CBCT in periodontology should be restricted to complex periodontal cases, particularly those involving maxillary molars.

An abstract for a recent systematic review on the role of vitamins in periodontal health maintenance.
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 +/- 2.98). The difference in mean 8-OHdG concentration in saliva between periodontal and healthy subjects was estimated at 2.11 ng/ml (95% CI 1.23-2.98). The different saliva collection methods (stimulated/unstimulated) did not explain the heterogeneity. The 8-OHdG levels in saliva of periodontal patients were almost double to those of healthy patients: 8-OHdG is clearly a powerful periodontal disease marker.

Publication Type

Year of Publication
2018
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.

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

Gingival melanin depigmentation by Er:YAG laser: A literature review. [Review]

Abstract
Laser ablation is recently suggested as a most effective and reliable technique for depigmentation of melanin hyperpigmented gingiva. To date, different lasers have been used for gingival depigmentation (CO₂, diode, Nd:YAG, Er:YAG, and Er,Cr:YSGG lasers). The use of Er:YAG laser for depigmentation of melanin hyperpigmented gingiva has gained increasing importance in recent years. The purpose of this study was to report removal of gingival melanin pigmentation using an Er:YAG laser in a literature review. The main outcomes, such as improvement of signs (clinical parameters of bleeding, erythema, swelling and wound healing), symptoms (pain) and melanin recurrence/repigmentation were measured. The literature demonstrated that depigmentation of gingival melanin pigmentation can be performed safely and effectively by Er:YAG laser resulting in healing and an esthetically significant improvement of gingival discoloration. Thus, Er:YAG laser seems to be safe and useful in melanin depigmentation procedure. However, the main issue in giving the final conclusion of the optimal Er:YAG laser use in melanin depigmentation is that, to date, studies are offering completely discrepant Er:YAG laser procedure protocols (complex settings of laser parameters), and different criteria for the assessment of depigmentation and repigmentation (recurrence), thus hampering the comparison of the results. Therefore, further studies are necessary to give an optimal recommendation on the use of Er:YAG laser in gingival melanin hyperpigmentation.
Does the adjunctive use of statins provide additional benefits to nonsurgical periodontal treatment? A systematic review and meta-analysis. [Review]


VI 1

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

Source

VI 1

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

Source

VI 1

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.
Title
The effect of professional tooth cleaning or non-surgical periodontal therapy on oral halitosis in patients with periodontal diseases. A systematic review. [Review]
Source
VI 1
Status
MEDLINE
Authors
Deutscher H; Derman S; Barbe AG; Seemann R; Noack MJ.

Abstract
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: 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: 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: 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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28544259
Title
Periodontal maintenance following active specialist treatment: Should patients stay put or return to primary dental care for continuing care? A comparison of outcomes based on the literature. [Review]
Source
VI 1
Status
MEDLINE
Authors
Leavy PG; Robertson DP.

Abstract
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 SCIENCE 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
AIM: This systematic review was performed to establish the effect of a manual toothbrush with tapered toothbrush filaments (TFTBs) compared to a manual toothbrush with end-rounded toothbrush filaments (ERTB) on clinical parameters of dental plaque, gingivitis and gingival abrasion.

MATERIALS AND METHODS: MEDLINE-PubMed and Cochrane-CENTRAL databases were searched. The inclusion criteria were (randomized) controlled clinical trials, participants >=18 years and papers evaluating the effect of a TFTB compared to an ERTB. Data were extracted for dental plaque index (PI), bleeding scores (BS), gingival index scores (GI) and gingival abrasion scores (GA). A descriptive analysis and a meta-analysis were performed when appropriate.

RESULTS: An independent screening of 33 unique papers resulted in seven eligible publications, which included eight comparisons. Meta-analysis did not show a significant difference between TFTB and ERTB with respect to PI scores. The meta-analysis of the GI scores showed a significant mean difference in favour of the TFTB (DfM=-0.12 [95% CI: -0.17; -0.07]). Of the three comparisons evaluating GA, no differences were found.

CONCLUSION: With respect to plaque removal, evidence that supports the recommendation for usage of a TFTB over an ERTB is lacking. Regarding GI, there is minimal evidence favouring a TFTB over an ERTB and the clinical relevance of this difference is probably negligible. Therefore, based on the collective evidence emerging from this systematic review, the strength and direction of the recommendation, there appears to be no firm evidence for a dental healthcare professional to advise the use of a TFTB over the use of an ERTB.

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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.

Abstract

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

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29565801
Title
Mesenchymal Stem Cells of Dental Origin for Inducing Tissue Regeneration in Periodontitis: A Mini-Review. [Review]
Source
VI 1
Status
MEDLINE
Authors
Hernandez-Monjaraz B; Santiago-Osorio E; Monroy-Garcia A; Ledesma-Martinez E; Mendoza-Nunez VM.
Authors Full Name
Institution
Hernandez-Monjaraz, Beatriz. Research Unit on Gerontology, FES Zaragoza, National Autonomous University of Mexico, 09230 Mexico City, Mexico. beatrizhmonjaraz@hotmail.com.
Santiago-Osorio, Edemlrio. Haematopoiesis and Leukaemia Laboratory, Research Unit on Cell Differentiation and Cancer, FES Zaragoza, National Autonomous University of Mexico, 09230 Mexico City, Mexico. edemlrio@unam.mx.
Monroy-Garcia, Alberto. Immunology and Cancer Laboratory, Oncology Research Unit, Oncology Hospital, National Medical Center, IMSS, 09230 Mexico City, Mexico. albertomon@yahoo.com.
Ledesma-Martinez, Edgar. Haematopoiesis and Leukaemia Laboratory, Research Unit on Cell Differentiation and Cancer, FES Zaragoza, National Autonomous University of Mexico, 09230 Mexico City, Mexico. 2814.260@gmail.com.
Mendoza-Nunez, Victor Manuel. Research Unit on Gerontology, FES Zaragoza, National Autonomous University of Mexico, 09230 Mexico City, Mexico. mendovic@unam.mx.
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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2018

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Title
Genetic polymorphisms and periodontal disease in populations of African descent: A review. [Review]
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VI 1
Status
MEDLINE
Authors
Goncalves PF; Harris TH; Elmariah T; Aukhil I; Wallace MR; Shaddox LM.
Author NameID
Shaddox, L M; ORCID: http://orcid.org/0000-0003-0948-1667
Authors Full Name
Goncalves, P F; Harris, T H; Elmariah, T; Aukhil, I; Wallace, M R; Shaddox, L M.
Institution
Goncalves, P F. Department of Periodontology, College of Dentistry, University of Florida, Gainesville, FL, USA.
Goncalves, P F. Department of Dentistry, Federal University of Jequitinhonha and Mucuri Valleys, Diamantina, MG, Brazil.
Harris, T H. Department of Periodontology, College of Dentistry, University of Florida, Gainesville, FL, USA.
Elmariah, T. Department of Periodontology, College of Dentistry, University of Florida, Gainesville, FL, USA.
Aukhil, I. Department of Periodontology, College of Dentistry, University of Florida, Gainesville, FL, USA.
Wallace, M R. Department of Molecular Genetics and Microbiology, College of Medicine, University of Florida, Gainesville, FL, USA.
Shaddox, L M. Department of Periodontology, College of Dentistry, University of Florida, Gainesville, FL, USA.
Local Messages
THIS JOURNAL IS AVAILABLE IN THE BDA LIBRARY, TO REQUEST THIS ARTICLE FROM THE LIBRARY GO TO:
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.

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.
BACKGROUND: Several studies have examined the association between the IL-13 -1112C/T polymorphism and periodontitis susceptibility. A meta-analysis.

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 met the inclusion criteria and were included in the present systematic review. The studies demonstrated significantly higher concentrations of MMP-8 in periodontal disease compared with controls, as well as in patients presenting more advanced stages of periodontal disease. The findings on higher MMP-8 concentrations in patients with periodontal disease compared with controls imply the potential adjunctive use of MMP-8 in the diagnosis of periodontal disease.
### Recent Systematic Reviews Related to Periodontology

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.

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**Title:** Association of periodontitis with preterm birth and low birth weight: a comprehensive review. [Review]


**Status:** MEDLINE

**Authors:**

**Authors Full Name:**
- Puertas, Alberto; ORCID: http://orcid.org/0000-0001-5574-040X

**Institution:**
- Puertas, Alberto. a Department of Obstetrics and Gynecology, "Virgen de las Nieves" University Hospital, Granada, Spain.
- Magan-Fernandez, Antonio. b Periodontology Department, School of Dentistry, University of Granada, Granada, Spain.
- Blanc, Vanessa. c Microbiology Laboratory, Dentaid Research Center, Barcelona, Spain.
- Revelles, Laura. d Department of Obstetrics and Gynecology, "Virgen de las Nieves" University Hospital, Granada, Spain.
- O’Valle, Francisco. e Pathology Department, School of Medicine, (IBIMER, CIBM) University of Granada, Granada, Spain.
- Pozo, Elena. b Periodontology Department, School of Dentistry, University of Granada, Granada, Spain.
- Leon, Ruben. c Microbiology Laboratory, Dentaid Research Center, Barcelona, Spain.
- Mesa, Francisco. b Periodontology Department, School of Dentistry, University of Granada, Granada, Spain.

**Abstract:**

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.

**Publication Type:** Journal Article. Review.

**Year of Publication:** 2018

**Unique Identifier:** 29502214

**Title:** Does diabetes increase the risk of periodontitis? A systematic review and meta-regression analysis of longitudinal prospective studies. [Review]

**Source:** Acta Diabetologica. 55(7):653-667, 2018 Jul.

**Status:** MEDLINE

**Authors:**
- Nascimento GG; Leite FRM; Vestergaard P; Scheutz F; Lopez R.


**Authors Full Name**
Nascimento, Gustavo G; Leite, Fabio R M; Vestergaard, Peter; Scheutz, Flemming; Lopez, Rodrigo.

**Institution**
Nascimento, Gustavo G. Section of Periodontology, Department of Dentistry and Oral Health, Aarhus University, Vennelyst Boulevard 9, 8000, Aarhus C, Denmark. ggn@dent.au.dk.
Leite, Fabio R M. Section of Periodontology, Department of Dentistry and Oral Health, Aarhus University, Vennelyst Boulevard 9, 8000, Aarhus C, Denmark.
Vestergaard, Peter. Department of Clinical Medicine, Aalborg University Hospital, Aalborg, Denmark.
Vestergaard, Peter. Department of Endocrinology, Aalborg University Hospital, Aalborg, Denmark.
Vestergaard, Peter. Steno Diabetes Center, Aalborg University Hospital, Aalborg, Denmark.
Scheutz, Flemming. Section of Periodontology, Department of Dentistry and Oral Health, Aarhus University, Vennelyst Boulevard 9, 8000, Aarhus C, Denmark.
Lopez, Rodrigo. Section of Periodontology, Department of Dentistry and Oral Health, Aarhus University, Vennelyst Boulevard 9, 8000, Aarhus C, Denmark.

**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.

**Publication Type**

**Year of Publication**
2018

**Unique Identifier**
29664916

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

**Source**

**Authors**
Corbella S; Veronesi P; Galimberti V; Weinstein R; Del Fabbro M; Francetti L.

**Authors Full Name**
Corbella, Stefano; Veronesi, Paolo; Galimberti, Viviana; Weinstein, Roberto; Del Fabbro, Massimo; Francetti, Luca.

**Institution**
Corbella, Stefano. IRCCS Istituto Ortopedico Galeazzi, Milan, Italy.
Corbella, Stefano. Department of Biomedical, Surgical and Dental Sciences, Universita degli Studi di Milano, Milan, Italy.
Veronesi, Paolo. European Institute of Oncology, Division of Senology, Milan, Italy.
Veronesi, Paolo. Universita degli Studi di Milano, Milan, Italy.
Galimberti, Viviana. European Institute of Oncology, Division of Senology, Milan, Italy.
Weinstein, Roberto. Scientific Director D&S ICH Humanitas Dental Center, Rozzano, Milan, Italy.
Del Fabbro, Massimo. IRCCS Istituto Ortopedico Galeazzi, Milan, Italy.
Del Fabbro, Massimo. Department of Biomedical, Surgical and Dental Sciences, Universita degli Studi di Milano, Milan, Italy.
Francetti, Luca. IRCCS Istituto Ortopedico Galeazzi, Milan, Italy.
Francetti, Luca. Department of Biomedical, Surgical and Dental Sciences, Universita degli Studi di Milano, Milan, Italy.

**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.
The aim of the present study was to evaluate the association between metabolic syndrome (MS) and periodontitis (PD), through a systematic review and meta-analysis. Original observational studies assessing the association between MS and PD in adults, published before May 11th (2017), were identified through electronic searches of MEDLINE, EMBASE and Cochrane Library databases. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guideline was used. For studies to be included, they had to mention the criteria used to diagnose MS and to have used at least one clinical measure to diagnose PD. There was no language restriction. Three reviewers independently identified eligible studies for possible inclusion in the systematic review and meta-analysis. The quality of the studies was evaluated by the Newcastle-Ottawa scale for observational studies. A random model meta-analysis was conducted. The strategies used to investigate heterogeneity were sequential analysis, subgroup analysis, univariate meta-regression and sensitivity analysis. Thirty-three studies met the inclusion criteria for the systematic review, and 26 had enough information to be included in the meta-analysis, totaling 52,504 patients. MS and PD were associated with an odds ratio of 1.38 (95% CI 1.26-1.51; I² = 92.7%; p < 0.001). Subgroup analysis showed that complete periodontal examination (I² = 70.6%; p = 0.001) partially explained the variability between studies. The present findings suggest an association between MS and PD. Individuals with MS are 38% more likely to present PD than individuals without this condition. Prospective studies should be conducted to establish cause and effect relations between MS and PD.
Comprehensive meta-extraction was performed focusing on ethnicity. A review of literature was performed in several databases to studies published before June 2017. Data on polymorphism in cytokine genes, however, the results remained contradictory. This study aimed at evaluating the rs1143634 polymorphism in interleukin-1B gene, a cytokine gene, and the risk of chronic periodontitis with conducting a meta-analysis. Various flap graft techniques in the treatment of gingival recession have already been reported in the literatures for root coverage. Laser therapy has effects of ablative, hemostatic, and decontamination. Therefore, we performed a meta-analysis of randomized controlled trials (RCTs) to compare the efficacy of flap surgery combined with laser with surgery alone for treating gingival recession. The studies were searched from PubMed, Embase, Web of science, and the Cochrane Central Register of Controlled Trials by two reviewers up to August 2017. The quality of RCTs was assessed by Cochrane Handbook. Data were extracted from studies and analyzed by Review Manager 5.3. 95% confidence interval (CI) and risk ratio (RR) were calculated for dichotomous data. Seven RCTs with 173 patients and 296 teeth were included in the meta-analysis. We found no statistically significant differences between two groups in GRD (gingival recession depth) (P=0.21), GRW (gingival recession width) (P=0.92), RES (root esthetic score) (P=0.21), and CRC (complete root coverage) (P=0.09). Statistically significant differences were found between two groups in the WKT (width of keratinized tissue) (P<0.0001) and 1-year follow-up of PD (probing depth) (P=0.03) and CAL (clinical attachment level) (P<0.0001). The meta-analysis found that surgery with laser therapy provided clinical advantages in terms of WKT and 1-year follow-up of PD and CAL. However, flap graft associated with laser did not offer additional benefit to root coverage and esthetics in treating gingival recession. More long-term studies are required to assess these parameters.

**Abstract**

Several factors are involved in the periodontitis with host response through cytokines and as well as with influence of polymorphisms in cytokine genes, however the results remained contradictory. This study aimed at evaluating the rs1143634 polymorphism in interleukin-1B gene, a cytokine gene, and the risk of chronic periodontitis with conducting a meta-analysis focusing on ethnicity. A review in literature was performed in several databases to studies published before June 2017. Data extraction was performed by two calibrated investigators and the calculations of the meta-analysis were obtained through Review Manager version 5.2 statistical software with Odds Ratio (OR) calculation and Funnel plot (P<0.05) to heterogeneity and the Comprehensive Meta-analysis version 3.3.070 to assessment publication bias by Egger's and Begg's tests. In overall, 54...
case/control studies composed the meta-analysis. T allele was significantly associated with patients case (OR=1.35, 95% CI: 1.24, 1.48, P<0.00001) in the overall analysis. The stratified evaluation showed the rs1143634 polymorphism had significant association with disease in Caucasian, Asian and mixed population was excepted in African ethnicity (P>0.05). No publication bias was found in allelic evaluation. This meta-analysis in 9376 participants with 54 case/control studies revealed the rs1143634 polymorphism was associated with elevated risk of chronic periodontitis in overall analysis as well as Caucasian and Asian ethnicities and Mixed population.

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Periodontal disease has an impact on patients' quality of life.

Source

Authors
Reynolds I; Duane B.

Authors Full Name
Reynolds, Ian; Duane, Brett.

Institution
Reynolds, Ian. Dublin Dental University Hospital, Dublin, Eire.
Duane, Brett. Dublin Dental University Hospital, Dublin, Eire.

Abstract
Data sourcesMedline, Embase, OpenGrey, Journal of Clinical Periodontology, Journal of Periodontology and a hand search of the bibliographies of retrieved publications.Study selectionTwo reviewers screened the title and abstract of 1134 studies from the literature and selected 37 suitable publications for inclusion following full text analysis of 109 papers and agreement between both reviewers. The search included observational, epidemiological studies and clinical trials that fulfilled the inclusion criteria. The publications assessed contained a periodontal clinical examination and a validated OHRQoL questionnaire. There were no language restrictions and the review was performed according to the MOOSE statement.Data extraction and synthesisData were extracted from each study applying the PECO 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 the heterogeneity of the included studies, therefore results were synthesised by applying a vote counting method.ResultsThirty-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 established. 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 the impact on OHRQoL. The findings support the association between clinically diagnosed periodontal diseases and OHRQoL with a dose-response relationship demonstrated. In summary, 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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Periodontal treatment for the prevention of adverse birth outcomes.

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VI 1

Authors
Spivakovsky S.

Authors Full Name
Spivakovsky, Silvia.

Institution
PURPOSE: To identify 100 top-cited articles published in periodontal journals and analyse the research trends by using citation analysis.

MATERIALS AND METHODS: 100 top-cited articles published in periodontal journals were retrieved by searching the database of the ISI Web of Science and Journal Citation reports. For each article, the following principal bibliometric parameters: authorship, geographic and institute origin, manuscript type, study design, scope of study, and citation count of each time period were analysed from 1965 to 2015.

RESULTS: The identified 100 top-cited articles were retrieved from five periodontal journals and citation counts were recorded between 262 and 1,693 times. For the institute of origin, the most productive institute, in terms of the number of 100 top-cited articles published, was the University of Gothenburg (Sweden) (n = 19), followed by the Forsyth Dental Center (USA) (n = 15). Most manuscripts were original research (n = 74), and the inflammatory periodontal disease (n = 59) was the most frequent topic studied. Interestingly, the trend of increase average citation reached significance for implantology (beta = 26.75, P = 0.003) and systemic interactions (beta = 29.63, P = 0.005), but not for inflammatory disease (beta = -10.30, P = 0.248) and tissue regeneration (beta = 9.04, P = 0.081). By using multivariable linear regression in a generalised linear model, suitable published journal (Journal of Clinical Periodontology), geographic regions (Europe), more intense international collaboration, adequate manuscript type (review article) and study design (systematic review) could be attributed to escalating average citation counts in implantology (all P < 0.05). However, for systemic interactions, only geographic region and study design were significantly associated with the increasing citation trend.

CONCLUSIONS: These principal bibliometric characteristics revealed escalated trends in average citation count in implantology throughout time. Conflict-of-interest statement The authors have stated explicitly that there are no conflicts of interest in connection with this article. The study was self-funded by the authors and their institution.
Melaleuca alternifolia and its application against dental plaque and periodontal diseases: A systematic review. [Review]


Melaleuca alternifolia and its application against dental plaque and periodontal diseases: A systematic review. [Review]

Source

VI 1
Status
MEDLINE
Authors
Casarin M; Pazinatto J; Santos RCV; Zanatta FB.

Author NameID
Casarin, Maisa; ORCID: http://orcid.org/0000-0002-3750-5091

Authors Full Name
Casarin, Maisa; Pazinatto, Josiele; Santos, Roberto Christ Vianna; Zanatta, Fabricio Batistin.

Institution
Casarin, Maisa. Department of Stomatology, School of Dentistry, Federal University of Santa Maria, Santa Maria, Brazil.
Pazinatto, Josiele. Department of Stomatology, School of Dentistry, Federal University of Santa Maria, Santa Maria, Brazil.
Santos, Roberto Christ Vianna. Department of Microbiology and Parasitology, Universidade Federal de Santa Maria, Santa Maria, Brazil.
Zanatta, Fabricio Batistin. Department of Stomatology, School of Dentistry, Federal University of Santa Maria, Santa Maria, Brazil.

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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Salivary matrix metalloproteinase (MMP)-8 as a biomarker for periodontitis: A PRISMA-compliant systematic review and meta-analysis. [Review]


Salivary matrix metalloproteinase (MMP)-8 as a biomarker for periodontitis: A PRISMA-compliant systematic review and meta-analysis. [Review]

Source

VI 1
Status
MEDLINE
Authors
Zhang L; Li X; Yan H; Huang L.

Authors Full Name
Zhang, Lin; Li, Xiue; Yan, Hong; Huang, Lei.

Institution
Zhang, Lin. Department of VIP Dental Service.
Li, Xiue. Department of Nursing, Peking University School and Hospital of Stomatology.
Yan, Hong. Department of VIP Dental Service.
Huang, Lei. Department of Clinical Laboratory, Peking University First Hospital, Beijing, China.

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). Methodological quality was assessed by the Newcastle Ottawa scale (NOS). Standard mean differences (SMDs), heterogeneity, and publication bias were assessed by Stata 13.0 software.

RESULTS: A total of 10 studies including 485 periodontitis patients and 379 healthy controls that met the preset inclusion criteria were included, the qualities of these studies were either good (n = 7) or moderate (n = 3). Eight studies showed salivary MMP-8 levels were higher in periodontitis patients compared with healthy controls (P < .05), while 2 studies showed opposite results (P >
Supportive periodontal therapy (SPT) for maintaining the dentition in adults treated for periodontitis. [Review]

CONCLUSION: Our meta-analysis showed that salivary MMP-8 levels were significantly higher in periodontitis patients compared with healthy controls overall. Due to the heterogeneity and publication bias of included studies, further high quality studies are still needed to verify the conclusion.

OBJECTIVES: To determine the effects of supportive periodontal therapy (SPT) in the maintenance of the dentition of adults treated for periodontitis.

SEARCH METHODS: Cochrane Oral Health's Information Specialist searched the following databases: Cochrane Oral Health's Trials Register (to 8 May 2017), the Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library, 2017, Issue 5), MEDLINE Ovid (1946 to 8 May 2017), and Embase Ovid (1980 to 8 May 2017). The US National Institutes of Health Trials Registry (ClinicalTrials.gov) and the World Health Organization International Clinical Trials Registry Platform were searched for ongoing trials. No restrictions were placed on the language or date of publication when searching the electronic databases.

SELECTION CRITERIA: Randomised controlled trials (RCTs) evaluating SPT versus monitoring only or alternative approaches to mechanical debridement; SPT alone versus SPT with adjunctive interventions; different approaches to or providers of SPT; and different time intervals for SPT delivery. We excluded split-mouth studies where we considered 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 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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Authors
Capodiferro S.
Author NameID
Capodiferro, Saverio; ORCID: http://orcid.org/0000-0002-9819-8229
Authors Full Name
Capodiferro, Saverio.
Institution
Capodiferro, Saverio. Department of Interdisciplinary Medicine, "Aldo Moro" University of Bari, Piazza G. Cesare 11, 70124, Bari, Italy. capodiferro.saverio@gmail.com.
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Authors
Azaripour A; Dittrich S; Van Noorden CJF; Willershausen B.
Authors Full Name
Azaripour, Adriano; Dittrich, Sebastian; Van Noorden, Cornelis J F; Willershausen, Brita.
Institution
Azaripour, Adriano. Department of Operative Dentistry and Periodontology, University Medical Center of the Johannes Gutenberg University Mainz, Augustusplatz 2, 55131, Mainz, Germany. adrianoasso@hotmail.com.
Dittrich, Sebastian. Department of Operative Dentistry and Periodontology, University Medical Center of the Johannes Gutenberg University Mainz, Augustusplatz 2, 55131, Mainz, Germany.
Van Noorden, Cornelis J F. Department of Cell Biology and Histology, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands.
Willershausen, Brita. Department of Operative Dentistry and Periodontology, University Medical Center of the Johannes Gutenberg University Mainz, Augustusplatz 2, 55131, Mainz, Germany.
Comments
Abstract
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> 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
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RECENT SYSTEMATIC REVIEWS RELATED TO PERIODONTOLOGY

(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 < 0.00001) 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 0.27-0.46). 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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2018

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29995795
Title
A meta-analysis of emotional disorders as possible risk factors for chronic periodontitis. [Review]
Source

Authors
Liu F; Wen YF; Zhou Y; Lei G; Guo QY; Dang YH.

Institution
Liu, Fei. Clinical Research Center of Shaanxi Province for Dental and Maxillofacial Diseases, College of Stomatology, Xi'an Jiaotong University.
Liu, Fei. College of Medicine & Forensics, Xi'an Jiaotong University Health Science Center.
Liu, Fei. Department of Pediatric Dentistry.
Wen, Yi-Feng. Clinical Research Center of Shaanxi Province for Dental and Maxillofacial Diseases, College of Stomatology, Xi'an Jiaotong University.
Wen, Yi-Feng. Department of Endodontic Dentistry, Affiliated Stomatlogy Hospita of Xi'an Jiaotong University.
Zhou, Yuan. College of Public Health, Xi'an Jiaotong University Health Science Center, Xi'an, Shaanxi, PR China.
Lei, Gang. Clinical Research Center of Shaanxi Province for Dental and Maxillofacial Diseases, College of Stomatology, Xi'an Jiaotong University.
Guo, Qing-Yu. Clinical Research Center of Shaanxi Province for Dental and Maxillofacial Diseases, College of Stomatology, Xi'an Jiaotong University.
Guo, Qing-Yu. Department of Pediatric Dentistry.
Dang, Yong-Hui. College of Medicine & Forensics, Xi'an Jiaotong University Health Science Center.
Dang, Yong-Hui. State Key Laboratory for Manufacturing Systems Engineering.

Abstract
The aim of the present meta-analysis was to evaluate scientific evidence on the association between emotional disorder (depression and anxiety) and chronic periodontitis. An overall electronic literature search in PubMed, ISI Web of Science, Cochrane Library, and China National Knowledge Infrastructure was undertaken up to November 2017. Newcastle-Ottawa scale was applied to ascertain the validity of each eligible study. Stata statistical software was used to perform meta-analysis. The strength of the association between periodontitis and emotional disorder was measured by odds ratios (ORs) with their 95% confidence intervals (95% CIs). Subgroup analysis and sensitivity analysis were performed. Publication bias was assessed through funnel plots and Begger's test. A total of 14 eligible articles were included in the meta-analysis, 6 of them were focused exclusively on depression, whereas 8 studies investigated both depression and anxiety. There was significant association between emotional disorder and chronic periodontitis (OR = 1.54, 95% CI = 1.27-1.86). Sensitivity analyses confirmed the stability of the present results. No evidence of asymmetry was observed in Begger's test. This meta-analysis demonstrates significant association between emotional disorder (including anxiety and depression) and chronic periodontitis. Nevertheless, the result should be interpreted with caution because of the potential bias and confounding in the included studies.

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2018

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28869397
Title
Precision of cone beam CT to assess periodontal bone defects: a systematic review and meta-analysis. [Review]
Source

Authors
Haas LF; Zimmermann GS; De Luca Canto G; Flores-Mir C; Correa M.

Institution
Haas, Leticia Fernanda. 1 Health Sciences Center, Federal University of Santa Catarina, Florianopolis, Brazil.
Zimmermann, Glauca Santos. 2 Department of Dentistry, Federal University of Santa Catarina, Santa Catarina, Brazil.
De Luca Canto, G. 2 Department of Dentistry, Federal University of Santa Catarina, Santa Catarina, Brazil.
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.

De Luca Canto, G. 3 Department of Dentistry, Faculty of Medicine and Dentistry University of Alberta, Edmonton, AB, Canada. Flores-Mir, Carlos. 3 Department of Dentistry, Faculty of Medicine and Dentistry University of Alberta, Edmonton, AB, Canada. Correa, Marcio. 2 Department of Dentistry, Federal University of Santa Catarina, Santa Catarina, Brazil.

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Abstract
Assessment of the periodontal health status in patients undergoing orthodontic treatment with fixed appliances and Invisalign system: A meta-analysis.

Source

Subject Area
VI 1

Status
MEDLINE

Authors
Lu H; Tang H; Zhou T; Kang N.

Authors Full Name
Lu, Haili; Tang, Haifang; Zhou, Tian; Kang, Na.

Institution
Lu, Haili. Department of Orthodontics, the Affiliated Stomatological Hospital of Guangxi Medical University, Nanning, Guangxi, China.

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.

De Luca Canto, G. 3 Department of Dentistry, Faculty of Medicine and Dentistry University of Alberta, Edmonton, AB, Canada. Flores-Mir, Carlos. 3 Department of Dentistry, Faculty of Medicine and Dentistry University of Alberta, Edmonton, AB, Canada. Correa, Marcio. 2 Department of Dentistry, Federal University of Santa Catarina, Santa Catarina, Brazil.

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Abstract
Assessment of the periodontal health status in patients undergoing orthodontic treatment with fixed appliances and Invisalign system: A meta-analysis.

Source