



RELATIONSHIP BETWEEN PERIODONTAL DISEASE AND CARDIOVASCULAR DISEASE

Dr. Yrene Peyramale / Dr. Marisabel Gomez
UNERG – Guárico - Venezuela



INTRODUCTION

Periodontal disease is a chronic inflammatory condition that affects the tissues surrounding and supporting the teeth. It is characterized by gum **inflammation**, the formation of periodontal pockets, deterioration of the alveolar bone, and, in advanced cases, tooth loss. According to data from the Centers for Disease Control and Prevention (CDC) in the United States, it is estimated that approximately **47.2%** of adults over 30 years old in the United States have some form of periodontal disease. On the other hand, **cardiovascular diseases** are conditions that affect the heart and blood vessels, such as coronary artery disease, myocardial infarction, and hypertension, among others. According to the World Health Organization, cardiovascular diseases are the leading cause of death worldwide. Claiming an estimated (31%) 17.9 million lives of all global deaths are estimated to be due to cardiovascular diseases.

OBJECTIVE

To propose a **preventive approach** to address oral health and early treatment of periodontal disease, aiming to have a positive impact on the prevention of cardiovascular diseases.

METHODS & MATERIAL

A literature review was conducted using various databases, including PubMed, NIH, JADA, MDPI, and the European Journal of Internal Medicine, to gather relevant studies published within the last 5 years. Ten articles were selected, representing different types of studies. To investigate the association between periodontal disease and cardiovascular diseases from various perspectives and levels of scientific evidence

INFLAMMATORY PATHWAY

The high concentration of pathogenic bacteria in dental plaque triggers an inflammatory immune response. This stimulates the production of inflammatory mediators and cytokines, promoting the release of enzymes that remodel the extracellular matrix and cause bone destruction. This process leads to bacterial dissemination and systemic infection, with a consequent inflammatory response. Additionally, periodontal pathogens have been detected in various tissues and organs of the cardiovascular system, including human cardiac tissue, pericardial fluids, heart valves, and atherosclerotic lesions. For these reasons, in recent decades, periodontitis has been associated with the development of systemic

RESULTS

| AUTHOR / YEAR | TITLE | STUDY DESIGN | SAMPLE SIZE | RESULT | CONCLUSION |
|--|--|--|---|--|--|
| Dr. Ibrahim Fazal February 2, 2023 | Association between cardiovascular and periodontal disease: more than what meets the eye | Cross-sectional and case-control studies | 233 controls with 97 nonfatal MI patients | Odds ratio for the presence of T. forsythia was 2.99 and for P. Gingivalis was 2.52 | These results support the idea that specific pathogenic bacteria found in PD may also be associated with MI |
| Moeintaghavi Hamid Reza, Masoud Amiri Jan 31 2019 | Evaluation of Effect of Surgical and Nonsurgical Periodontal Therapy in Patients with Severe Chronic Periodontitis | Clinical trial | 30 patients | All parameters showed a mean reduction, specifically CRP (p=0.011) and TC (p=0.035) which exhibited significant change. | Changes in blood parameters of all individuals before and after surgical and nonsurgical periodontal therapy |
| Romesh P. Nalliah April 19, 2022 | Association between periodontal care and hospitalization with acute myocardial infarction | Retrospective cohort | 2,370 Patients | Adjusted odds ratio, 1.63; 95% CI, 1.07 to 2.47; P = .02 | We found that periodontal care was associated with more after AMI visits. This suggests that there is a benefit to incorporating oral health care and medical care to improve AMI outcomes. |
| Attawood Lerpimonchai Jan 19 2021. | Periodontitis is associated with cardiovascular diseases: A 13-year study | Prospective cohort | 1850 patients | The prevalence of Mild 11.7%, Moderate 52.7% Severe 35.6%, | This study demonstrates that severe periodontitis is associated with an increased incidence of CHD, independent of established cardiovascular risk factor |
| Raima Bashir, Mervyn Hosein Fizza Saher July 05, 2021 | Periodontitis and myocardial infarction risk | Case control | 125 patients | Periodontitis was found to be prevalent in 71% of Myocardial Infarction (MI) patients compared to 29% in Control (non-Myocardial Infarct | Periodontitis was found to be prevalent among the MI patients suggesting a causal link between these two conditions that can be reduced by adopting a healthy lifestyle, refraining from smoking, good oral hygiene and visiting a dentist for regular check-up. |

CONCLUSION

These studies collectively provide evidence suggesting a link between periodontitis and cardiovascular diseases, particularly myocardial infarction and coronary heart disease. While causality has not been definitively established, improving oral health through periodontal interventions may have potential benefits in reducing cardiovascular risk factors and improving overall heart health. Larger and longer-term studies are still needed to fully understand the mechanisms and causal relationships between periodontitis and cardiovascular diseases.

REFERENCES

- 1- "Association between cardiovascular diseases and periodontal disease: more than what meets the eye" Authors: Bhavya Shetty, Ibrahim Fazal, Safiya Fatima Khan, Manjusha Nambiar, Khadijathul Irfana D, Rohit Prasad, Akshata Raj Journal: Drug Target Insights ISSN: 1177-3928 DOI: 10.33393/dti.2023.2510
- 2- "Periodontal Disease: A Risk Factor for Diabetes and Cardiovascular Disease" Authors: Daniela Liccardo, Alessandro Cannavo, Gianrico Spagnuolo, Nicola Ferrara, Antonio Cittadini, Carlo Rengo, Giuseppe Rengo Journal: International Journal of Molecular Sciences ISSN: 1422-0067 DOI: 10.3390/ijms20061414
- 3- "Association between periodontal care and hospitalization with acute myocardial infarction" Authors: Romesh P. Nalliah, Tanim Basu, Chiang-Hua Chang Journal: The Journal of the American Dental Association (JADA) Volume: 153 Issue: 8 Pages: 776-786.E2 Publication Date: August 2022 DOI: <https://doi.org/10.1016/j.adaj.2022.02.003>

Periodontal Disease Can Affect Your Heart & Body

Emerging evidence shows a relationship between periodontal disease, cardiovascular disease and other chronic diseases — the common link is **inflammation**.

