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THE CRITICAL CONNECTION BETWEEN ORAL HEALTH AND CARDIOVASCULAR WELL-BEING

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ABSTRACT

The relationship between oral health and cardiovascular health has gained significant attention, particularly regarding the prevention of periodontal diseases to mitigate cardiovascular complications, especially in hypertensive patients. Periodontal diseases, including gingivitis and periodontitis, are chronic infections affecting the gums and supporting structures of teeth, potentially leading to systemic inflammation and the release of inflammatory mediators into the bloodstream. This chronic inflammation is associated with cardiovascular diseases, as it can contribute to plaque formation in arteries, increasing the risk of adverse cardiac events. Hypertension is a notable risk factor for cardiovascular diseases, and studies suggest that individuals with periodontal diseases are more likely to develop hypertension and related conditions. Therefore, proper prevention and treatment of periodontal diseases play a crucial role in the cardiovascular health of hypertensive patients. Early detection and intervention through periodontal screening programs can help reduce systemic inflammation and healthcare costs related to cardiovascular complications. Various studies support the positive effects of periodontal therapy on cardiovascular risk factors, indicating significant reductions in blood pressure and inflammatory markers following periodontal treatment. Furthermore, the alarming prevalence of hypertension, affecting approximately 45% of the global population, necessitates increased awareness of its links to periodontal health. Collaborative approaches between dentists and primary care physicians are essential to improve early detection and management of both periodontal and systemic health issues. Investing in preventive dental care not only enhances oral health but can also lead to substantial savings in healthcare costs by alleviating the financial burden associated with treating cardiovascular diseases. Ultimately, integrating oral health into broader health strategies is vital for promoting overall health and preventing chronic diseases.

Keywords: Oral Health. Cardiovascular Disease. Hypertension. Periodontal Disease. Systemic Inflammation.

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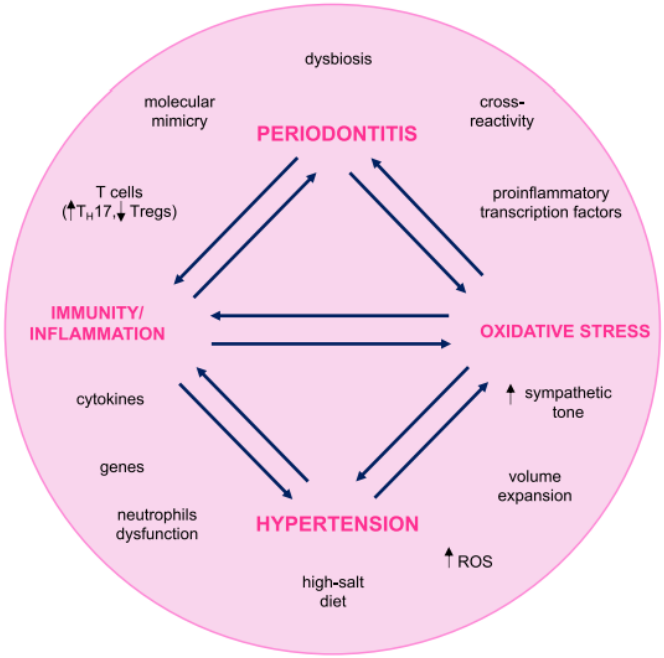
INTRODUCTION

The relationship between oral health and cardiovascular health has received increasing attention in recent decades, highlighting the importance of preventing periodontal diseases in reducing cardiovascular complications, especially in hypertensive patients. Periodontal diseases, such as gingivitis and periodontitis, are chronic infections that affect the gums and supporting tissues of the teeth, potentially leading to systemic inflammation and the release of inflammatory mediators into the bloodstream. This chronic inflammation is associated with the development of cardiovascular diseases, as it can contribute to plaque formation in the arteries, increasing the risk of adverse cardiac events.

Hypertension is a significant risk factor for cardiovascular diseases, and studies indicate that individuals with periodontal diseases are more likely to develop hypertension and other associated conditions, such as heart disease and strokes. Therefore, the prevention and proper treatment of periodontal diseases play a crucial role in the cardiovascular health of hypertensive patients, helping to mitigate the risks of complications. Screening programs and periodontal interventions are essential for the early detection and treatment of these diseases, thus reducing systemic inflammation and the costs associated with hospitalizations and treatments for cardiovascular complications. Educating patients about the importance of oral hygiene and periodontal care is essential for promoting adherence to self-care practices, contributing to a stronger overall and oral health.

Figure 1: Common pathogenetic events in periodontitis and hypertension.



Source: Del Pinto et al. (2020).

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Furthermore, the economic effectiveness of preventive interventions in oral health is evident. Investing in preventive dental care not only improves patients' oral health but can also lead to significant savings for health systems by reducing the financial burden associated with treating cardiovascular diseases and their complications. Thus, promoting the prevention of periodontal diseases emerges as an effective strategy to enhance cardiovascular health and reduce associated costs in hypertensive patients.

The study conducted by Vidal et al. (2013) analyzed the effects of non-surgical periodontal treatment in patients with refractory hypertension, focusing on cardiovascular indicators such as left ventricular mass (LVM), arterial stiffness, systolic and diastolic blood pressure, as well as plasma levels of inflammatory markers such as C-reactive protein (CRP), fibrinogen, and interleukin-6. The research included 26 patients with a mean age of 53.6 years, diagnosed with refractory hypertension and generalized chronic periodontitis. The results showed that periodontal treatment resulted in significant reductions in all evaluated cardiovascular risk markers. After six months of follow-up, systolic and diastolic blood pressure decreased by 12.5 mmHg and 10.0 mmHg, respectively, while LVM reduced by 12.9 g, and arterial stiffness showed a decrease of 0.9 m/s. Additionally, the levels of CRP, IL-6, and fibrinogen showed significant decreases. Thus, the results indicate that periodontal therapy not only improved the patients' oral health but also had a positive impact on reducing cardiovascular risk in refractory hypertensive patients.

The study by Surma et al. (2021) highlights the significant role of arterial hypertension as an important risk factor for cardiovascular diseases, affecting about 45% of the global population. Alarmingly, only about 50% of treated hypertensive patients achieve effective blood pressure control. This high prevalence and inadequate control are largely attributed to low awareness of hypertensive factors, including periodontitis, a disease of significant social importance. Research has shown that periodontitis can lead to increased blood pressure, thereby elevating the risk of developing hypertension. Furthermore, the presence of periodontitis may render antihypertensive treatments less effective. Interventional studies indicate that treating periodontitis can reduce blood pressure in hypertensive patients. The relationship between hypertension and periodontitis is complex, primarily involving the impairment of endothelial vasodilatory properties. Therefore, maintaining oral hygiene and treating periodontitis should be considered essential strategies for preventing hypertension and enhancing the effectiveness of antihypertensive therapies.

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The study by Sanz et al. (2020) addresses the critical issue of cardiovascular diseases (CVD) in Europe, which account for 3.9 million deaths, representing 45% of total mortality, with ischemic heart disease, stroke, and hypertension as the main contributors. Meanwhile, periodontitis stands out as a prevalent chronic non-communicable disease, affecting 11.2% of the global population, making it the sixth most common disease worldwide. The authors emphasize the independent associations between severe periodontitis and various non-communicable diseases, particularly CVDs. In 2012, a workshop organized by the European Federation of Periodontology (EFP) and the American Academy of Periodontology convened to review existing literature linking periodontitis to systemic diseases, including CVDs. Recent advances in scientific research have further corroborated these associations. This review summarizes the findings of a workshop co-organized by the EFP and the World Heart Federation (WHF), updating the epidemiological evidence supporting the links between periodontitis and CVDs, exploring the underlying mechanisms, and assessing the effects of periodontal therapy on cardiovascular outcomes. Additionally, it highlights the potential risks and complications of periodontal treatments in patients undergoing anti-thrombotic therapy and provides recommendations for dentists, physicians, and patients seeking care in dental and medical settings.

The study by Herrera et al. (2023) investigates the significant implications of the association between periodontal diseases and systemic diseases for both dentists and family physicians, emphasizing their roles in managing non-communicable diseases (NCDs) and promoting healthy lifestyles. Utilizing consensus reports from previous workshops that focused on the connections between periodontitis and diabetes (2017) and cardiovascular diseases (2019), the research highlights the independent association of periodontitis with various NCDs, including cardiovascular diseases, diabetes, chronic obstructive pulmonary disease (COPD), obstructive sleep apnea, and COVID-19-related complications. The findings suggest that a collaborative approach between dentists and family physicians is essential for early detection and management of these conditions. The study advocates for the implementation of strategies in primary care settings to identify periodontitis and raise awareness among family physicians about the implications of periodontal diseases. Conversely, it calls for oral health professionals to be educated about the importance of NCDs and their associated risk factors. Ultimately, the research highlights the need to promote closer collaboration between oral health and primary care

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professionals to enhance early detection, effectively manage NCDs, and encourage healthier lifestyle choices among patients.

Finally, the study by Kim et al. (2021) reinforces the relevance of the association between periodontal diseases and systemic diseases, emphasizing the importance of an integrated approach in patient care. The research stresses that mutual understanding of the implications of periodontal and non-communicable diseases can lead to better health outcomes, demonstrating that collaboration between dentists and family physicians is fundamental for promoting health holistically. This synergy in treatment not only improves oral health but also contributes to cardiovascular health, underscoring the importance of considering oral health as an essential part of overall health.

In conclusion, the relationship between oral health and cardiovascular health is increasingly recognized as a vital aspect of overall well-being, particularly for hypertensive patients. The significant impact of periodontal diseases on systemic inflammation and cardiovascular risk underscores the need for proactive prevention and treatment strategies. Research consistently highlights that addressing periodontal health can lead to substantial improvements in cardiovascular indicators, ultimately reducing the risk of severe health complications and associated healthcare costs.

Furthermore, the collaborative efforts between dental professionals and primary care physicians are essential for effective management of both periodontal and systemic health issues. By fostering awareness and understanding of the connections between oral diseases and chronic conditions, healthcare providers can enhance early detection and intervention strategies, promoting healthier lifestyles and improved patient outcomes.

Overall, prioritizing oral health care not only benefits individual patients but also contributes to broader public health efforts aimed at reducing the burden of cardiovascular diseases. As the evidence linking periodontal disease to cardiovascular health continues to grow, it is imperative that healthcare systems integrate dental care into comprehensive health strategies, ensuring a holistic approach to patient care that recognizes the interconnectedness of oral and systemic health.

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