



Hypertension and Periodontitis: An Upcoming Joint Report by the Italian Society of Hypertension (SIIA) and the Italian Society of Periodontology and Implantology (SIdP)

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Cardiovascular diseases (CVD), such as coronary heart diseases, myocardial infarction, heart failure, and stroke, are the most common non-communicable diseases globally and represent a leading cause of death worldwide [1], accounting for nearly 18 million deaths on a yearly basis [2]. In Europe, such a pandemic is responsible for 3.9 million deaths annually, accounting for 45% of total mortality [3]. In the United States, on average every 37 s an adult dies from CVDs, with an estimated 850,000 deaths each year [4]. Thus, CVDs represent a noteworthy burden to the society in terms of social and economic costs [5, 6]. Health care expenditures, productivity losses, and informal care of people with CVDs are, in fact, estimated to cost the European Union's economy 210 € billion a year [3].

CVD-related morbidity and mortality are largely driven by one major cardiovascular risk factor: high blood pressure,

or hypertension. Other traditional modifiable cardiovascular risk factors include tobacco smoking, dyslipidemia, and impaired glucose metabolism, all of which can be effectively managed to various extents through non-pharmacological approaches. Additional classic determinants of the individual cardiovascular risk include unmodifiable traits, like demographic features and family predisposition. Still, based on consistent and vast evidence from observational and intervention studies, emerging contributors to the personal risk profile are now being considered that are characterized by a common denominator, i.e. inflammation [7]. Among others, periodontitis has been recently proposed as a modifiable non-traditional risk factor for CVDs. Periodontitis is a chronic inflammatory non-communicable disease of the structures supporting the teeth, characterized by aberrant host immune fitness to oral microbiome, with an overall prevalence of about 45% and about 11.2% of the population suffering from the most severe form, which may lead to teeth loss [8, 9]. The most recent consensus report on this topic concluded that successful periodontal treatment influences CVD progression, and that active management of traditional cardiovascular risk factors, including hypertension, is required in the presence of periodontitis in high-risk patients and in those with established CVD [10, 11]. However, the feasibility of a systematic treatment approach to periodontitis in uncomplicated settings remains undetermined, given the fact that the encouraging evidence supporting the effects of periodontal treatment in the reduction of arterial blood pressure and stiffness as well as subclinical atherosclerotic CVDs is still limited [10–12].

Recent evidence indicates that hypertension and periodontitis share a common genetic background involving a vast group of genes entailed in the immune function,

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1. Do people with periodontitis have a higher prevalence of hypertension?
2. Do people treating high blood pressure with medications have a higher risk of uncontrolled hypertension in the presence of periodontitis?
3. Is there any evidence for a causal link between periodontitis and hypertension?
4. Are people with periodontitis more likely to develop hypertension in the future?
5. Is there an effect of periodontitis treatment in lowering BP and ameliorate BP control in hypertensive people?

Fig. 1 Questions that the jointly SIIA SIdP document will aim to answer

supporting the pathogenic hypothesis of a proinflammatory milieu favoring both conditions as well as the onset and progression of related CVD [13]. Hypertension itself is considered a condition of low-grade inflammation at least in part involving the activation of the adaptive immune system [14]. In this complexity, immunosenescence and the reciprocal relation of the human genome with the oral-gut microbiome contribute to determine the clinical phenotype and might influence the response to treatments [15].

Non-pharmacological strategies for cardiovascular prevention, including healthy diet and active lifestyle, are well established at any level of baseline risk. In fact, the disease burden attributable to cardiovascular risk factors imposes a decisive action not only after their establishment, but also against their onset—the so called *primordial prevention* [16]. In this context, awareness is needed with regards to preventive measures that can effectively and safely contribute to good global health. From these bases, a joint document of the Italian Society of Hypertension and the Italian Society of Periodontology and Implantology will discuss the role for periodontal treatment in the management of hypertension. Based on the most updated evidence, the document will address the rationale and the effectiveness of achieving or maintaining a good periodontal health for delaying the onset of hypertension or improving blood pressure control, in order to define a shared approach to the topic for Professionals in both fields (Fig. 1), with the final aim of spreading awareness of such a common combination and ultimately improving patients care.

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Declarations

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