

Hypertension?

What does gum health have to do with it?

Periodontal bacteria cause damage to the gums and trigger an inflammatory response that can impact the development of systemic disease including hypertension

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According to new research, adults with periodontitis, a severe gum infection, may be significantly more likely to have higher blood pressure compared with individuals who had healthy gums.

Previous studies have found an association between hypertension and periodontitis; however, research confirming the details of this association is scarce.

Periodontitis is an infection of the gum tissues that hold teeth in place can lead to progressive inflammation, bone loss, or tooth loss. Prevention and treatment of periodontitis is cost-effective and can lead to reduction of systemic markers of inflammation as well as improvement in function of the endothelium (thin membrane lining the inside of the heart and blood vessels).



“Patients with gum disease often present with elevated blood pressure, especially where there is active gingival inflammation, or bleeding of the gums,” said lead study author Eva Munoz Aguilera, DDS, senior researcher at UC Easternman Dental Institute in London.

Elevated blood pressure is usually asymptomatic, and many individuals may be unaware that they are at increased risk of cardiovascular complications; the study aimed to investigate the association between severe periodontitis and high blood pressure in healthy adults without a confirmed diagnosis of hypertension.

The study included 250 adults with generalised, severe periodontitis (≥ 50 percent of teeth measured with gum infection) and a control group of 250 adults who did not have severe gum disease, all of whom were otherwise healthy and had no other chronic health conditions. The median age of the participants was 35 years, and 52.6 percent were female.

All participants underwent comprehensive periodontal examinations including detailed measures of gum disease severity, such as full mouth plaque, bleeding of the gums, and the depth of the infected gum pockets. Blood pressure assessments were measured three times for each participant to ensure accuracy.

Fasting blood samples were also collected and analysed for high levels of white blood cells and high sensitivity C-reactive protein (hsCRP), as both are markers of increased inflammation in the body. Additional information analysed as confounders included family history of cardiovascular disease, age, body mass index, gender, ethnicity, smoking, and physical activity levels.

The researchers found that a diagnosis of gum disease was associated with higher odds of hypertension, independent of common cardiovascular risk factors. Individuals with gum disease were twice as likely to have high systolic blood pressure values ≥ 140 mmHg, compared with people with healthy gums (14 percent and seven percent, respectively).

Researchers also found the following:

- The presence of active gum inflammation (identified by bleeding gums) was associated with higher systolic blood pressure.
- Participants with periodontitis exhibited increased glucose, LDL, ("bad" cholesterol), hsCRP and white blood cell levels, and lower HDL ("Good" cholesterol) levels compared with those in the control group.
- Nearly 50% of participants with gum disease and 42 per cent of the control group had blood pressure values for a diagnosis of hypertension defined as $\geq 130/80$ mm Hg.

"This evidence indicates that periodontal bacteria cause damage to the gums and also triggers inflammatory responses that can impact the development of systemic disease including hypertension" said corresponding author Francesco D'Aiuto, DMD, a professor of systemic diseases including hypertension" said corresponding periodontology and head of the periodontology unit of UCL Eastman Dental Institute.

"This would mean that the link between gum disease and elevated blood pressure occurs well before a patient develops high blood pressure. Our study also confirms that a worryingly high number of individuals are unaware of a possible diagnosis of hypertension."

The integration of hypertension screening by dental professionals with referrals to primary care professionals and periodontal disease screening by medical professionals with referrals to periodontists could improve detection and treatment of both conditions to improve oral health and reduce the burden of hypertension and its complications.

Oral health strategies such as brushing teeth twice daily are proven to be very effective in managing and preventing the most common oral conditions, and the study's results indicate they can also be a powerful and affordable tool to help prevent hypertension.

This study did not account for other factors that may also impact blood pressure, such as abdominal obesity, salt intake, use of anti-inflammatory medications, hormone treatments or stress, or any other oral health conditions.

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