

The Connection Between Severe Gum Disease and Kidney Health

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STORY AT-A-GLANCE

- Gum disease is a common bacterial infection of the gums that; its most severe form, called periodontitis, affects an estimated 42% of U.S. adults over 30
- A study of over 6,000 adults in Germany found that severe gum disease was tied to lower kidney function and higher protein levels in the urine, which is a warning sign of kidney damage
- Long-term, untreated gum disease has also been linked to an irregular heartbeat called atrial fibrillation, mental health disorders, multiple chronic illnesses, and Alzheimer's disease
- Smoking, a poor diet, teeth grinding, and chronic stress can all make gum disease more likely to develop or get worse over time
- Brushing and flossing properly, oil pulling, eating a nutrient-dense diet, and visiting a biological dentist may help protect your gums and support your overall health

Over the years, researchers have uncovered connections between poor oral health and a growing list of health problems beyond the mouth — and now, kidney health is joining that list.

One condition attracting growing attention is chronic kidney disease (CKD), which often develops silently and may not cause noticeable symptoms until significant damage has already occurred.¹ As a result, researchers are exploring whether signs of gum disease

could help determine a person's risk of CKD sooner.

Severe Gum Disease Could Be Linked to Early Signs of Kidney Damage

Researchers from the University Medical Center Hamburg-Eppendorf published a study in the International Journal of Oral Science examining links between periodontitis and early kidney disease. The researchers analyzed data from 6,179 participants in the Hamburg City Health Study in Germany. All participants underwent detailed periodontal examinations as well as tests measuring kidney function and inflammation.^{2,3,4}

- **The researchers assessed both gum health and kidney health** — Periodontal disease severity was classified using a standardized staging system, while kidney health was evaluated using estimated glomerular filtration rate (eGFR), a measure of how well the kidneys filter waste, and urinary albumin-to-creatinine ratio (uACR), a marker of protein leakage into the urine. Researchers also measured inflammatory markers, including high-sensitivity C-reactive protein (hsCRP) and interleukin-6 (IL-6).
- **Inflammation explained only part of the association** — Levels of hsCRP and IL-6 increased as both gum disease and kidney dysfunction became more severe. However, hsCRP accounted for only about 35% of the association between severe periodontitis and reduced kidney function and about 10% of the association with albuminuria, a condition where there's an excessive amount of the blood protein albumin into the urine. This suggests other biological mechanisms are involved.
- **Severe gum disease became more common as kidney function declined** — Severe periodontitis was present in 14% of people with normal kidney function but increased to 36% among those with moderately reduced kidney function.
- **Tooth loss and gum tissue damage tracked with worsening kidney health** — Measures of long-term periodontal damage, including clinical attachment loss and tooth loss, became more severe across stages of kidney dysfunction.

- **Possible pathways connecting the mouth and kidneys** — The authors proposed that bacteria from infected gums may spread through the bloodstream and affect distant organs. Other potential mechanisms included endothelial dysfunction, oxidative stress, and metabolic alterations, all of which may contribute to declining kidney health.
- **Gum disease and kidney health are closely interconnected** — Severe periodontitis was independently associated with reduced kidney function and increased albuminuria, even during the early stages of CKD. The researchers noted that future studies should evaluate whether treating periodontal disease could help preserve kidney function and reduce disease risk.

Researchers Investigated Whether Gum Disease Raises CKD Risk

In an earlier related study, published in the Journal of Periodontology, researchers investigated whether periodontal disease could predict future kidney function decline in a group of African American adults, a population disproportionately affected by CKD.⁵

The researchers followed 699 African American adults from the Jackson Heart Study, whose dental exams were conducted through the related Dental ARIC study. These participants had an estimated glomerular filtration rate (eGFR) above 60 mL/min/1.73 m², indicating preserved kidney function at baseline. Participants underwent comprehensive dental examinations and were followed for an average of 4.8 years.

- **How gum disease was measured** — To estimate inflammatory burden, the team used a metric called the periodontal inflamed surface area (PISA), which measures the amount of inflamed gum tissue in the mouth.

Using standards developed by the U.S. Centers for Disease Control and Prevention (CDC) and the American Academy of Periodontology (AAP), participants were categorized as having no, mild, moderate, or severe periodontal disease. Overall, 16.3% of participants had severe periodontal disease at the beginning of the study.

- **Severe gum disease predicted faster kidney decline** — During the follow-up period, 21 participants developed CKD. Researchers found that people with severe periodontal disease had a significantly higher risk of kidney function decline than those with less severe disease. After adjusting for factors such as age, sex, diabetes, hypertension, smoking, and income, severe periodontal disease was associated with a 4.18-fold greater rate of incident CKD.
- **Researchers proposed inflammation as one possible explanation** — The authors noted that bacteria associated with periodontal disease can enter the bloodstream and trigger immune responses throughout the body. They suggested that chronic inflammation caused by oral infections may contribute to kidney injury and accelerate kidney function decline.
- **The study suggests gum disease may be a modifiable risk factor for CKD** — The researchers concluded that severe periodontal disease was associated with clinically significant kidney function decline among African American adults. They noted that further research is needed to determine whether treating periodontal disease could slow the loss of kidney function and reduce CKD risk.

Together, these studies suggest that gum disease may have consequences that extend well beyond the mouth. To better understand why researchers are paying so much attention to periodontal disease, it helps to look at the different forms of gum disease and how they progress over time.

Understanding the Types of Gum Disease

Gum disease is one of the most common health conditions in the U.S. Since 2009, national data have consistently shown that roughly 30% to 47% of Americans have some form of periodontal disease,^{6,7,8} leading some experts to describe it as a growing epidemic.⁹

Gingivitis is the earliest and mildest stage of gum disease.¹⁰ It develops when plaque accumulates along the gumline, causing redness, swelling, and bleeding, especially during brushing or flossing. Without proper treatment, gingivitis can progress to periodontitis, a more serious condition that affects the tissues supporting your teeth — it's a leading cause of tooth loss. According to data from the CDC, about 42% of adults aged 30 and older have periodontitis.¹¹

As periodontitis advances, plaque and bacteria move below the gumline, where they release toxins that trigger an ongoing inflammatory response. Over time, the gums begin to pull away from the teeth, creating pockets that allow even more bacteria to collect. This process gradually damages the gum tissue and bone that hold your teeth in place, increasing the risk of loose teeth and eventual tooth loss. Other types of gum disease include:

- **Aggressive periodontitis** — A rapidly progressing form of periodontal disease that can affect multiple teeth. It often develops at a younger age and occurs in people who do not have an underlying systemic disease.¹²
- **Pregnancy gingivitis** — Hormonal changes during pregnancy can make the gums more sensitive to plaque, increasing the likelihood of inflammation and bleeding. Dietary changes and shifts in saliva production may also contribute to a higher risk of gingivitis during pregnancy.¹³
- **Pericoronitis** — Most common in adults ages 17 to 24, this condition develops around a partially erupted tooth.¹⁴ A flap of gum tissue can trap food particles and bacteria, creating an environment where infection can develop. Good oral hygiene can help reduce the risk.
- **Desquamative gingivitis** — This rare and often painful condition affects the outer layer of the gums, causing redness, irritation, bleeding, and tissue that tears easily.¹⁵ It may be associated with conditions such as mucous membrane pemphigoid, oral lichen planus, and pemphigus vulgaris. Hormonal changes, including those that occur during menopause, may also play a role.

Gum Disease's Reach Goes Far Beyond Your Mouth

Kidney disease isn't the only condition researchers have connected to unresolved gum disease. Over the past decade, studies have tied periodontitis to a variety of health problems, including:

- **Atrial fibrillation (AFib)** — Oral bacteria that enter the bloodstream through inflamed gums may contribute to the scarring and electrical disruption behind AFib, an irregular, often rapid heartbeat that raises the risk of stroke and heart failure.

A South Korean study of more than 1.2 million adults, published in BMC Oral Health, tracked participants for a median of over 14 years and found that those who developed periodontal disease during course of the study had about a 4% higher risk of developing AFib than those who remained disease-free — a risk that held even after adjusting for smoking, alcohol use, and other health conditions.

Risk was highest among those with chronic, unresolved gum disease, while people whose gum disease resolved had a somewhat lower risk than those with ongoing disease — though still not as low as people who never developed it — suggesting gum health may play a role in cardiovascular risk, though more research is needed to confirm cause and effect.¹⁶

- **Mental health disorders** — A UK cohort study published in BMJ Open tracked whether a periodontal disease diagnosis preceded higher rates of chronic disease within three years compared to healthy controls. According to the findings, mental ill health rose by 37%, autoimmune disease by 33%, cardiovascular disease by 18%, Type 2 diabetes by 26%, and cardiometabolic disorder by 7%.

Dr. Joht Singh Chandan of the University of Birmingham, one of the study's researchers, explained the significance:¹⁷

"Poor oral health is extremely common, both here in the UK and globally. When oral ill-health progresses, it can lead to a substantially reduced quality of life. However, until now, not much has been known about the

association of poor oral health and many chronic diseases, particularly mental ill-health.

We conducted one of the largest epidemiological studies of its kind to date, using UK primary care data to explore the association between periodontal disease and several chronic conditions.

We found evidence that periodontal disease appears to be associated with an increased risk of developing these associated chronic diseases. As periodontal diseases are very common, an increased risk of other chronic diseases may represent a substantial public health burden."

- **Chronic illness (multimorbidity)** — Gum pain may be an early warning sign of multimorbidity, defined as having two or more chronic health conditions.

An analysis of over 500,000 UK Biobank participants, presented at the EFP's EuroPerio11 congress, found that 57% already had at least two chronic illnesses, and among those reporting gum inflammation symptoms, the risk of multimorbidity jumped by 15% — with pain the strongest predictor, reported by 54% of participants. Lead author Dr. Nisachon Siripaiboonpong of UCL's Eastman Dental Institute explained:¹⁸

"Maintaining good gum health is not just about keeping your teeth, it is about protecting your general health. Preventing or managing gum disease could reduce the risk of multiple long-term conditions and improve quality of life."

- **Alzheimer's disease** — Porphyromonas gingivalis, the bacteria behind periodontitis, has been found in the brains of people who died of Alzheimer's disease, a progressive neurodegenerative disorder marked by memory loss and cognitive decline.

A 2019 study published in Science Advances identified toxic proteases from the bacteria, called gingipains, whose levels correlated with tau and ubiquitin – both markers of the disease.¹⁹ They also pointed to animal studies showing that oral infection with this pathogen led to brain colonization and increased amyloid beta production.²⁰

Most tellingly, the researchers also found gingipains in the brains of people who had never been diagnosed with Alzheimer's – suggesting that had they lived longer, they likely would have developed the disease.

"Our identification of gingipain antigens in the brains of individuals with AD and also with AD pathology but no diagnosis of dementia argues that brain infection with P. gingivalis is not a result of poor dental care following the onset of dementia or a consequence of late-stage disease," the authors reported.

Your Daily Habits Could Be Making Gum Disease Worse

Everyday habits play a significant role in raising your risk for gum disease – unhealthy lifestyle choices can make periodontal disease more likely to happen or make it worse once it's already started. Some of the most common habits linked to gum disease include:^{21,22}

- **Smoking** — This is the most well-established habit-related risk factor for periodontitis. Heavy smokers face up to 7.28 times the odds of developing the disease compared to non-smokers. Smoking also suppresses gum bleeding, a key warning sign, making early damage easier to miss and treatment less likely to succeed.
- **Poor oral hygiene** — Skipping regular brushing and flossing causes plaque to harden into tartar, which can only be removed by a dental professional and keeps collecting bacteria below the gumline, fueling ongoing inflammation and infection.

- **Poor diet** — Diets high in ultraprocessed foods and refined carbohydrates feed the bacteria in plaque, increasing the tendency for gums to become inflamed.
- **Teeth grinding and clenching** — The excess force placed on teeth can speed up the tissue and bone damage periodontitis has already started.
- **Chronic stress** — Psychological stress has been linked to greater attachment and bone loss, possibly through elevated IL-6 production and a weakened immune response to oral bacteria — though it may also simply make people less likely to keep up with regular oral hygiene.

6 Tips to Naturally Support Healthy Gums

The CDC notes that gingivitis is reversible, and even severe periodontitis can be slowed and managed with the right care.²³ Here are practical strategies that can help you protect your gums — and the rest of your body:

1. **Brush and floss the right way** — Brush twice daily with a soft-bristle toothbrush and a nonfluoridated toothpaste, waiting 30 minutes after eating before you brush. Floss at least once a day using a PFAS-free option, and replace your toothbrush every three to four months to keep bacteria from building up.²⁴ For more useful toothbrushing tips, "[Poor Oral Health Wreaks Havoc on Your Heart and Brain](#)."

Fluoridated toothpaste, mouthwash, and other harsh antibacterial products can throw off this balance too — biological dentist Dr. Gerry Curatola compares them to a "scorched earth policy" that kills off both harmful and helpful bacteria, making it harder for a healthy oral microbiome to bounce back.²⁵

2. **Try oil pulling with coconut oil** — This traditional practice involves swishing coconut oil in your mouth for several minutes before spitting it out. Coconut oil's antibacterial lauric acid content has been shown in some clinical studies to help

reduce plaque and gum bleeding when used alongside regular brushing and flossing.²⁶ If you want to learn more, read "[Why Is Oil Pulling Suddenly All the Rage?](#)"

3. **Eat a nutrient-dense, whole-food diet** — Fresh vegetables, fruits, healthy fats, and fiber-rich whole foods support a balanced oral microbiome and strengthen your immune defenses. Refined sugar, [seed oils](#), and [ultraprocessed foods](#) do the opposite, feeding the harmful bacteria that drive plaque buildup, tooth decay, and gum disease.
4. **Support your gums with the right nutrients** — Vitamin D deficiency is linked to a higher risk of periodontal disease, while vitamin K2, calcium, and magnesium work together to keep bone strong and prevent harmful calcification.²⁷ A University of Washington-led review also found that low vitamin C levels are tied to bleeding gums.²⁸
5. **Quit smoking and vaping** — Nicotine restricts blood flow to your gums and masks the bleeding that normally signals inflammation, letting damage progress undetected. Research shows vaping is linked to markedly higher rates of gum disease than not smoking at all, though cigarettes remain the more destructive habit.²⁹
6. **Consider seeing a [biological dentist](#)** — These practitioners take a whole-body approach to oral care, avoiding mercury amalgam fillings and using biocompatible materials that don't add to your body's toxic burden. If you're dealing with persistent gum issues, a biological dentist can help you address the root cause rather than just the symptoms.

Frequently Asked Questions (FAQs) About Gum Disease and Kidney Health

Q: How common is gum disease?

A: About 42% of U.S. adults age 30 and older have some form of periodontitis, the most severe stage of gum disease, according to the U.S. Centers for Disease Control and Prevention (CDC). National data suggest 30% to 47% of Americans have some degree of periodontal disease overall.

Q: What's the connection between gum disease and kidney health?

A: Two separate studies found that severe periodontitis is independently linked to reduced kidney function and higher levels of protein in the urine (albuminuria), even in the early stages of chronic kidney disease (CKD).

One study found severe gum disease was nearly four times more common in people with moderately reduced kidney function, while another found it raised the rate of incident CKD more than fourfold in African American adults.

Q: How might gum disease affect the kidneys?

A: Researchers believe bacteria from infected gums may enter the bloodstream and trigger inflammation and immune responses that affect distant organs, including the kidneys. Other proposed mechanisms include endothelial dysfunction, oxidative stress, and metabolic changes.

Q: What habits make gum disease worse?

A: Smoking is the most well-established risk factor, but poor oral hygiene, a diet high in processed foods and refined carbs, teeth grinding, and chronic stress can all make periodontal disease more likely to develop or progress.

Q: What can I do to protect my gums naturally?

A: Brush and floss consistently, try oil pulling with coconut oil, eat a nutrient-dense whole-food diet, support your gums with vitamins D, K2, C, and calcium/magnesium, quit smoking and vaping, and consider seeing a biological dentist for a whole-body approach to oral care.

This article discusses findings from both clinical research and laboratory/animal studies. These findings are from research conducted in clinical settings and may not apply to all individuals; findings from laboratory or animal research may not directly apply to human health.

This article is for informational purposes only and does not constitute medical advice. Consult a qualified healthcare provider before making changes to your health regimen.

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