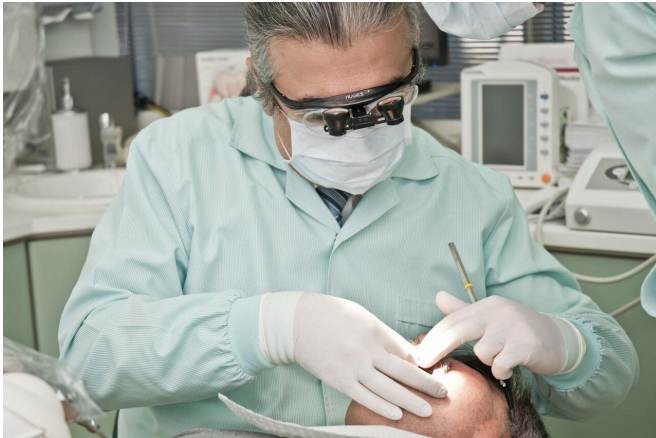


Dental experts discover biological imbalance is the link between gum and kidney disease

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Research into link between gum and kidney disease.
Credit: University of Birmingham

An imbalance of the body's oxygen producing free radicals and its antioxidant cells could be the reason why gum disease and chronic kidney disease affect each other, a new study led by the University of Birmingham has found.

Periodontitis—or gum disease—is a common, inflammatory disease which causes bleeding gums, wobbly or drifting teeth and can eventually result in tooth loss.

Previous studies have shown a link between the severe oral inflammation caused by [gum disease](#) and chronic kidney disease (CKD) which demonstrated that those with worse inflammation of the gums have worse kidney function.

Previous research also showed that patients with CKD and periodontitis experience a drop in survival rates, similar in magnitude to if they had diabetes instead of gum inflammation, suggesting that gum inflammation may casually affect kidney

function.

In this latest study, led by researchers at the University of Birmingham, over 700 patients with chronic kidney disease were examined using detailed oral and full-body examinations including blood samples. The aim was to test the hypothesis that periodontal inflammation and kidney function affect each other and to establish the underlying mechanism that may facilitate this.

Results showed that just a 10% increase in gum inflammation reduces kidney function by 3%. In this group of patients, a 3% worsening in kidney function would translate to an increase in the risk of kidney failure over a 5 year period from 32%-34%. Results also showed that a 10% reduction in kidney function increases periodontal inflammation by 25%.

In contrast to current beliefs that inflammation is the link between periodontitis and other systemic diseases, researchers found for the first time, that in this group of patients, the effect was caused by a [biological process](#) called '[oxidative stress](#)'—or, an imbalance between [reactive oxygen species](#) and the body's antioxidant capacity which damages tissues on a cellular level.

Lead author Dr. Praveen Sharma, from the Periodontal Research Group at the University of Birmingham's School of Dentistry, said, "This is the first paper to quantify the casual effect of periodontitis on [kidney](#) function and vice-versa as well as the first to elucidate the pathways involved.

"It showed that even a modest reduction in gum inflammation can benefit renal function. Given the relative ease of achieving a 10% reduction in gum [inflammation](#), through simple measures like correct brushing techniques and cleaning between the

teeth, these results are very interesting.

"We hope that this research paves the way for further studies to see if improvements in [kidney function](#), following periodontal care, translate to longer, healthier life for patients with [chronic kidney disease](#). We would also hope that the hypothesis we have identified could be tested in other groups."

More information: Praveen Sharma et al, Oxidative stress links periodontal inflammation and renal function, *Journal of Clinical Periodontology* (2020). [DOI: 10.1111/jcpe.13414](https://doi.org/10.1111/jcpe.13414)

Provided by University of Birmingham

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