

# Body's immune system response to dental plaque varies by gender and race

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Michael Kowolik, B.D.S., Ph.D., professor of periodontics and associate dean for graduate education at the Indiana University School of Dentistry on the campus of Indiana University-Purdue University Indianapolis. Credit: Indiana University School of Dentistry

Will neglecting to brush your teeth damage more than just your smile?  
Can failing to attack dental plaque increase your risk of heart damage?

The answer to both questions may be yes if you are male and black, an Indiana University School of Dentistry study published in the current

issue of the *Journal of Dental Research* reports.

The researchers, led by Michael Kowolik, B.D.S., Ph.D., professor of periodontics and associate dean for graduate education at the IU School of Dentistry on the campus of Indiana University-Purdue University Indianapolis, studied 128 black and white men and women and found that dental plaque accumulation did not result in a change in total white blood count, a known risk factor for adverse cardiac events. However, in black males the researchers noted a significant increase in the activity of neutrophils, the most common type of white blood cell and an essential part of the immune system.

Unlike most other studies that attempt to understand the link between oral inflammatory disease and [heart disease](#) risk, these study participants did not have periodontal disease. They were healthy individuals who by the study design were asked to neglect oral hygiene.

"We are talking about healthy people who simply neglect [oral hygiene](#) and if they were male and black, we found a response from their [white blood cells](#), or neutrophils, that might be a cause for concern," said Dr. Kowolik.

"If you get a bacterial infection anywhere in the body, billions of neutrophils come flooding out of your bone marrow to defend against the intruder. Our observation that with poor dental hygiene white blood cell activity increased in black men but not black women or whites of either sex suggests both gender and racial differences in the inflammatory response to dental plaque. This finding could help us identify individuals at greater risk for infections anywhere in the body including those affecting the heart," he said.

Physicians have known for about a quarter of a century that one of the principal risk

factors for a heart attack is an elevated white blood cell count. "While we did not observe higher white blood cell counts as the result of dental plaque accumulation, the increased activity of white blood cells, which we did find, may also carry a higher risk for heart disease," he added.

More information: "Neutrophil Response to Dental Plaque by Gender and Race" appears in the August 2009 issue of the *Journal of Dental Research* and adds to the body of evidence that dental hygiene plays an important role in a preventive health program for the whole body.

Source: Indiana University School of Medicine

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