



► More Shared Risk Factors
Further Multiply Effects of
Diabetes, Periodontal Disease

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Informed

The truth about the diabetic & oral care

Risks & Rewards: Part 2

In last month's issue of *Informed*, we reviewed research studies into several risk factors associated with diabetes (including age, number of years living with diabetes, and tobacco use). We also discussed to what degree periodontal disease, the sixth complication of diabetes, affects or is affected by those same risk factors.

Not surprisingly, research suggests that each of those factors multiplies the risk of developing both diabetes and periodontal disease

in similar ways. However, there are other factors that may carry even greater risk for both diseases, including obesity, ethnicity, socioeconomic status and gender.

This month, we will review research associated with these remaining risks, and we will also perform a comparative review of how these factors act on diabetes in the presence of periodontal disease.



Did You Know?

Although traditional thinking says that periodontitis is an oral disease with tissue destruction which remains localized, the sequelae of periodontal disease appears significantly more threatening than simply a localized infection. Research over the last 20 years suggests various inflammatory pathways that link oral infections such as periodontitis to systemic damage.

More Shared Risk Factors Further Multiply Effects of Diabetes, Periodontal Disease

Statistics show that both diabetes and periodontal disease rates are on the rise. At the same time, some studies show that there is a negative multiplying risk for the individual when the two combine—suggesting that the presence of one of these diseases increases the risk factor for and severity of the other. For example, impaired host response and magnified collagenolytic activity associated with diabetes may lead to advanced stage periodontal damage and infection.¹ Perio infection, in turn, may trigger systemic inflammation that may increase insulin resistance or hinder management in existent diabetes.²

For these reasons, we will continue review of risk factors for both diabetes and periodontal disease.

Ethnicity

Diabetes is the sixth leading cause of death in the United States, according to a report from the U.S. National Center for Health Statistics. However, for African Americans, American Indians, Asian/Pacific Islanders, and Hispanics – diabetes is among the top five causes.⁵

While socioeconomic status may play a role in the differences, research suggests that people of color in the United States may be predisposed to diabetes regardless of income or educational level. For example, black men living at the same economic and educational level as white men, in the same geographic location, experience higher rates of disease.⁶ Some researchers believe the so called “thrifty gene” may cause a genetic predisposition toward obesity and subsequent development of diabetes in many people of color.

From an oral health perspective, periodontal disease may be the most pervasive diabetes-related disease. While it affects people of all ages and ethnicities, certain populations may be at increased risk.

Research published in the *Journal of Periodontology* (1999) found that Mexican Americans, American Indians and African Americans are more likely to develop periodontitis than people of European descent.⁷ While a study from New York University College of Dentistry found that of all recent U.S. immigrants, those who come from Puerto Rican, Indian, or Haitian backgrounds were much more likely to have periodontitis than immigrants of other backgrounds, possibly due to variance in diet and susceptibility to the oral bacteria that causes gum disease.⁸ In addition, populations of non-European descent may have different inflammatory response to bacterial infection.

The death rate for diabetes in American Indians is estimated to be more than 4 times the rate in non-Hispanic white people

— National Diabetes Education Program. (May 1999) "The Diabetes Epidemic Among American Indians and Alaska Natives." Fact sheet.

The precise causal factors related to increased risk of both periodontitis and diabetes are not completely understood. What is known is that education and awareness are key to prevention and treatment. However, it is important that physicians and dentists reach out in culturally appropriate ways, especially to new immigrants if they hope to be successful. For example, women of Hispanic, Asian and Pacific Island descent have been found to be more receptive to increasing self-care when family is referenced – asking the question ‘how will you care for your children and grandchildren if you are not healthy?’ will have greater impact than simple messages about the importance of their health.

Check it out

Overweight is a major medical risk factor for diabetes in African Americans, American Indians, and Pacific Islanders especially for women. Some diabetes may be prevented with weight control through regular exercise and healthy eating.

Gender

Studies have consistently shown that women develop diabetes at a higher rate than men. However, the rate of diabetes in reproductive age women doubled between 1999 and 2005.⁸ Some researchers attribute the doubling of diabetes rates primarily to the rise in obesity, especially in minority women; however, according to a study published in *Diabetic Care Journal* (2008), pre-pregnancy diabetes increased across all age, racial and ethnic groups.⁹ In addition, 9% of those women who develop gestational diabetes become type 2 diabetic patients later in life.

From an oral health perspective, statistics may even be worse. About 50% of women experience "pregnancy gingivitis". Left untreated, gingivitis may advance rapidly to periodontitis, a serious oral infection that destroys attachment fibers and supporting bone that hold teeth in place. Periodontal disease may also trigger systemic inflammation that may lead to gestational diabetes, or inhibit management for those living with diabetes.

Today, it is common for physicians of obstetrics and gynecology to screen at-risk groups for gestational diabetes. To further reduce diabetes rates in women of childbearing years, the American Dental Association recommends oral screening to reduce both periodontal risk, and risk for developing gestational diabetes.

In its *Standards of Medical Care Supplement (2007)*, the American Diabetes Association reports:

"Major congenital malformations remain the leading cause of mortality and serious morbidity in infants of mothers with type 1 & type 2 diabetes."

Obesity

Like diabetes and periodontal disease, obesity rates are on the rise—and may be surpassing those

Women generally are less active than men at all ages

People with lower incomes and less education are typically not as physically active as those with higher incomes and education

African Americans and Hispanics are generally less physically active than whites

Adults in northeastern and southern States tend to be less active than adults in North-Central and Western State

— U.S. Department of Health and Human Services. (2000) *Healthy People 2010: Understanding and Improving Health, 2nd ed.*

maladies in rate of increase. In 2002, the National Institutes of Health published clinical guidelines to identify, evaluate, and treat adult obesity. Based on those guidelines, an estimated 97 million American adults were classified as overweight or obese.¹⁰ That number has risen to more than 60% of American adults today, and nearly 80% of some high-risk subgroups, such as African-American women.¹¹

What may be more startling is that the number of overweight children has more than doubled among 2- to 5-year-olds and more than tripled among 6- to 11-year-olds.¹² Approximately 10.4% of children 2- to 5-years-old and 15.3% of children 6- to 11-years-old are overweight.¹³

All of which suggests that increases in rate of diabetes (and other complications of obesity) may continue to rise long after the Baby Boomer generation. In addition, reports from American Diabetes Association, *Standards of Medical Care in Diabetes-2006*,

Did you know?

Researchers suspect that a lack of physical activity is one factor contributing to the high rates of diabetes in people of color compared to whites

have found treatment standards for diabetes difficult to meet, as evidenced by the following results:

Only 37% of adults with diagnosed diabetes achieved an HbA1c of < 7% (goal)

Only 36% of adult diabetics had a blood pressure < 130/80 mmHg (goal)

Only 48% of adult diabetics had a cholesterol < 200mg/dL (goal)

Fewer than 7.3% of diabetics achieved all 3 goals

Research into how obesity affects oral health is limited. What is known is that obesity is a marker for periodontal disease, suggesting that referral to a dental practitioner for obese patients may help curb periodontal disease in those patients. However, the real opportunity may lie in collaboration between dentist and physician to educate patients about the interrelated nature of overweight and obesity rates, periodontal disease, and diabetes—and to collectively help change unhealthy lifestyle patterns for children and adults.

Socioeconomic Status

Lower socioeconomic status has been linked to increased rates of diabetes due in large part to lesser access to preventive care and education. However, a study by Borell, et al (2006), found that education and income level also had a similar impact on oral health.¹⁴ As with medical care, economically disadvantaged subjects in Borell’s study had less access to routine dental professional care and to education and guidance on preventive oral hygiene. The result was higher rates of periodontal disease, and more advanced disease.

For this population, culturally relevant education with regard to enhanced self-care practices may yield significant clinical gains. Use of an integrated risk assessment tool that assesses risk for diabetes as well as periodontal disease during the patient interaction may aid in early diagnosis and delay of onset.

Looking Forward

The research reviewed thus far appears to suggest that periodontal disease and diabetes act synergistically to contribute to worsening levels of disease and comorbidity. In next month’s issue of *Informed*, we will wrap up the discussion of risk factors with a look at the specific impacts of periodontitis and diabetes on each other. We will also review what some researchers call a “syndemic” approach to prevention and treatment of interrelated diseases, and how that may or may not apply to diabetes and periodontal disease.

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<i>From:</i>	<i>To:</i>