



Diabetes & Dentistry YOU

What We Can Learn from the Arizona Indians Diabetes & Oral Health

Diabetes mellitus is the most common endocrine disorder in the world, affecting an estimated 16 million people in the United States alone. An additional 6 million people in the US have diabetes but do not know it.

Up to 60% of all diabetics have periodontal disease, a disease that can multiply the negative effects of DM.

To shed some light on what those statistics really mean to you and me, let's take a close look at the Pimas of Arizona.

The Pimas are a band of Indians, who live in Arizona's southern desert, nestled between the Gila River to the east and the town of Mesa to the west. Once famous among archeologists for the vast canal system they built to tame the desert and create a farming system among the otherwise arid landscape. The Pimas of today are somewhat infamous among researchers. The reason for such notoriety is that today's Pimas have the highest per capita incidence of diabetes in the world (a testament to the high-fat, high sugar, low fiber diet they consume, as do many people across the US).

For that reason, the Pima Indians have been the focus of several studies on the affects of diabetes for the last 50 years. In fact, more than \$100 million has been spent by the US National Institute of Health (NIH), joined by the American Academy of Periodontology (AAP), to determine what causes this small population to contract diabetes and periodontal disease at such an alarming rate.

How does periodontal disease affect the diabetic?

Research suggests that oral infection from periodontal disease may cause an ongoing burden of inflammation that can affect the overall health of the diabetic patient and drive glucose levels out of target ranges.

According to the NIH, **one-half of all adult Pima Indians have diabetes** and 95% of those with diabetes are overweight. In addition, **60% of those with diabetes have periodontal**

disease (more than **2.5 times the rate** of non-diabetics), which in turn leads to a **400% greater risk of alveolar bone loss** (the bone that your teeth attach to) and tooth loss.

While on the outside this may simply sound a bit sad, and quite grim for the Pima population, in reality it is much more. Research has taught us that the Pima of S. Arizona have a slight hereditary predisposition toward diabetes – but it is only slight. What causes them to develop diabetes in such great numbers (as well as periodontitis) is much more about lifestyle than it is about heredity.

How do we know?

We know this because one of the other amazing circumstances surrounding the Pima population is that they have close cousins who live in the Sierra Madres of Mexico. Genetically speaking, the two Pima populations are almost identical. But their lifestyles are vastly different. The S. Arizona Pimas have embraced the “modern” American lifestyle complete with many sedentary hours spent on the computer, in

Diabetes and Oral Health:

Periodontal disease is often referred to as the sixth complication of diabetes mellitus because it is negatively affected in the same ways “classic” complications (such as heart disease and kidney disease) are affected.

How can your dentist you manage your diabetes?

In addition to regular check ups and tooth cleaning, a *DentistryforDiabetes* dentist will test your A1C levels, probe for oral infection — both of which will help you manage glucose levels. In addition, she may consult with your primary care physician on proper medications and help you achieve your management goals.

front of the TV, etc., and consuming a high percentage of processed food. Whereas the Pimas of Mexico continue to lead the life their ancestors did more than 2000 years ago. Spending an average of 22 hours per week performing physical labor (whether tilling the soil, gathering crops, etc.) versus the 3.1 hours per week the US Pima spends.

In addition, according to Jeff Leach of Paleobiotics Lab (an independent research group exploring the evolution of diet and nutrition and its impact on human health), the Mexican Pimas consistently consumed more than 100 grams of dietary fiber, which dramatically influences the amount of insulin secreted, and prevents the metabolic condition of insulin resistance — a complication of type 2 diabetes. Compare this to the 12 to 15 grams a day the average US Pima

consumes (similar to that of the average American, by the way).

The difference in rate of diabetes tells the story almost by itself.

- 5.6% of Mexican Pima men had diabetes
- 8.5% of the Mexican Pima women had diabetes

Compared to

- 34.2% of the S. Arizona men had diabetes
- 40.8% of the S. Arizona women had diabetes

And a control group of non-Pima Mexicans, who consumed a high-fiber diet similar to the Mexican Pimas and lived a physically demanding lifestyle similar to the Mexican Pimas:

- 5% of the women were diabetic
- NONE of the men were diabetic

Leach goes on to say, that this “metabolic condition, which [he calls] *The Human Hybrid Theory*,

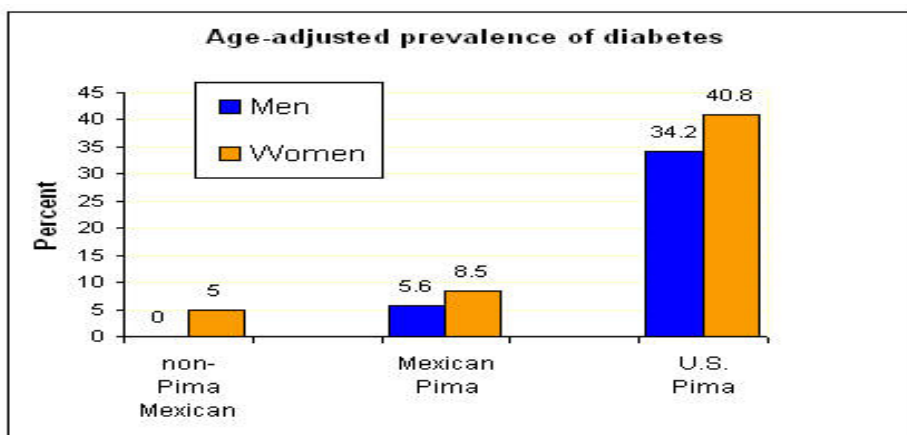
potentially affects all modern humans who have shifted away from a diversity and quantity of dietary fiber that our ancestors once enjoyed and that our genome was selected upon.”

In Sum

And therein lies the rub. The high sugar, low fiber diets Americans subsist on acts as the kingpin that puts many, many of us at risk for diabetes. When we choose to be sedentary and eat processed foods rather than natural, fibrous foods, we make ourselves vulnerable to diabetes. These same choices create an oral health environment that promotes tooth decay and periodontal disease.

And as each of these separate-but-interrelated diseases progresses, it has the potential to multiply the negative affects of the other. Whether diabetes inhibits infection fighting capabilities enabling periodontal disease to grow, or the infection and tooth loss associated with gum disease affects glucose levels and inhibits the diabetic’s ability to eat a healthy, fiber-rich diet — each disease can worsen the affects of the other.

If this is sounding all too terrible, remember these diseases are preventable for many of the Pimas and Americans alike. The recipe is simple — manage your blood glucose through regular exercise, a balanced diet low in sugar and fat, and rich in fiber, and visit your doctor and your dentist frequently.



Source: “So Go the Pimas, so go the rest of us”; Paleobiotics Labs, Jeff D. Leach. Found June 22, 2008.

Oral Health & Treatment:

To ensure proper oral health, diabetic patients should participate in a program of rigorous oral hygiene and visit their dentist up to four times a year.