

Dentistry in diabetes

diagnosis and management

✉ **Martin Gillis and Steven Saxon**

*Much attention is given to heart disease, nerve damage, kidney disease, and eye damage which can develop in people with diabetes. However, the mouth (oral) health complications associated with diabetes are often overlooked. The oral complications of prime concern are gum (periodontal) disease, **dental caries**, dry mouth (xerostomia), oral soft tissue damage, and pain in the face and mouth (orofacial pain).*

In order to diagnose the potential presence of these conditions, it is very important for people with diabetes to have dental examinations at least every 6 months. In this article, Martin Gillis and Steven Saxon look at the oral health of people with diabetes with regard to the oral symptoms of undiagnosed diabetes, the oral health complications which can develop in diagnosed diabetes, the oral health-care management of people with diabetes, and national oral health-care policy as it relates to diabetes.



Diabetes manifests itself in the mouth. Therefore, in addition to looking after the oral health of people with diabetes, dentists also play a role in screening for disease in the general population. There is a strong relationship between a person's oral health and their general health. In some people, such as in those with diabetes, the first signs and symptoms of a medical condition can develop in the mouth. These people can be referred to their family physician for further diagnostic tests.

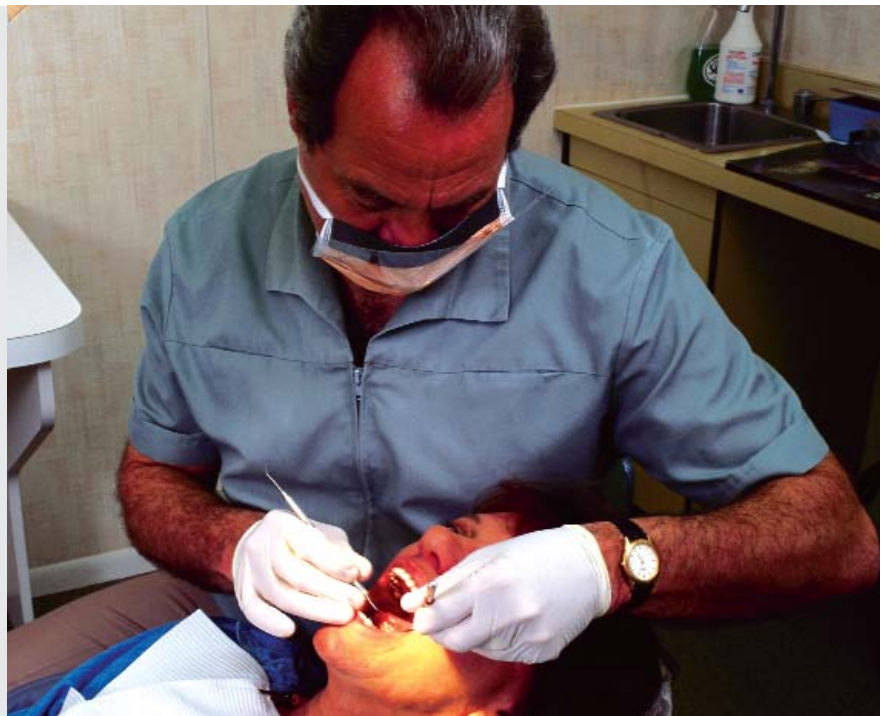
Oral complications

The oral complications of diabetes, like other complications associated with the condition, are related to a person's ability to control blood sugar levels (glycaemic control) and their overall health. People with well-managed diabetes have fewer or less severe complications than those with poorer glycaemic control.

Periodontal disease (periodontitis) affects the gums and bone which support the teeth. It is an inflammatory disease, triggered by the bacteria in dental plaque, which results in the infection of gums followed by the destruction of bone. The symptoms of periodontitis are hardly noticeable at first; but as the disease

Dental caries is the process of demineralization of the tooth surface caused by bacteria in which the enamel is broken down. With proper early measures, the process can be halted and even reversed. If untreated, the demineralization weakens the tooth and may lead to fracture.

The **temporomandibular** joint allows the lower jaw (mandible) to move when the mouth opens, articulating with the bones at the side of the skull (temporals).



progresses, symptoms such as bleeding gums, tooth sensitivity, recession of gums, bad breath (halitosis), swollen gums, itchy gums, and loose teeth become apparent.

Scientific studies have shown that cases of advanced periodontitis are associated with poorly controlled diabetes. One researcher called it the sixth complication of diabetes.¹ There is a two-way relationship between diabetes and periodontitis: periodontitis can affect diabetes control and the ability to follow a proper diet, while poor diabetes control can negatively affect the outcome of treatment for periodontal disease. A healthy treatment outcome relies on both good oral health and good diabetes management.

Dental caries is an oral disease which affects everybody, but especially those who have diabetes.

This is mainly due to higher sugar (glucose) levels in the saliva surrounding the teeth.

Gum disease has been called the sixth complication of diabetes.

Oral soft tissue damage includes fungal infections (candidiasis), ulcers, denture-sore mouth, and changes in the tongue (such as chronic fissured tongue). The development of these conditions is due to a dry mouth, delayed wound healing and altered immune and inflammatory responses.

Xerostomia, or dry mouth, occurs in people with poor diabetes control. It is due to decreased salivary flow rates, alterations in saliva composition and an increase in salivary glucose levels. Medications

and nerve damage (neuropathies) may further complicate the xerostomia.

Oral neuropathies can be either painful conditions which are debilitating to the person with diabetes, or non-painful conditions which alter taste and function.

Examples of oral neuropathies are:

- ◆ burning mouth syndrome
- ◆ burning tongue
- ◆ **temporomandibular** joint dysfunction (TMD)
- ◆ depapillation and fissuring of the tongue.

Dentistry and diabetes diagnosis

There is a relationship between oral disease and those affecting the whole body (systemic). Diabetes is a condition which reflects this relationship. A person with undiagnosed diabetes who visits the dentist for a check-up will show oral symptoms which could alert the >>

dentist of this undiagnosed condition. People who previously had unremarkable check-ups may have dry mouth, periodontitis, soft tissue damage and dental caries. At the same time, the person with diabetes may talk about weight changes, blurred vision, lethargy, changes in mood, and frequent trips to the toilet.

These symptoms would alert the dentist to refer this person with diabetes to their family physician for diagnostic blood work to test for diabetes. The diagnosis and treatment of diabetes is not within the scope of practice of the

general dentist. It is, however, within the dentist's scope of practice to be highly vigilant with this aspect of care. This applies not only to diabetes, but to all systemic conditions that influence oral health.

In a check-up, a person with undiagnosed diabetes may show oral symptoms which could alert the dentist of the condition.

Collaborative efforts

In February 2003, the Nova Scotia Dental Association (NSDA), the Canadian Diabetes Association (CDA)-Nova Scotia Division, and Dalhousie University held a diabetes oral consultation clinic. The clinic was available to people with diabetes for consultations with dentists to assess their oral health status with respect to the oral complications of diabetes. The goals of the clinic were to:

- ♦ increase public awareness of the oral complications of diabetes
- ♦ educate people with diabetes about the importance of good oral health and the necessity of regular visits to the dentist
- ♦ uncover the barriers which people with diabetes face in seeking oral health care.

In 2003, there was also a poster campaign which was co-sponsored by NSDA and CDA. More than 2000 posters were distributed to dental and medical practices, and diabetes care centres throughout Nova Scotia. These posters are designed to communicate to people with diabetes the importance of good oral health care, and the importance of keeping routine dental appointments.

**DIABETES
SEE WALLET CARD**

**Diabetes:
Know the Signs**

- unusual thirst
- unusual weight loss
- frequent urination
- extreme fatigue or lack of energy
- blurred vision
- frequent or recurring infections
- cuts and bruises that are slow to heal
- tingling or numbness in hands or feet

Oral Warning Signs

- increased oral infections
- dry mouth
- perpetual bad breath

NSDA
NOVA SCOTIA DENTAL ASSOCIATION

CANADIAN DIABETES ASSOCIATION
ASSOCIATION CANADIENNE DU DIABÈTE

Know who to turn to

Diabetes warning signs often show up first in your mouth. Take care of your teeth and gums and make regular dental visits. If you have any of these signs and symptoms, see your physician.

www.diabetes.ca

Posters are designed to communicate to people with diabetes the importance of good oral health care.

National oral health-care policy on diabetes

The US and a number of European countries have developed oral health-care policies. Canada is in the process of developing such a policy. A national oral health-care policy essentially involves the:

- ♦ collection of current epidemiological data
- ♦ identification of a problem area based on this data
- ♦ establishment of a measurable goal to improve the identified problem
- ♦ development of action programmes to reach this goal.

An example is the US 'Healthy People 2010' health-care strategy. The document encompasses all aspects of health care, including oral health and diabetes. One goal of the strategy is to increase the percentage of people with diabetes having at least one annual dental check up from the current 58% to 75% by the year 2010.²

The financial and social costs of oral disease are high.

Action programmes need to be developed in order to reach this and other oral health-care goals. A second document, 'A national call to action to promote oral health', prepared by the office of the US Surgeon General, outlines the objectives necessary to attain these goals. These objectives apply to oral health and diabetes through the:

- ♦ recognition of oral health care as an accepted component of diabetes management
- ♦ accumulation of scientific

information to develop an evidence base in order to improve the oral health of people with diabetes

- ♦ removal of the barriers to care faced by people with diabetes through the development of oral health-care programmes.³

The burden of oral disease restricts activities in school, in the workplace, at home, and impacts negatively upon a person's quality of life. The financial and social costs of oral disease are high. A national oral health-care policy is designed to help society deal with oral disease. It also deals with the relationship between oral disease and systemic conditions. The relationship between oral health and systemic health is well illustrated with diabetes.

Scientific study, oral health-care programmes, and collaborative efforts between dental associations, diabetes organizations, and the private sector can create a template which is integral for dealing with oral health-care issues. Templates of this kind provide a foundation for the health-care policy makers and educators to give health-care providers the resources necessary to improve the public's well being.

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