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From Your Dentistry for Diabetics (DFD) Professional
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Informed

The truth about the diabetic & oral care

Type 2 Diabetes and Young People

Childhood diabetes is on the rise, exposing a new trend in diabetic care. That of the young person still learning how to care for his body in general, and now facing a complex, devastating disease.

While there are many factors that contribute to the onset of diabetes at any age, researchers have focused on two primary risks — obesity and puberty. However, there may be a third risk factor, which (if not dealt with early) may accelerate dependence on oral agents and

increase risk of some classic diabetes complications.

That third risk factor comes in the form of oral health disease. However, lifestyle habits may compound the child's vulnerability and resulting comorbidity. The following newsletter combines what we know about childhood diabetes with what we know about adolescent oral health and the impact of both together.



Did You Know?

The emerging public health problem of type 2 diabetes in youth reflects increasing rates of childhood obesity. As in adults, type 2 diabetes in children is part of the insulin resistance syndrome that includes hypertension, dyslipidemia and other atherosclerosis risk factors.

Rise of Type 2 Diabetes in Children and Adolescents Complex and Multi-faceted

As a physician or specialist treating patients with diabetes, you may already be witnessing the number of patients with type 2 diabetes climbing year after year – while the age of onset for type 2 diabetes falls.

According to the American Diabetes Association, in the last two decades, Japan has seen an estimated 4X increase in incidence of type 2 diabetes for the 6-to-15 year old demographic. The U.S. reports 8-45% of newly-diagnosed children and adolescents with diabetes – have type 2.¹

The precise causal factors associated with the rise of type 2 among young people is not known. However, environment, changing hormone levels associated with puberty, and increased obesity rates appear to be significant contributors.

Among comorbidity associated with diabetes at increased risk due to early onset, are cardiovascular disease and microangiopathy. However, there is another complication whose presence may multiply

the affects of other classic complications of diabetes.

In a study of the Pima Indians of Southern Arizona (ages 15 to 54), prevalence of periodontitis was 60% in patients with diabetes and 36% in those without diabetes.

Oral diseases such as xerostomia, periodontal disease and oral candidiasis have a two-way relationship with diabetes mellitus. As with classic complications of diabetes, the longer the patient lives with the disease the greater the risk of developing oral diseases.

In a study of the Pima Indians of S. Arizona (ages 15 to 54), prevalence of periodontitis was 60% in patients with diabetes and 36% in systemically healthy individuals; 2.5 years later, incidence of periodontal disease was 2.6 times higher in patients with diabetes than those without diabetes.²

Oral Diseases Uniquely Hazardous to Young People

However, what makes oral diseases uniquely hazardous for children and adolescents is not simply the increased risk associated with a life lived longer with diabetes. Rather the increased risk may occur during childhood and adolescence itself.

In a group of 263 diabetic patients compared to 59 non-diabetic siblings and 149 non-diabetic unrelated controls, periodontitis was not seen among any of the subjects under the age of 12.³

However, between 13 and 18 years of age, 13.6% of

the diabetic individuals had periodontitis, and the prevalence increased to 39% among those aged 19 to 32 years. By comparison, the prevalence in non-diabetic control subjects was <3%.⁴

Patients of any age living with diabetes are up to 3.4 times more likely to develop periodontal disease than systemically healthy individuals.

What's more, when periodontal disease reaches advanced stages,

Check it out

From the available data, the magnitude of metabolic syndrome and type 2 diabetes mellitus in children and adolescents in the European Caucasian population seems to be much less than in North America.

— D Molnár. The prevalence of the metabolic syndrome and type 2 diabetes mellitus in children and adolescents *International Journal of Obesity* (2004) 28, S70–S74. doi:10.1038/sj.ijo.0802811

its infection may lead to systemic inflammation – increasing glucose levels long term, weakening the system and perhaps prematurely increasing the need for oral agents to manage glycemic levels.

In addition, xerostomia may be triggered by oral medications used to manage glucose levels. In turn, impaired salivary production reduces salivary populations, driving glucose levels further out of target ranges.

Finally, when poorly-controlled diabetes (and associated inhibition of microbial killing) combines with *Candida Albicans* – oral candidiasis may occur. This oral fungus presents with a white or yellow film concealing lesions and sores. The discomfort and pain associated with oral candidiasis impacts the patient's ability to comfortably consume roughage and foods high in citric acid – the very dietary ingredients that help manage glucose and fight obesity.

According to the *American Dental Association*, the most common oral health problems associated with diabetes are:

- Tooth decay
- Periodontal disease
- Salivary gland dysfunction (xerostomia)
- Fungal infections (candidiasis)
- Lichen planus and lichenoid reactions (inflammatory skin disease)
- Infection and delayed healing
- Taste impairment

Physicians can play a role in encouraging patients' oral health by recommending good maintenance of blood glucose levels, a well-balanced diet, good oral care at home, and regular dental checkups.

SOURCE: Tracy Hampton. Studies probe oral health diabetes link. *JAMA* 2008. 300(21):2471-2473.

The question arises once again, why does oral disease pose a uniquely hazardous risk to young patients?

As with all things in childhood, the practice of proper oral care is a learned discipline. When systemically healthy youngsters skip brushing, flossing and even miss semi-annual preventive examinations, the result may be early-stage gingival infection and a sprinkling of dental caries.

For those young people with diabetes, who also have immature oral hygiene habits, the impact may be devastating both to immediate management goals, and to long term health. Untreated periodontal disease and xerostomia may inhibit glycemic management at this early stage, triggering premature need for oral agents to manage patient health.

In addition, candidiasis (as well as periodontitis) may impact dietary goals, further inhibiting the patient's ability to manage metabolic levels without the aid of oral medications.

IN SUM

Onset of type 2 diabetes during childhood and adolescents introduces greater complexity to this already-serious disease. In addition, immature oral hygiene habits may further inhibit management goals and accelerate dependence on oral agents.

In 2008, the ADA recommended referral to dentist for any patient living with diabetes.⁵ This suggestion may be even more urgent for those young people with early onset diabetes.

To help reduce risk factors associated with oral disease in adolescent or child onset diabetes, the *DentistryForDiabetics*SM organization recommends those patients visit a dentist 2-4 times per year.

To find a dentist certified by DentistryForDiabetics, visit www.DentistryForDiabetics.com/directory/index.php.

Did you know?

Research has shown that many medications used to treat complications associated with diabetes type 1 and type 2 may trigger degeneration of salivary glands.

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2. Nelson RG, Shlossman M, Budding LM, et al. Periodontal disease and NIDDM in Pima Indians. *Diabetes Care* 1990;13:836-840.
3. Cianciola L, Park B, Bruck E, Mosovich L, Genco R. Prevalence of periodontal disease in insulin-dependent diabetes mellitus (juvenile diabetes). *J Am Dent Assoc* 1982;104:653-660.
4. B Mealey, T Oates. AAP-Commissioned Review: diabetes mellitus and periodontal diseases. *J. Periodontal* 2006. 1289-1298.
5. Tracy Hampton. Studies probe oral health diabetes link. *JAMA* 2008. 300(21):2471-2473.

What's Clicking? Types of Diabetes in Children

Types of Diabetes in Children

Type 1 (immune-mediated) Diabetes

- Usually not obese; often recent weight loss
- Short duration of symptoms (thirst and frequent urination)
- Presence of [ketones](#) at diagnosis with about 35% presenting with [ketoacidosis](#).
- Often a [honeymoon](#) period after blood sugars are in control during which the need for insulin diminishes significantly (and sometimes is not needed to control blood sugars) for a while.
- Ultimate complete destruction of the insulin-producing cells needing [exogenous](#) insulin for survival
- Ongoing risk of ketoacidosis
- Only about 5% with a family history (in first or second degree relatives) of diabetes

Type 2 (insulin resistant) Diabetes

- Overweight at diagnosis; little or no weight loss (obesity is the hallmark of type 2 diabetes)
- Usually have sugar in the urine but no ketones
- As many as 30% will have some ketones in the urine at diagnosis
- About 5% will have ketoacidosis at diagnosis
- Little or no thirst and no increased urination
- Strong family history of diabetes
- 45 - 80% have at least one parent with diabetes
- diabetes may span many generations of family members
- 74 - 100% have a first or second degree relative with diabetes
- Typically from African, Hispanic, Asian, or American Indian origin
- Disorders likely to cause [insulin resistance](#) are common
- About 90% of children with type 2 have dark shiny patches on the skin ([acanthosis nigricans](#)), which are most often found between the fingers and between the toes and on the back of the neck ("dirty neck") and in axillary creases.
- Polycystic ovary syndrome (PCOS)

SOURCE: ADA Consensus Statement on "Type 2 Diabetes in Children and Adolescents"
DIABETES CARE 2004. 27(7):1798-1811

From:

To: