Perio & Diabetes

Recommendations for universities and research centres

EFP
European Federation of Periodontology

The EFP thanks Sunstar for its support and its unrestricted grant.

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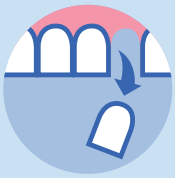
Periodontitis & diabetes mellitus **at a glance**

Diabetes and periodontitis are **chronic non-communicable diseases**, whose prevalence increases with age.

There is a **bidirectional (two-way) relationship** between periodontitis and diabetes.



If untreated, periodontitis causes **tooth loss**.

Periodontitis **is easily diagnosed** and **clinically controlled**. With regular high-quality supportive treatment, clinical results can be maintained.

People with sub-optimally controlled diabetes (both type 1 and 2) suffer from increased periodontal **inflammation/destruction/ breakdown**.

People with periodontitis **have an elevated risk** of pre-diabetes or developing type 2 diabetes.

People with both diabetes and periodontitis have a **greater likelihood of more severe medical complications** (affecting eyes and kidneys) **and even death** than people with diabetes alone.

Periodontal treatment in people with diabetes **results in a significant reduction in glycated haemoglobin (HbA1c) levels** three months after periodontal therapy, with emerging evidence available also for six months.

Early diagnosis, prevention, and co-management (dentists and physicians) of both diabetes and periodontitis is of utmost importance.

Successful periodontal treatment has a **clinically significant effect on general health** and should have a place in the treatment of people with diabetes.

Recommendations for universities and research centres

Periodontal diseases and diabetes are both chronic diseases that become more common as people get older. About 80% of people aged over 35 suffer from some kind of gum complaint and about 7% of the population suffers from diabetes, although in many cases this goes undiagnosed.

There are strong associations between the two diseases. Indeed, there is a two-way (bidirectional) relationship between periodontal disease and diabetes. This means that people with periodontitis have a higher risk of diabetes and patients with diabetes are three times more likely to develop periodontal disease.

On top of that, controlling diabetes is more complicated when a patient also has periodontitis, and people who have both diabetes and periodontitis are at greater risk of suffering some severe medical complications – including cardiovascular disease, chronic kidney disease, and retinopathy – than people who have diabetes alone.

Periodontitis is a chronic non-communicable disease (NCD) that shares social determinants and risk factors with the other major NCDs of diabetes, hypertension, heart disease, and cancer.

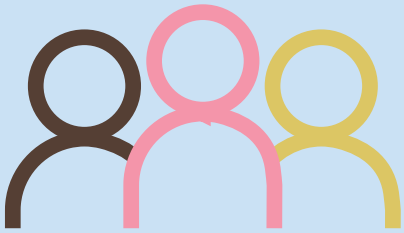
Universities are strongly encouraged to design curricula for dental and medical students that include inter-professional learning approaches to non-communicable diseases.

Within medical studies, the undergraduate curriculum should include information about periodontitis, the relationship between periodontitis and diabetes, and the impact of periodontal treatment on glycaemic control.

Within dental studies, the undergraduate curriculum should include information on chronic non-communicable diseases and their diagnosis. Dental students should understand glucose and lipid metabolism, they should know how to use a glucometer and other tools for investigating glycaemic control, and they should be able to recognise and evaluate all signs and symptoms of poorly controlled diabetes that are present in the mouth.

Research should focus on randomised controlled trials (RCTs) with large study cohorts and long follow-up times to assess the impact of periodontal therapy on glycaemic control in patients with diabetes.

Periodontitis and **diabetes mellitus** are **both widespread conditions** among the **world's population**



Diabetes mellitus

Approx. 415 million people

Prevalence:
constantly **rising**

Periodontitis

Western countries, more than 50% of the population

750

Prevalence:
750 million people around the world with **severe forms**

Diabetes general facts

- Diabetes is now a global epidemic.
- In 2017, diabetes caused an estimated 4 million deaths worldwide.
- There are an estimated 212 million people with undiagnosed diabetes.

Periodontitis general facts

- Periodontal diseases, i.e. gingivitis and periodontitis, are the most prevalent inflammatory diseases of mankind.
- If untreated, periodontitis causes tooth loss.
- If left untreated, people with periodontitis have poorer nutrition, speech, and self-confidence and a lower quality of life.
- Periodontitis is associated with a higher level of atherosclerosis, endothelial dysfunction, and higher levels of systemic inflammation.
- Periodontitis is easily diagnosed and clinically controlled; with regular high-quality supportive treatment, clinical results can be maintained.

Gum disease and diabetes require lifelong attention and professional care

Periodontitis and diabetes mellitus, a **two-way relationship**

What happens when you have **periodontitis** and **diabetes at the same time**

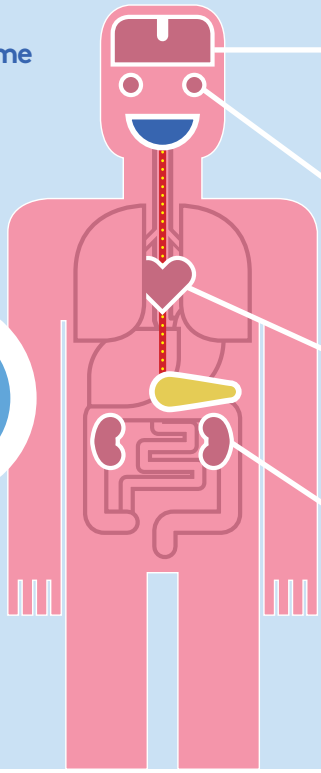
Diabetes mellitus increases **prevalence, progression, and severity** of periodontitis

Periodontitis

Increased **risk**

Diabetes mellitus

Periodontitis **influences blood-sugar control** in diabetes mellitus



Complications of diabetes

Stroke
Higher rate of cerebrovascular complications.

Retinopathy
Increased risk for larger retinal venular diameter and general diabetes-associated retinopathy.

Cardiovascular complications
Increased risk for coronary heart disease and dying from a heart attack (22% in 10 years.).

Kidney failure and **macroalbuminuria**
Increased all-cause mortality risk (41% in 10 years).

Evidence of associations between both diseases

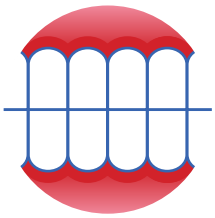
Impact of diabetes on periodontitis

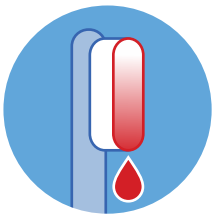
- Hyperglycaemia is associated with an increased risk and severity of periodontitis.
- There is a dose-dependent relationship between glycaemia and periodontal destruction.
- Patients with diabetes are three times more likely to develop gum disease.
- The control of diabetes is more complicated when periodontitis is also present in a patient (co-morbidity).
- People with diabetes who have good glycaemic control experience no more periodontitis than people without diabetes.

Impact of periodontitis on diabetes

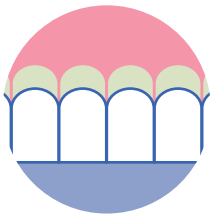
- Healthy patients with periodontitis exhibit a higher chance of developing pre-diabetes and diabetes.
- People with severe periodontitis have an increased risk of developing type 2 diabetes.
- Periodontitis is significantly associated with poorer glycaemic control (HbA1C) and higher blood-glucose levels (glycaemia) both in people with diabetes and in those without the disease.
- There are higher levels of insulin resistance in people with periodontitis.
- People with periodontitis and type 1 or 2 diabetes, when compared to patients with just diabetes, have higher:
  - ocular complications (retinopathy);
  - renal complications (chronic kidney disease);
  - cardiovascular complications (heart disease, cerebrovascular events);
  - risk of mortality.

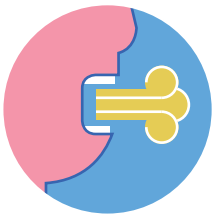
Signs and symptoms of periodontitis

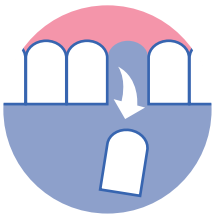

Red or swollen gums


Bleeding from the gums or blood in the sink after you brush your teeth

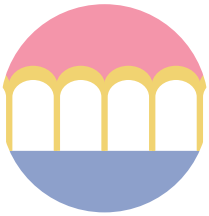

Bad taste

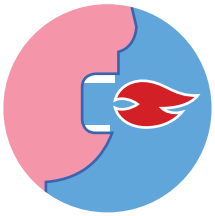

Longer-looking teeth


Bad breath (halitosis)


Loose teeth


Increasing spaces between your teeth


Calculus (tartar) on your teeth


Dry and/or burning mouth

Periodontal treatment is safe, effective, and may improve glycaemic control

Benefits of periodontal therapy

- Successful periodontal therapy will arrest disease progression, stabilise bone levels, diminish symptoms, and lengthen the life expectancy of teeth.
- Successful periodontal treatment reduces circulating levels of inflammatory molecules in people with diabetes.
- In people with diabetes, periodontal care (therapy) is safe and effective.
- Periodontal therapy significantly reduces HbA1c and glycaemia both in people with diabetes and in those without the disease.
- Successful gum treatment reduces blood-sugar (HbA1c) levels and could help you avoid having to take extra medication.
- May contribute to reduced diabetes-associated morbidity and mortality.

What should be done:

UNIVERSITIES:

- Curriculum design that considers inter-professional learning approaches for education in non-communicable diseases among dental and medical students is to be strongly encouraged.

MEDICAL STUDIES:

- The undergraduate curriculum should include information about periodontitis, its signs, and symptoms.
- Specific curricular space should be dedicated to education on the relationship between periodontitis and diabetes.
- The impact of successful/optimal periodontal treatment on glycaemic control should be taught to medical students.

DENTAL STUDIES:

- The undergraduate curriculum should include information on chronic non-communicable diseases and their diagnosis.
- Dental students should be proficient in understanding glucose and lipid metabolism.
- Dental students should be knowledgeable in using a glucometer and other investigations for glycaemic control.
- Dental students should be competent in recognising and evaluating signs and symptoms of poorly controlled diabetes present in the oral cavity, besides gingivitis and periodontitis. These include impaired wound healing, multiple or recalcitrant abscesses, xerostomia, burning-mouth sensation, increased incidence of fungal infections, etc.

RESEARCH:

- Further clinical research (RCTs) on large study cohorts and with long follow-up times to assess the influence of periodontal therapy on glycaemic control in patients with diabetes should be conducted.

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Take care of **your gums**, control **diabetes**.

visit your doctor regularly

visit your dentist regularly

control your diabetes

clean your teeth twice a day

watch your weight

eat healthy foods, do not smoke

visit:

perioand**diabetes**.efp.org