



Periodontal Health  
for a Better Life



# DOSSIER ON PERIODONTAL DISEASE

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## FACTS & FIGURES: **IMPACT OF GUM HEALTH**

### Oral health represents

- Between 0.5 to 1% of GDP.
- About 10% of medical expenses.

### Periodontitis is the most common chronic inflammatory disease of humans

- 8 out of 10 people aged 35 and over suffer from some kind of gum complaint.
- Periodontal diseases are the most common conditions to afflict European populations, but are among the least acknowledged.
- Gum disease can cause tooth loss and affect the rest of the body.
- Periodontal diseases do not tend to cause pain or intense discomfort. The most frequent symptom is bleeding gums.
- Periodontal diseases represent a major cause of expenditure in the adult and elderly population.

### Evidence of how periodontal health improves general health and medical costs

“Periodontitis is significantly and independently associated with the major chronic inflammatory diseases of ageing, including atherogenic cardiovascular disease, type-2 diabetes, rheumatoid arthritis, chronic kidney disease, obesity, and chronic obstructive pulmonary disease.”<sup>1</sup>

- Severe periodontitis adversely affects blood-sugar levels in non-diabetes subjects and blood-sugar control in diabetes patients.
- The worse the periodontitis, the worse the diabetes complications (heart & kidney).
- Overall, studies show that successful periodontal treatment improves diabetes outcomes.
- Severe periodontal disease imparts significantly elevated risk for coronary artery (heart) disease.
- Evidence from laboratory and animal research shows that periodontal therapy improves cardiovascular (heart) outcomes, and in human studies biomarker outcomes of heart disease also improve.

“Cost-based results provide new, independent, and potentially valuable evidence that well-performed, non-invasive periodontal therapy may also improve health-economic outcomes.”<sup>2</sup>

- Treatment of periodontal disease to a defined end-point reduces annual medical costs in patients diagnosed with:
  - Type-2 diabetes by 40%.
  - Heart-disease (coronary artery disease) by 11%.
  - Stroke patients (cerebrovascular disease) by 41%.
- The corresponding reductions in hospital admissions are:
  - 39% in diabetes patients.
  - 29% in heart disease patients.
  - 21% in stroke patients.

For more information on the links between periodontal disease and diabetes, visit the EFP's website section on Perio-Diabetes Workshop, organised in February 2017 by the European Federation of Periodontology (EFP) and the International Diabetes Federation (IDF) at [www.efp.org/events/perio-diabetes-workshop/index.html](http://www.efp.org/events/perio-diabetes-workshop/index.html)

### About diabetes<sup>3</sup>

In Europe:

- 58 million people were living with diabetes in 2017.
- There will be a projected 70 million people with diabetes in 2035.
- Prevalence: 6.8 % of the population in 2017, and 6.9% in 2045.
- 22 million people have undiagnosed diabetes, 37.9% of all cases.
- Total diabetes-related health expenditure in Europe: € 140 billion.
- Number of deaths caused by diabetes: 477,000, around 9% of all mortality.

\*Find the consensus report and guidelines of Perio-Diabetes Workshop published at the *Journal of Clinical Periodontology*: <https://www.onlinelibrary.wiley.com/doi/abs/10.1111/jcpe.12808>

### About cardiovascular disease<sup>4</sup>

Cardiovascular disease (CVD) is the main cause of death in the European Union, killing more than two million people per year. CVD costs the EU economy more than €192 billion annually.

\* A joint workshop of the European Federation of Periodontology and the World Heart Federation will produce guidelines in 2019.

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**Periodontal diseases** are the most common conditions suffered by European populations, but are among the least acknowledged. In fact, few people seem to be aware that, within dentistry, there is both a science and a practice dedicated to the study of the gums and tissues that support the teeth: “periodontology”.

**Eight out of 10 people aged over 35 suffer from some kind of gum complaint.**

Global goals for oral health have been set for 2020 by the World Health Organisation (WHO), the International Association for Dental Research (IADR), and the International Dental Federation (FDI). This blueprint aims at reducing tooth loss (edentulism) and increasing the number of elderly people who retain a natural and functional dentition. However, periodontal experts now have scientific reasons to believe that oral health has far greater importance in terms of general health than medical institutions and the public have

previously been aware of. The growing weight of evidence from more than 30 years of research suggests that not only are there strong links between periodontal disease and systemic illnesses such as diabetes and cardiovascular disease, chronic kidney disease, rheumatoid arthritis – and indeed premature mortality – but also that periodontal care can aid in diagnosing and controlling a great number of these major systemic complaints.

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## WHAT IS **PERIODONTAL DISEASE ?**

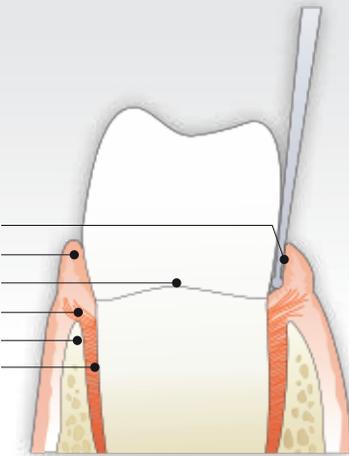
**Periodontal diseases** are conditions that affect the periodontium, i.e. the tissues that support teeth. There are many different forms, but the most frequent are "gingivitis" and "periodontitis". Periodontitis is an inflammatory disease initiated by bacteria which, in susceptible people, cause severe inflammation and loss of bone around the teeth.

There are two major types of periodontal disease. When only the soft gum is affected, causing a reversible inflammatory process, this is known as gingivitis.

If gingivitis goes untreated and is compounded by other factors (genetic, environmental, local...), then periodontitis occurs in susceptible people. In addition to the aforementioned inflammation, a deeper destructive process begins, which will affect other tissues of the periodontium, namely the alveolar bone, the

cementum around the tooth, and the periodontal ligament. This destruction is irreversible and leads to a progression of the disease because it creates a space below the gum that we call a periodontal pocket, an area where a greater quantity of bacteria can go on accumulating, thus threatening the survival of teeth, and the integrity of the body internal systems.

Periodontal pocket  
Gingiva  
Cementoamel junction  
Periodontal ligament  
Alveolar bone  
Cementum



**GIN-  
GIVI-  
TIS**

**Superficial inflammation** of the gum. The main warning sign is bleeding (but not in smokers). If this is not correctly treated, it can lead to periodontitis.

**PERIO-  
DON-  
TITIS**

**Profound inflammation** of the gum and the other tissues supporting the tooth. This can lead to tooth loss. It may affect general health: an increase in the risk of cardiovascular disease, chronic kidney disease, rheumatoid arthritis, and diabetes.



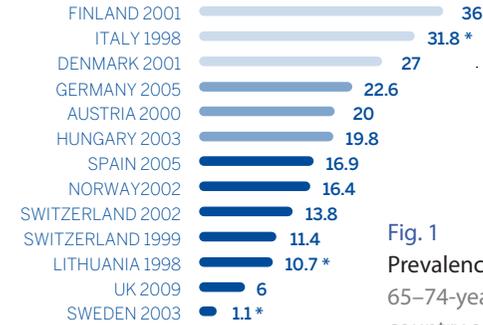
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# PERIODONTAL DISEASE IN EUROPE



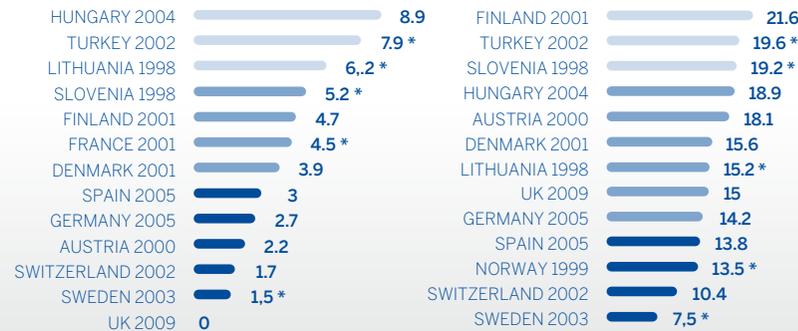
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The most recent statistics and epidemiological studies on periodontal disease (see figures in this dossier) point to the UK, Spain, Sweden, and Switzerland as being the healthiest European countries in terms of low tooth loss and low prevalence of moderate to severe periodontal pocketing. There is encouraging data to confirm the role of dental hygienists in countries where the right medico-legal framework exists to allow for and foster their inclusion in approaches to effective periodontal care. Nevertheless, in some countries dental hygienists are not allowed to practise.



\* Regional study.

Fig. 1 Prevalence of edentulism in 65-74-year-old subjects in Europe by country and according to national and some regional surveys. Severity is represented in different shades of blue, the darker the colour, the lower the prevalence.



Figures 2 (a) and 2 (b) Tooth loss in 35- to 44- and 65- to 74-year-olds in Europe by country and according to national and some regional surveys. Severity is represented in different shades of blue, the darker the colour, the lower the number of missing teeth.



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## PERIODONTAL DISEASE IN EUROPE



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### DOSSIER ON PERIODONTAL DISEASE

The shortcomings of available epidemiological data on the provision and success of periodontal care in Europe means that uniformly designed national representative studies have been strongly encouraged.

A world workshop jointly organised in Chicago in 2017 by the EFP and the American Academy of Periodontology (AAP) developed case definitions for periodontal diseases to facilitate uniformity in data collection across the world. A global disease-burden study in collaboration with the WHO revealed a prevalence of periodontitis in its most severe form of >11% – Kassebaum et al 2014. Global Burden of Severe Periodontitis in 1990-2010: A Systematic Review and Metaregression *J Dent Res* 93(11):1045-1053, 2014. One excellent systematic review – by König, Holtfreter and Kocher, published in the *European Journal of Dental*

*Education* – is regarded as the most authoritative source for periodontal data in Europe, and this dossier features data from this paper, updated with the 2009 UK data (excluding Scotland).

While the aforementioned study concludes that optimal prevention and treatment strategies in European periodontology will be boosted by "more comparable and representative data," there are other dynamics within the speciality that will increase its influence on general health, notably the continuing scientific research into the connections between periodontal health and life-threatening illnesses. After decades of work in this direction, dental researchers are moving ever closer to consensus and to pinning down the evidence that periodontal attention can not only aid the diagnosis of conditions such as diabetes and cardiovascular disease, but also contribute to their control.



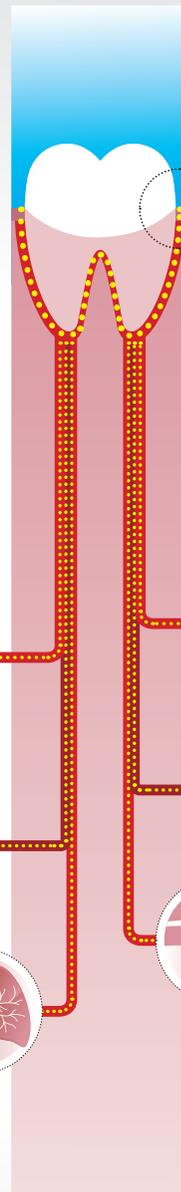
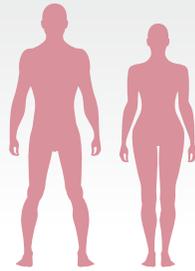
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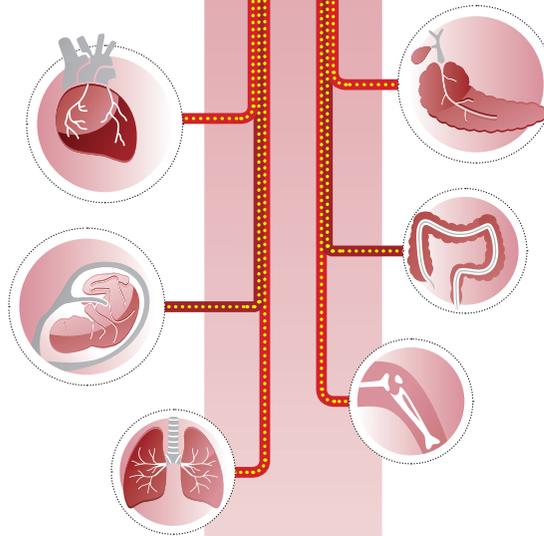


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PERIODONTAL DISEASE CAN CAUSE TOOTH LOSS AND AFFECT THE REST OF THE BODY



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## CONSEQUENCES OF PERIODONTAL DISEASE

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Periodontitis can have two kinds of consequences: at a local level (in the mouth) and at a systemic level (in the rest of the body).

At the local level, the most serious consequence is tooth loss, and this has an aesthetic effect as well as an effect on functions such as chewing and speech. It can also cause bleeding gums, bad breath, receding gums, tooth movement, and pain (although pain is not common).

In the rest of the body, the presence of a vast quantity of bacteria under the gums means that such bacteria can pass into the bloodstream and affect other parts of the body (either directly or indirectly through causing systemic inflammation). This can increase the risk of suffering cardiovascular disease, chronic kidney disease, and rheumatoid arthritis and can adversely affect diabetes control and complications.

PERIODONTITIS CAN AFFECT BOTH THE MOUTH (YOU CAN LOSE YOUR TEETH) AND THE REST OF THE BODY (CARDIOVASCULAR DISEASE, PREMATURE BIRTH, DIABETES CONTROL AND COMPLICATIONS)



### Risk factors

- Poor tooth cleaning (oral hygiene)
- Smoking
- Stress
- Illness or low defences: poorly controlled diabetes, osteoporosis, HIV, herpes, transplants, etc.
- Hormonal changes: pregnancy, menopause
- Personal medical conditions (rare) and associated medications
- Family medical history
- An ageing immune system



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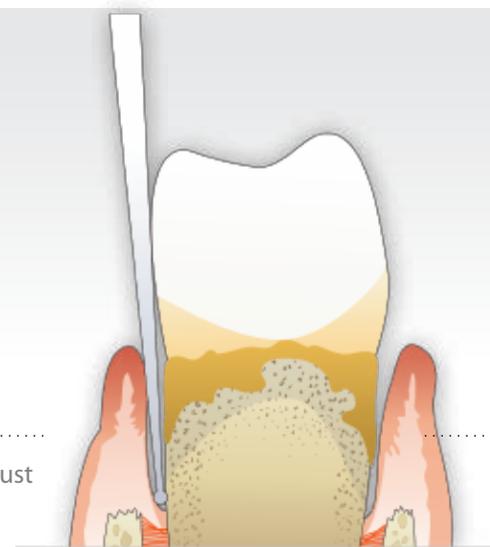
## CAUSES OF PERIODONTAL DISEASE

Periodontal diseases are complex diseases with no single cause. They are initiated by bacteria located under the gums, specifically between the gum and the tooth. The accumulation of bacteria under the gum, in the form of bacterial plaque (now known as dental biofilm), leads to inflammation of the surrounding tissues, i.e. to gingivitis (gum inflammation). Wherever there is biofilm, there will be some degree of gingivitis.

If this biofilm is not removed, it may initiate an immune and inflammatory response that, in susceptible subjects, may lead to periodontitis; the immune response and the inflammatory reaction causes most of the tissue damage that manifests as periodontitis.

For periodontitis to progress there must be several factors at work:

- Pathogenic (disease-causing) bacteria within the biofilm.
- Limited oral-hygiene habits and the absence of professional care.
- Being a susceptible person for genetic reasons.
- Wrongly positioned teeth or fillings, which trap and retain the biofilm locally.
- Stress, alcohol consumption, obesity or being overweight, and – above all – smoking.
- Illnesses affecting the rest of the body, such as diabetes and osteoporosis, or frequent viral infections may also play a role.
- Certain drugs leading to an increase in the volume of inflammation or the inflammatory response of the gums.



WHEREVER DENTAL PLAQUE ACCUMULATES IN THE GUMS, GINGIVITIS IS PRODUCED. HOWEVER, FOR GINGIVITIS TO PROGRESS TO PERIODONTITIS, OTHER FACTORS MUST BE INVOLVED: GENETIC, ENVIRONMENTAL, MEDICINES, LOCAL FACTORS, INADEQUATE ORAL HYGIENE...



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## DIAGNOSIS OF **PERIODONTAL DISEASE**



Periodontal diseases do not tend to cause pain or intense discomfort. The most frequent symptom is bleeding, either spontaneous or during toothbrushing, though it is less evident in smokers. The bleeding normally appears as redness (blood) in the saliva when rinsing or spitting out toothpaste after brushing. The list of possible symptoms also includes pus in the gums, bad tastes or a bad-smelling mouth, reddening of the gums, gingival retraction and teeth appearing longer, the appearance of spaces between teeth or change of tooth position, hypersensitivity to temperature changes (above all to cold), pain, and tooth movement.\*

A reliable diagnosis can be arrived at only by a dentist or periodontist (dentist specialising in treating gum conditions).

Through the use of a measuring instrument called a probe, an evaluation is made as to whether the periodontal tissues are superficially inflamed (gingivitis) or whether there has been deeper loss of supporting tissue (periodontitis). The taking of X-rays may also be required to confirm the findings.

### Alarm signs

- Bleeding or redness of the gums
- Blood or redness in saliva
- Bad breath
- Tooth hypersensitivity
- Tooth mobility
- Tooth migration
- Tooth loss



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\* See the EFP-produced film *The Sound of Periodontitis*, available here: <http://www.efp.org/patients/sound-of-periodontitis.html>

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## PREVENTION OF **PERIODONTAL DISEASES**

The best way to prevent periodontitis is to maintain correct oral hygiene in order to control dental biofilm levels, and to have regular check-ups. In very susceptible patients, however, periodontal disease may occur despite the performance of correct oral hygiene. Personal oral hygiene should be accompanied by regular visits to the dentist, periodontist, or hygienist so that early diagnosis can be made of any disease present.

To control dental biofilm in the mouth, there are two methods:

- Mechanical methods. These include normal manual brushing or powered brushing and the use of special interdental brushes.
- Chemical methods. Rinsing with mouthwashes and the use of toothpaste, gels, sprays, and antiseptic products can be applied alongside mechanical methods in order to control bacterial plaque.

**PREVENTION IS BASED ON CONTROL OF DENTAL PLAQUE, AVOIDING ITS ACCUMULATION IN GUMS, MAKING CLEANING TEETH AND IN BETWEEN TEETH (WITH INTERDENTAL BRUSHES) A NECESSITY. AND REGULAR CHECK-UPS ARE FUNDAMENTAL IN ORDER TO MAINTAIN GUM HEALTH**

Correct oral hygiene must be carried out after every meal. It is also necessary to have a check-up by the dentist or periodontist in order to establish your health status and to take measures for any problems found. Early detection of periodontal conditions simplifies their treatment and dramatically increases the likelihood of tooth retention.

Guidelines on prevention of periodontal and peri-implant diseases are available at:  
<http://www.efp.org/perioworkshop/workshop-2014/guidelines.html>.

Get the conclusions and consensus reports with outcomes from Perio Workshop 2014 here:  
<http://www.efp.org/perioworkshop/workshop-2014/conclusions.html>

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## TREATMENT OF PERIODONTAL DISEASES

In gingivitis cases, accumulated bacteria must be cleaned away, and this is achieved through the elimination of dental plaque and dental calculus (also known as tartar, which is plaque that has mineralised). This treatment, known as professional dental prophylaxis (or supragingival scaling, or tooth cleaning) is carried out by oral-health professionals, either by the dental hygienist, or by the dentist or periodontist. Furthermore, there is a basic need for professionals to explain how teeth and gums should be brushed to keep them clean, so that gingivitis will not reappear.

Treatment of periodontitis is organised in two phases. In the first phase, also called the basic-treatment phase, bacteria are removed from periodontal pockets using scaling and root-surface debridement (otherwise known as conventional periodontal therapy, non-surgical periodontal therapy, deep

cleaning), the aim of which is to clean away bacteria, plaque, and calculus from the roots of the teeth. Antibiotics may be used to complement this therapy, but only in rare specific cases: in general their use is to be discouraged.

When it comes to rapidly progressing or advanced diseases, however, a second treatment phase may be called for, and this involves creating access to these deep periodontal pockets. This phase is called periodontal surgery. Occasionally, periodontal surgery involves localised application of periodontal regeneration techniques.

When active treatment ends, the disease should be under control. This is when the maintenance (or supportive) phase begins, and this is a fundamental stage in periodontal treatment and the only way to achieve control of periodontitis in the long term.



### Simple treatment

- Improvement of oral hygiene, correction of specific risk factors.
- Deep cleaning of bacterial plaque around the gums.
- Evaluation of periodontal health.
- Control of plaque and bacteria under the gums (scaling and root surface debridement/root planing).
- In advanced cases, minor surgery.

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# TREATMENT OF PERIODONTAL DISEASES

The basic and surgical phases are very effective in controlling bacteria and inflammation, and in achieving periodontal health, but the bacteria tend to recolonise periodontal pockets from other oral reservoirs and, if preventive action is not taken, the disease reappears some months later.

At each maintenance visit, the dentist, periodontist, or dental hygienist will carry out a protocol of consistent actions in line with the following points: verifying the clinical situation tooth by tooth; evaluation of oral health; analysis of plaque levels; and individualised elimination of calculus and bacteria according to the state of different areas of the mouth. It is important to stress that periodontal maintenance is not just a question of carrying out a professional dental prophylaxis (tooth cleaning) but individualised medical treatment

adjusted to the needs of each patient.

The frequency of maintenance depends on each particular case, but it generally means a visit every three, four, or six months, depending upon each individual person's risks and needs analysis.

GINGIVITIS IS TREATED EASILY THROUGH PROFESSIONAL DENTAL PROPHYLAXIS AND CORRECT HYGIENE. PERIODONTITIS REQUIRES SEVERAL PHASES OF TREATMENT THAT MUST INVOLVE LIFE-LONG MAINTENANCE



PROFESSIONAL PROPHYLAXIS OR CLEANING + MAINTENANCE



SCALING AND ROOT-SURFACE DEBRIDEMENT + PERIODONTAL SURGERY + MAINTENANCE

SCALING AND ROOT-SURFACE DEBRIDEMENT + MAINTENANCE

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# Look after your gums

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2 to 3 times a day, do:



**1** Brush gums and teeth with toothpaste



**2** Use interdental brushes between the teeth daily. If these brushes do not fit, floss may be used (but is less effective)



**3** If indicated, rinse with the correct mouthwash



**4** Renew your toothbrush



**5** Visit your dentist or periodontist: have a gum check-up and a cleaning

See a hygienist for professional prophylaxis (or "tooth cleaning") and reinforcement of your tooth-cleaning method\*



Full-member national societies



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