

## Concern for Public Health: Periodontitis

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### Abstract

*Periodontitis, a severe form of gum disease, erodes the bone that supports teeth and results in tooth loss. It is caused by bacterial infection and inflammation of the soft tissues around the teeth. About 70% of people 65 years of age and older are affected, on average. Red, bleeding, sensitive gums, foul breath, and receding gums are hallmark indications. Depending on the severity, a full dental examination, the insertion of a periodontal probe, and an X-ray can confirm the diagnosis. Medical and surgical management are crucial to the management of periodontitis. The composition of biofilms is a major factor in periodontitis, an inflammatory disease caused by infection. When dental plaque builds up near the gingival margin, it triggers an inflammatory reaction that changes microbiology and can have severe effects on the periodontium of those who are vulnerable. Prolonged inflammation damages the gingiva and can lead to periodontitis, which is characterized by irreversible loss of alveolar bone and attachment. Although it usually affects adults, young people can also develop periodontitis and its negative effects. Adult tooth loss is primarily caused by advanced illness. Periodontitis is also linked to several long-term illnesses and disorders that impact overall health. The primary hallmark of periodontitis is the permanent breakdown of alveolar bone resulting from the stimulation of osteoclast generation, which ultimately leads to the loss of tooth support. In otherwise healthy individuals, the approximate fatality rate for surgically treatable instances of peritonitis (e.g., diverticulitis, appendicitis, and perforated peptic ulcer) is less than 10% when appropriately managed. Those with peritonitis who develop sepsis have a mortality rate of 35%, and those with underlying renal insufficiency and comorbidities also have a greater death rate. Early detection and treatment of periodontitis may be facilitated by routine examinations and proper dental hygiene.*

**Keywords:** Periodontitis, public health, bleeding gums, tooth loss, oral hygiene

### INTRODUCTION

Gum disease is called periodontitis. This is a severe chronic inflammatory illness that can result in tooth loss and the deterioration of the bone that supports teeth. It is brought on by bacterial germs. In the current situation, public health issues like oral diseases like the high prevalence of periodontitis, as well as non-communicable diseases (NCDs) like cancer, cardiovascular disease (CVD), chronic respiratory disease, diabetes, and mental and neurological disorders are relatively uncommon in people

under the age of thirty [1]. However, it still affects people of all ages who have poor dental hygiene. Less than nine teeth remain in the mouth; this includes edentulism or total lack of teeth. When gingivitis is no longer the only periodontal condition present and has developed into a damaging, irreversible, and chronic inflammatory disease state, it is called periodontitis [2]. At that point, the bacteria have a greater opportunity to enter the surrounding periodontium and tissues. This sets off the host's defense mechanism against the invasive microorganisms. Nevertheless, the host defenses also cause the periodontium to be destroyed in the process of defending against the

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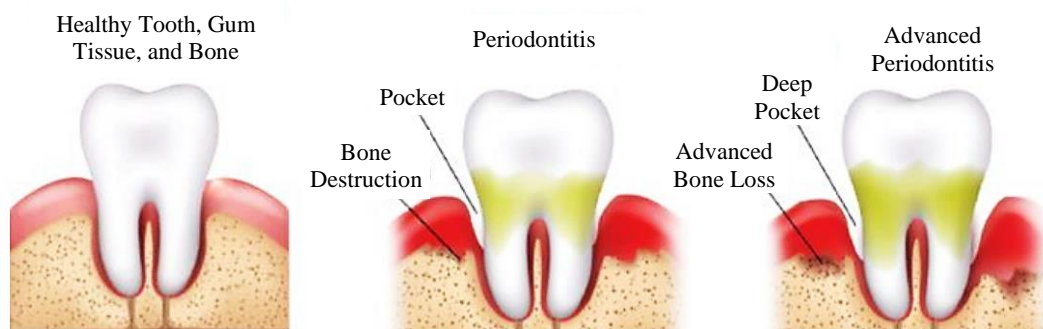
bacteria. The disease known as periodontitis causes the periodontium to lose its connection which then causes a loss of alveolar bone and may even cause the impacted tooth to fall out [3]. This is considered significant tooth loss. Teeth loss is typically the culmination of a lifetime of oral health issues, primarily severe periodontal disease, and extensive tooth cavities.

**EPIDEMIOLOGY**

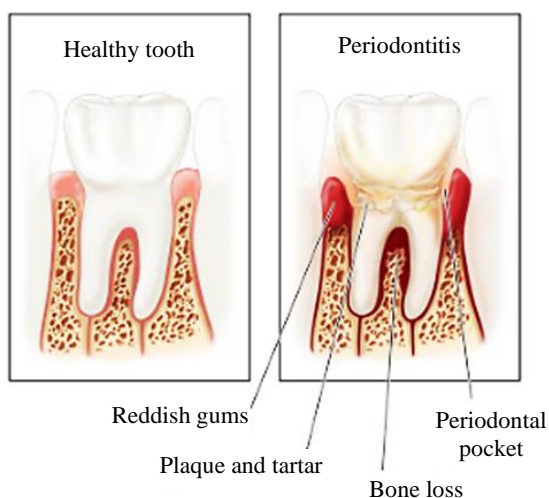
Almost half of the world's population, or individuals, is afflicted by oral disorders such as dental decay, periodontal disease, and tooth loss. Between 20 and 50 percent of people worldwide suffer from periodontal disorders, which are common in both industrialized and developing nations [4]. Periodontal disease is a public health concern due to its high prevalence in adolescents, adults, and older people. Approximately 10% of the world's population suffers from periodontitis, with over 47% of those over 30 and 70% over the age of 65. Men are more likely than women to have this condition (56.4% vs. 38.4%); those with less than a high school education (66.9%) are more likely to live below the federal poverty line (65.4%), and those who smoke now (64.2%) (Figure 1).

**CAUSES AND PATHOLOGY**

Oral hygiene issues are the primary cause of periodontitis. Initially, germs grow and cause gingivitis, a treatable inflammation of the gingiva surrounding the teeth. Bacterial plaque, a sticky white membrane coating, accumulates in these areas and is the most frequent source of periodontal disease and appears on the surface of teeth. The remaining plaque, which will solidify, is calculus, also known as tartar. As the year goes on, the immune system fails to react, and tartar accumulates. Bacterial oxidants begin to break down the bone and connective tissues that support teeth. The teeth eventually start to come loose and may even fall out (Figure 2).



**Figure 1.** Periodontitis.



**Figure 2.** Difference between healthy teeth and periodontitis.

### **Risk Factors**

The factors that increase the risk include:

- *Inadequate dental hygiene*: Infrequent brushing and flossing.
- *Smoking*: Raises the chance of gum disease, which is 90% difficult to treat.
- *Genetic factors*: Due to the method by which their immune systems respond, people are more likely to develop.
- *Age*: Poor dental hygiene can occur at any age; however, it typically begins between the ages of 30 and 35.
- *Diabetes type 2*: Incapable of controlling blood sugar levels.
- *Diet*: Consume a lot of processed carbs, especially those with added sugars.
- *Stress*: It weakens immunity and raises the risk of inflammation.
- *Hormonal changes*: Using oral birth control and becoming pregnant put you at risk.
- *Physical irregularities*: Misaligned teeth, broken dental bridges, and damaged fillings.

### **Stages of Periodontitis**

As periodontal disease worsens over time, it becomes increasingly problematic. There are four phases:

1. *Gingivitis*: This is a treatable early-stage gum disease that swells and turns red. Must brush your teeth and get expert cleanings from the dentist regularly.
2. *Mild periodontitis*: If gingivitis is not treated, it might progress to mild periodontitis. At this point, the gums start to separate from the teeth, and the surrounding bone starts to disappear. As a result, periodontal pockets form where germs, plaque, and tartar are trapped and are inaccessible to the toothbrush and floss [5].
3. *Moderate periodontitis*: The bone surrounding the teeth is lost much more as periodontitis worsens. The soft tissues and ligaments that support the teeth are still being weakened by bacteria. The gums may become painful and irritated at this point.
4. *Severe periodontitis*: Untreated periodontitis can lead to continued bone loss, loosening, and even falling out of the teeth. Apart from bleeding gums, the gum line is frequently surrounded by pus and infection, which can result in halitosis [6].

### **Signs and Symptoms**

Symptoms can be delayed until a person is in their 30s or 40s. By now, the patient can have permanent damage and severe periodontitis. Tight gums encircle the teeth tightly and feel stiff to the touch. On the other hand, symptoms of periodontitis include:

- Reddish or purplish swollen bleeding tender gums/pain when chewing.
- Discolored plaque or tartar on the teeth
- Sensitive teeth
- New gaps or spaces between teeth
- Changes in the way teeth fit together.
- Bad breath
- Pus (infection) around the gum line
- A metallic taste in the mouth
- Loose teeth/tooth loss

*Diagnosis*: Patients must undergo a thorough medical history, dental checkup, and physical examination to be diagnosed with periodontitis. To measure pockets that have formed, a periodontal probe is used under the gum line close to the tooth. X-rays are recommended to evaluate the erosion of the teeth and jaw bone.

### **Management**

Although periodontitis cannot be cured, it can be controlled with the right attention and therapy. A dentist or periodontist may say that the specific treatment and upkeep plan can change according to the stage. Treatment options for periodontitis include both nonsurgical and surgical methods [7].

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## Nonsurgical Management

For those with mild to moderate periodontitis, nonsurgical approaches are frequently effective. These treatments include:

- *Antibiotics:* Antibiotics taken orally to combat an infection or applied topically to the afflicted area under the gums. The dentist uses minocycline hydrochloride microspheres in powder form, which they can put into pockets to lessen plaque accumulation.
- *Good oral hygiene:* Fluoride tooth brushing, oil pulling, and saltwater rinses can help prevent plaque and gingivitis. Homemade mouthwashes with components like lemon grass oil, aloe vera, guava leaf, and turmeric gel are recommended at least twice a day. Flossing once a day using gentle picks or interdental brushes is also advised. Visiting a dentist yearly, avoiding tobacco use, and limiting alcohol intake and foods high in added sugars can help.
- *Scaling and cleaning:* Removing calculus and plaque can aid in restoring periodontal health.

*Surgical Management:* If periodontitis is mild to severe, surgery will probably be necessary. Procedures include:

- *Flap surgery:* A periodontist or gum specialist raises the gum tissue away from the teeth for a short while by making an incision along the gum line. This makes it simple and clean to see the roots of teeth.
- *Gum grafts:* Recommended for severe gum recession, this procedure reveals the teeth's roots. Tissue grafts or gum replacements restore the lost tissue surrounding teeth, reducing the chance of future recession, and improving the appearance of the smile. Tissue can be purchased from an authorized bone and tissue bank or extracted from the roof of the mouth [8].
- *Dental bone grafts:* Given the severe bone loss, a bone graft might be advised. The graft acts as a scaffold to support the formation of new bone. The aim is to reduce the chance of infection and tooth loss in the future.
- *Guided bone/tissue regeneration:* This process positions a unique biocompatible membrane as a barrier between the tooth and existing bone, guiding the development of new bone and gingival tissue where needed. Platelet-rich plasma (PRP) transfusions can aid in the regeneration of gum tissue or bone [9].

## Complications

The complications and consequences of periodontitis include:

It affects the main organs and raises the chance of developing respiratory, heart, renal, rheumatoid arthritis, diabetes, stroke, and dementia. It also increases the risk of premature birth, low birth weight, and pre-eclampsia during pregnancy.

## Prevention

Maintaining good oral hygiene and getting regular dental cleanings is the best approach to avoid developing periodontitis. Antioxidants included in fruits and vegetables aid in gum protection [10].

## CONCLUSION

The most common infectious mouth disorder is periodontal disease, which is avoidable. The community needs to build a surveillance system for oral diseases due to the high prevalence of periodontal disease. To enhance patients' quality of life, healthcare professionals should be knowledgeable about the perio-systemic relationship, be able to diagnose patients, and refer them to expert dental or periodontal care. Surgical perforation peritonitis is a common surgical emergency. Morbidity and mortality are related to several factors, including age, sex, length of stay, site of perforation, degree of peritonitis, and delay in surgical intervention. According to the World Health Organization, dental health is a critical indicator of overall health, well-being, and quality of life. Raising awareness of the significance of dental health is crucial to reducing the prevalence of periodontitis, which can minimize treatment demands and lessen the financial strain on healthcare systems. Community health workers play a role in fostering oral health literacy.

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