

Is there a link between oral health and physical health?

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Introduction

- ❖ Oral health plays a vital role in the physical and mental well being of individuals. It is a common misconception that the mouth and oral health is isolated alone to the head but in reality has many links to the rest of the body and shows signs of many systematic diseases and infections
- ❖ The oral cavity and its surrounding structures are essential parts of the human body, for many reasons such as:
 - The mouth being the entry to the digestive track (1)
 - The mouth being the entry to the respiratory system (1)
 - Humans using it to verbally communicate with others (2)
 - It playing a major role in the appearance of an individual (2)



• Diseases that show early signs in the mouth

• Diabetes

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces.

• Signs of diabetes in the mouth include (3)

dryness

soreness

white patches

a bad taste



Diseases that show early signs in the mouth

Osteoporosis

- Osteoporosis is a health condition that weakens bones, making them fragile and more likely to break.
- This can be detected before a person even experiences a fracture due to oral conditions like (4)
 - bone loss around the teeth and in the jaw
 - tooth loss
 - poorly fitting dentures
 - gum disease.



Diseases that show early signs in the mouth

Heart disease

Heart disease could refer to a range of complex conditions that effect the heart and blood vessels.

signs in the mouth could be:

red, swollen gums

bleeding gums when eating, brushing or flossing

signs of infection around the gums.



Diseases that show early signs in the mouth.

Vitamin deficiencies

Vitamin deficiencies occur when the body lacks a specific vitamin over a long period of time.

Vitamins are crucial for maintaining the integrity of soft tissues. Some help you resist infections and keep your nerves healthy, while others may help your body get energy from food or help your blood clot properly

Deficiencies can manifest as: (5)

Mouth sores

Inflammation

A heightened risk of oral infections



Diseases that show early signs in the mouth

Cancer

Cancer occurs when DNA changes cause normal cells to grow abnormally and uncontrollably forming a mass called a tumour.

Oral cancer forms when cells on the lips or in the mouth mutate.

Signs in the mouth can appear as: (5)

- long lasting mouth ulcers
- lumps inside or around your mouth or lip
- a red/white patch inside the mouth



Gum disease

- Gum disease is most commonly referred to as **Gingivitis**.

Gingivitis is gum inflammation which usually doesn't cause any major problems at first. The main signs of gingivitis are red, swollen and bleeding gums. The gums bleed when you clean your teeth, and sometimes for no obvious reason too. Gingivitis generally doesn't cause any pain or other symptoms, so it remains undetected for quite some time. (6)

This may spread to other parts of the periodontium (the soft tissue and bone responsible for keeping our teeth firmly anchored) and cause damage there. The medical term for inflammation of the periodontium is **periodontitis**. (6)



• Gum Disease

As well as red and bleeding gums, it can also lead to sensitive teeth and receding gums, sore gums and bad breath.

If the gums are inflamed they may start pulling away from the neck of the tooth. This causes gaps to form between the teeth and the gums, known as gum pockets (or periodontal pockets).

At a more advanced stage, periodontitis can cause teeth to shift position, start wobbling or hurt when you chew. (6)



Gum disease continued

Gum disease can also be linked to systemic inflammation like heart disease and diabetes

The bacteria that infect the gums and cause gingivitis and periodontitis also travel to blood vessels elsewhere in the body where they cause:

blood vessel inflammation and damage

tiny blood clots

heart attack

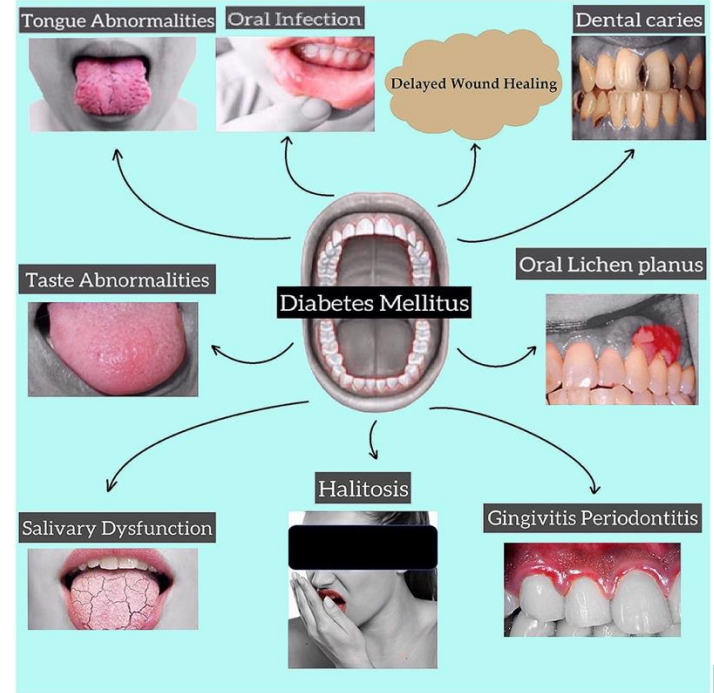
Or even strokes

Gum disease continued

Having diabetes can increase the risk of developing gum disease. And also, having gum disease can increase your blood sugar levels, which increases your risk of developing both prediabetes and type 2 diabetes.

Living with diabetes and some medicines used to treat diabetes mean that you make less saliva. Saliva helps protect your teeth and gums, so less saliva means you have a greater risk of tooth decay, and other mouth problems like tooth wear.

Diabetes can also increase the amount of sugar or glucose in your saliva, which can feed harmful bacteria that combine with food to form plaque.



The Role of Infections and Bacteria

In common conditions like gingivitis and chronic periodontitis, which are caused by plaque buildup, the blood vessels in the gums expand and increase in number. This creates a larger surface area, making it easier for bacteria to enter the bloodstream. (7)

When the bacteria enters the bloodstream it can travel to the heart. If the heart has damaged valves or other risk factors, these bacteria can attach to the inner lining, leading to infective endocarditis—a serious condition that causes inflammation and damage to the heart valves.

The bacteria can also spread to other parts of the body, contributing to systemic infections.

This process, known as bacteremia, has been linked to conditions such as:

1. Cardiovascular Disease – Bacteria from periodontal infections can trigger inflammation in blood vessels, and increase the risk of heart attacks and strokes.
2. Diabetes Complications – Periodontal inflammation can worsen insulin resistance, making blood sugar levels harder to control.
3. Respiratory Infections – Inhaled bacteria from the mouth may contribute to pneumonia or conditions like COPD – a common lung disease causing restricted airflow and breathing problems (7)

Case Study 1



- Patient X is a 55 year old male
- Patient X visits the dentist complaining of bleeding gums, persistent bad breath and loss of teeth.
- He reports that his gums have been swollen and tender for months and despite regular brushing, his condition has worsened.
- Initial examinations found he had severe periodontitis with significant bone loss.
- Upon further questioning patient X admits he has been experiencing increased thirst and frequent urination, unexplained weight loss and fatigue and slow healing cuts and infections.
- His dentist suggest he receives a blood test and his results show an increased level of HbA1c meaning he has increased levels of blood sugar.
- He is eventually diagnosed with type 2 diabetes, which had gone undetected.
- The uncontrolled diabetes had contributed to his severe gum disease due to impaired immune response and poor healing ability
- After being placed on a diabetes management plan – including medication, lifestyle changes and
 - improved oral hygiene, patient X's gum health significantly improved

Case Study 2

- Patient Y is a 42 year old female
- Patient Y visits the dentist complaining of painful, recurring ulcers in her mouth that have persisted for several months. She explains that the sores make eating and speaking uncomfortable .
- Examinations indicate multiple sores on the inner cheek and tongue, swelling of the gums and small cracks at the corners of the mouth.
- Upon further questioning patient Y reveals that she has been experiencing frequent abdominal pain and bloating , episodes of diarrhea and weight loss as well as fatigue and general discomfort.
- The dentist refers her to a gastroenterologist for further evaluation.
- After undergoing a series of tests, including a colonoscopy and blood work, patient Y was diagnosed with Crohn's disease, a chronic inflammatory condition of the gastrointestinal tract. (The organs that food and liquids travel through when they are swallowed, digested, absorbed, and leave the body.
- Patient Y's ulcers were one of the earliest external signs of the disease before severe digestive symptoms appeared.
- With proper treatment, including medication to manage inflammation and dietary adjustments, both her gut health and oral symptoms improve significantly.

My own experience

- During my placement at a dental practice during work experience I witnessed a patient being put on a 2 week wait referral.
- The patient had come in for a regular dental check up when the dentist noticed discolouration and ulcer like sores on the patients inside lower lip. She then made the decisions to refer him to put him on a 2 week wait referral. The referral is called an urgent suspected cancer referral and is to investigate the patients symptoms and to find out what is wrong and if it could be cancer.



Preventative Measures

There are many actions that a person can do in order to maintain a good physical and mental health

Maintain good oral hygiene

Brushing your teeth at least twice a day for minimum of two minutes each time as well as brushing your tongue.

Using a brush with soft bristles and fluoride toothpaste.

Cleaning between your teeth daily with floss.

Seeing a dentist twice a year for checkups and cleanings (1)



Lifestyle choices

Eating a healthy diet, limiting sugary foods and drinks.

Removing the use of any tobacco containing products (1)

Overview

These cases highlight the critical role of oral health in detecting systemic diseases emphasising that dentists can play a crucial role in early diagnosis.

Recognising oral signs of systemic conditions can lead to earlier medical intervention, preventing complications and improving patient outcomes.



References

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- (5) <https://www.nhs.uk/conditions/mouth-cancer/symptoms/>
- (6) [https://www.ncbi.nlm.nih.gov/books/NBK279593/#:~:text=At%20a%20glance-A%20gum%20inflammation%20\(gingivitis\)%20usually%20doesn't%20cause%20any,are%20removed%20to%20treat%20periodontitis](https://www.ncbi.nlm.nih.gov/books/NBK279593/#:~:text=At%20a%20glance-A%20gum%20inflammation%20(gingivitis)%20usually%20doesn't%20cause%20any,are%20removed%20to%20treat%20periodontitis)
- (7) <https://www.diabetes.org.uk/about-diabetes/complications/gum-disease>



Any Questions?

Thank you for listening :)