Community Dentistry

Lecture 4

Dental caries and periodontal disease as a community and economic problems

**By**

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**Dental Caries**

**Dental caries**, also known as tooth decay, is considered one of the most prevalent chronic diseases affecting large number of individuals worldwide

Formation of dental caries occur through a complex interaction over time between acid-producing bacteria and fermentable carbohydrate, and many host factors including teeth and saliva, affecting the mineralized tissues of the teeth enamel, dentine, and cementum. The disease develops in both the crowns and roots of teeth.

* **Dental caries** is a multi-factorial disease. It is the result of interaction between:
* Host
* Tooth

Saliva

* Bacteria
* Diet

Time

**Teeth**.

The morphology of teeth which is refers to

1. The number.

b. shape of cusps,

1. Ridges, grooves, and
2. the tooth size.
3. Also, the position of the teeth, deep anatomy grooves, and areas of retention due to the natural morphology of the tooth structure considered one of the reason difficulties in tooth brushing, and fluoride penetration, and thus be considered as caries risk factors, especially for pit and fissure caries.

**Saliva**

Salivary composition and flow, and Saliva contains components that can directly kill cariogenic bacteria.

It is also rich in calcium and phosphates which are actively involved in the tooth enamel re-mineralization process. The physical flow of saliva helps to remove pathogens (viruses, bacteria, and yeast) from teeth and mucosal surfaces.

**PH**

As the PH of saliva decrease, minerals of the tooth begin to dissolve and result in initiation of caries.

**Flow rate**

* Caries incidence is significantly higher in people with less or no salivary flow, as seen in cases of salivary gland, aplasia and xerostomia
* Continuous flow of saliva is required for mechanical removal of bacteria and food debris from the tooth surface.

**Anti-bacterial.**

* properties saliva contains many antibacterial factors like lysozyme, lactoferrin. Lactoferrin is one of the components of the [immune system](https://en.wikipedia.org/wiki/Immune_system) of the body; it has antimicrobial activity (bactericide, [fungicide](https://en.wikipedia.org/wiki/Fungicide)). IgA, which will help in decrease in dental caries

**Viscosity of saliva.**

* A high caries incidence is associated with a thick, mucinous saliva. The viscosity of saliva due to the much mucin content.

**Bacteria.**

The mouth contains a wide variety of bacteria, but only a few specific species of bacteria are believed to cause dental caries: streptococcus *mutans* and *lactobacilli* among them.

Bacteria in person’s mouth convert sugars into acid such as lactic acid through a glycolytic process called fermentation, this acid may cause the demineralization, which is the dissolution of its mineral content

**(Diet)Carbohydrates**

Cariogenicity of carbohydrates depend upon frequency of its ingestion, physical form, chemical composition, route of administration.

* Highly acidogenic snack foods should be consumed at mealtimes to reduce the risk, and between-meal snacks.

**Fluoride**

Topical and water fluoridation has been known to the effective in caries control.

**Pregnancy and lactation.**

During pregnancy, woman tend to neglect their oral health owing to all attention to that of care for the newborn, thus increased caries incidence during pregnancy and lactation is more a problem of neglect.

**Tobacco**

* Smoking has a significant effect on dental caries (Benedetti, Guido, et al 2013)

**Use of medications** certain medications can cause tooth decay

* Antacids which can cause dry mouth.
* Pain Medications which can cause dry mouth
* Antihistamines and Decongestants simply block the release of saliva and cause dry mouth
* High Blood Pressure Medication which can cause dry mouth

**Epidemiology of periodontal disease**

* The periodontium (perio=around, odontos =tooth consist of the tissues which surround and support the teeth.
* Their function is to attach the tooth to the surrounding alveolar bone and to support the tooth during function

**Periodontal Disease**

* Periodontitis which is a group of
* Inflammatory disease that affect all
* the periodontal structures

**Gingivitis** is characterized by local, swelling and bleeding of the soft tissues surrounding a tooth without loss of connective tissue or bone support. Inflammation of the gingiva that occur due to the accumulation of bacteria as a thin film on the teeth is called plaque.

* Plaque accumulation is greatest in the sheltered interdental

region since gingivitis started from interdental papilla

and spread from there around the neck of the tooth.

**Periodontitis**

it is a serious gum infection that damages the soft tissue and bone that supports the tooth.

What are the risk factors?

* Smoking  smokers people are much more likely to develop gum problems than nonsmokers. Smoking also weakens the efficiency of treatments.
* **Hormonal changes in females**. Puberty, pregnancy, and the menopause were periods in life when a female's hormones undergo changes. Such changes raise the risk of developing gum diseases.
* **Diabetes** - patients who live with diabetes have a much higher incidence of gum disease than other individuals of the same age.
* **AIDS**. individuals with AIDS have more gum diseases.
* **Cancer**. Cancer is a class of diseases characterized by out-of-control cell growth. And some cancer treatments can make gum diseases more of a problem
* **Some drugs**. Some medications that reduce saliva are linked to gum disease risk.
* **Genetics**. Some people are more genetically susceptible to gum diseases.

**Psychosomatic factors**

Abnormal oral hygiene habits like clenching and bruxism (produce forces that are destructive to periodontium), nutritional factors, destructive mechanical oral habits and other predisposing factors.

Stress is thought to manifest in the periodontium through behavioral changes, such as increase smoking and poor oral hygiene.

**Environmental factors**

* There are many environmental factors that may influence the periodontal diseases like:

Geographic distribution certain geographic areas throughout the world are associated with more periodontal disease than