

# Community Dentistry

Lec 3

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Dental caries:

Is a chronic disease, affecting large number of population. The carious process affects the mineralized tissues of the teeth, enamel, dentine and cementum, and caused by the action of microorganisms of fermentable carbohydrates in the diet.

Bacterial enzyme + fermentable carbohydrate = acid. Acid + enamel =

Dental caries

Dental caries is a multi-factorial disease

It is the result of interaction between:

1) Host:

a) Tooth

b) Saliva

2) Bacteria

3) Diet

4) Time

Teeth

The anatomy of teeth may affect the caries formation. In cases where the deep grooves of teeth are more numerous, pit and fissure caries are more likely to develop.

Also caries are more likely to develop when food is trapped between teeth.

## 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 a person's mouth convert sugars into acids such as lactic acid through a glycolytic process called fermentation. If left in contact with the tooth, these acids may cause demineralization, which is the dissolution of its mineral content.

## Carbohydrate

Carcinogenicity of carbohydrates depend upon frequency of its ingestion, physical form, chemical composition, route of administration and presence of other food component.

## Time

The frequency of which teeth are exposed to cariogenic (acidic) environment affects the likelihood of caries development.

## Risk factors affecting caries prevalence:

### Age

Dental caries more prevalent in children up to 12 years, incidence decreases somewhat in younger and middle age group and increases again by the older age.

### Gender

Caries is significantly higher in female than males, this may be due to fact that teeth in females erupt earlier compared male

### Race

People living in same geographical area belonging to different race have differing caries incidence. Generally, Chinese, black, Indians have lesser caries incidence than the Caucasian white.

### Familial

There appears to be heredity involved. Children of parents with low caries experience also show lesser caries incidence and vice versa.

### Emotional disturbance

Emotional disturbance, particularly anxiety states, influence the incidence of dental caries.

### Social factors

Good economic status and social pressure in the direction of good mouth appearance are both strong factors increasing demand for dental treatment. So the incidence of caries is low.

### Saliva

#### a. Composition

Many inorganic and organic components of saliva have been investigated for anticariogenic effects, normal circumstances, saliva is supersaturated with calcium and phosphate.

#### b. PH

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

c. 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.

d. Anti bacterial properties saliva contains many antibacterial factors like lysozyme, lactoferrin IgA etc., all these factors have antibacterial effect, thus result in decrease in dental caries.

e. Viscosity of saliva

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

### Fluoride

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

### Pregnancy and lactation

During pregnancy, women 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 has a significant effect on dental caries.

Oral health practices like brushing, flossing, use of mouth irrigant help in control of dental plaque.

Use of **medications that** can promote xerostomia which increase caries susceptibility, like drugs taken by hypertensive patients.

**Radiation** increases caries susceptibility.