



# Introduction to dentistry



## **Public health and community dentistry**

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By the end of this lecture, the student will be able to:

- Define health, public health and dental public health
  - Identify the aim and functions of dental public health and community dentistry.
  - Describe the epidemiology of oral diseases.
  - Identify the concept of primary health care.
  - Discuss the strategies of dental health education.
  - Recognize the preventive strategies in public health dentistry
  - Define the dental index.
  - Appraise the future challenges and directions in dental public health and community dentistry.
- 
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# What will we **learn in this topic?**



**01**

What is Public Health  
Dentistry



**03**

Aim of Public Health  
Dentistry



**02**

Historical Aspects of Public  
Health



**04**

Functions of Public  
Health Dentistry

# What will we **learn in this topic?**



**05**

Epidemiology of Oral  
Diseases



**06**

Primary Health Care



**07**

Oral Health Education



**08**

Preventive Strategies in  
Public Health Dentistry

# What will we **learn in this topic?**

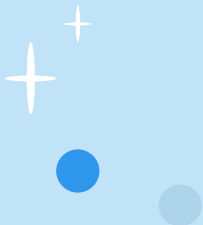


**09**

Indices for Oral Diseases

**10**

Future Directions and  
Challenges



# Sunny smiles song

Brush, brush, up and down,  
In our mouths, smiles will crown.  
Healthy foods, a tasty treat,  
Keep our teeth so strong and neat.

Happy teeth, shiny bright,  
Dental care is our delight.  
Visit dentists, don't you fear,  
They make sure our smiles are clear

Flossing fun, like a dance,  
Tooth fairy tales, a sweet romance.  
Mouthguard magic, play it smart,  
Caring for our teeth, a work of art.

Twinkle, twinkle, pearly whites,  
Brushing daily feels just right.  
Healthy gums and sparkling grins,  
Little smiles, where joy begins





**01**

# **Public Health Dentistry**

# Health (WHO 1948)



WHO defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.



# Public Health



The art and science of preventing disease, prolonging life and promoting physical and mental efficiency, through organized community efforts

# Dental Public Health

American Board of Dental Public Health



The science and art of preventing and controlling dental diseases and promoting dental health through organized community efforts.



**02**

## **Historical Aspects of Public Health**

# History Of Medicine and Public Health in Europe and America



- Ancient Greek physician Hippocrates spoke of the relationship of one's environment, i.e. water, nutrition, climate and lifestyle and one's health.

# History Of Medicine and Public Health in Europe and America



- The first known dentist was an Egyptian named Hesi-Re (3000 BC). He was the chief toothist to the Pharaohs.
- He was also a physician, indicating an association between medicine and dentistry.



# History Of Medicine and Public Health in Europe and America



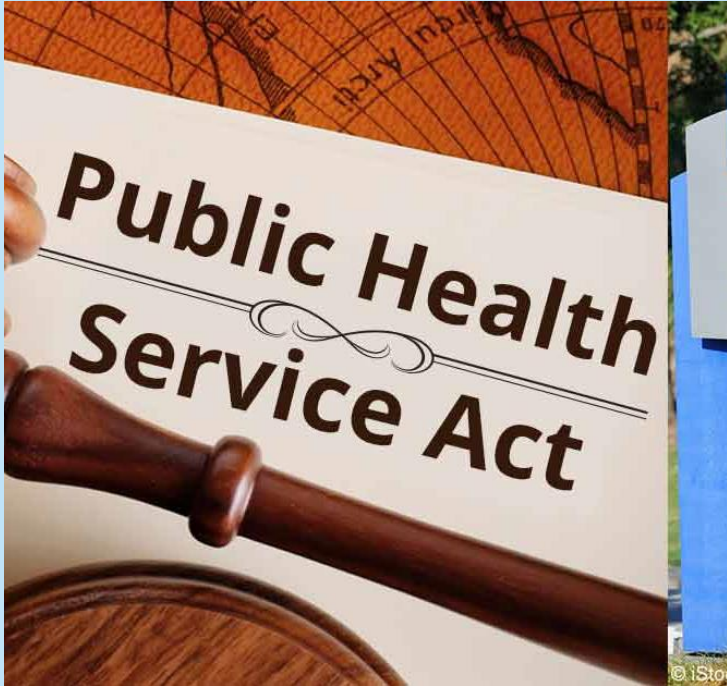
- The European middle ages (500–1400) were marked by high mortality rates due to widespread diseases, including bubonic plagues.
- Towards the end of the middle ages, many European cities passed laws to improve the living conditions of their citizens. Some of the public health practices from the middle ages survive even today (e.g. quarantine)

# History Of Medicine and Public Health in Europe and America



- In Renaissance period, Giolamo Fracastoro (1478–1533) proposed that infection is caused by agents that are not visible to the naked eye.
- The Renaissance period was marked by revolutions in every sphere political, industrial, religious, scientific, medical and public health.

# History Of Medicine and Public Health in Europe and America



- The increasing incidence of diseases and poor environmental conditions in the industrial revolution (1700–1900) due to crowding in cities, led to the Public Health Act of 1848 in England.



# History Of Medicine and Public Health in Europe and America



- By the beginning of the 20<sup>th</sup> century, the broad foundations of public health—clean water, clean surroundings, wholesome condition of houses, control of offensive trades, etc., were laid in England, America and the European nations.



**03**

## **Aim of Public Health Dentistry**

# FDI aims related to Public Health



- ❖ To develop, support and promote programs aimed at the prevention of oral diseases and the improvement of general and oral health.
- ❖ To provide expertise and advice on (oral) health promotion programs, suitable for various situations.

# FDI aims related to Public Health



- ❖ To develop collaboration with Member Associations, intergovernmental, governmental and voluntary organizations involved in the promotion of general and oral health.

# FDI aims related to Public Health



- ❖ To promote the delivery of best possible oral health care.
- ❖ To provide a comprehensive information and communication system for making relevant information available to members, the media and governments.



**04**

## **Functions of Public Health Dentistry**

# The services provided to the community by public health dentist include:



## 1. Preventive Services

- a. Application of topical fluorides
- b. Promotion of water fluoridation

## 2. Public Health Training

- a. School teacher training program.
- b. Training of the health care worker about dental health and oral hygiene measures.



The services provided to the community by public health dentist include:



### **3. School Dental Health Program**

- a. Teaching of oral hygiene methods and importance of dental health to children.
- b. Education about safe play areas for children to school authorities.
- e. Knowledge about junk foods and effects of cold drinks to children.



The services provided to the community by public health dentist include:



- 4. Dental Public Health Program**
  - a. Examination and treatment of community through dental health program.
  - b. Screening program for oral cancer.
  - c. Dental health check up and treatment like extraction, filling, oral prophylaxis of industrial workers through camps.

# The services provided to the community by public health dentist include:



## 5. Dental Health Education

- Education about dental health and its importance to community, industrial workers and social organizations.
- Imparting knowledge about oral health to expectant mothers.
- Education to geriatric population about oral health.
- Informing people about ill effects of tobacco and smoking.
- Educating public about methods of prevention of dental diseases like dental caries, periodontal disease and oral cancer.
- educating care takers about maintenance of oral health in special needs patients.



The services provided to the community by public health dentist include:



## 6. Program Administration and Promotion

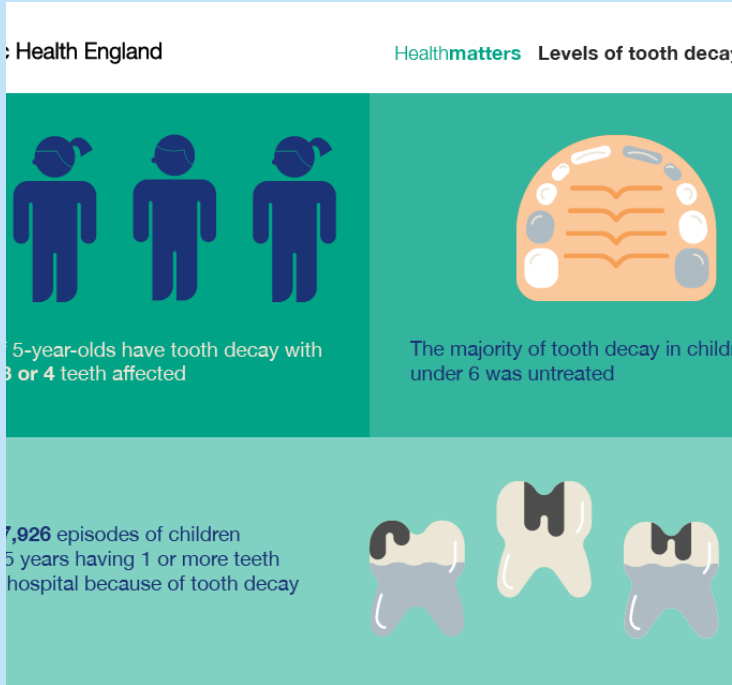
- a. Helping the State / Central agency in conducting epidemiological studies regarding oral diseases.
- b. Conducting surveys to determine dental needs of the population.
- c. Providing dental health knowledge to state agencies or education department.



**05**

# **Epidemiology of Oral Diseases**

# Epidemiology



Epidemiology is the study of the causes, distribution and control of disease in population.

Epidemiology is about information, the information needed for health planning, supervision and evaluation of the health promotion and disease control activities.

+ The key components of the data needed can be approached through a series of questions:

- **Who?** – Who is affected? - referring to age, sex, social class, ethnic group, occupation, heredity and personal habits.
- **Where?** – Where did it happen? - geographical distribution and place of exposure.
- **When?** – When did it happen? - in terms of months, season or year.



- **What?** – What is the disease or condition? - its clinical manifestation and diagnosis.
- **How?** – How did the disease occur? - in relation to the interplay of the specific agent, source of infection,
- **Why?** – Why did it occur? - in terms of the reasons for the disease outbreak.
- **What now?** – The most important question - What action is now to be taken as a result of the information gained?





**06**

**Primary Health Care**



# Primary Health Care

It is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community.



# Principles of Primary Health Care

- **Equitable distribution**

Health services must be shared equally by all people irrespective of their ability to pay, and all people either rich or poor, urban or rural must have access to health services.



# Principles of Primary Health Care

- **Community participation**

It is more effective to begin work in a community, dealing with the issues which community members have identified as important, rather than beginning with predetermined services.



# Principles of Primary Health Care

- **Focus on prevention and health promotion**

The focus of health planners and funding must shift from medical/dental care to prevention and health promotion.



# Principles of Primary Health Care

- **Appropriate technology**  
Emphasis should be on the most appropriate technology and personnel to deal with dental problems according to the community needs.





**07**

# **Oral Health Education**

Health education is defined as any educational activity which aims to achieve a health related goal.



The three main objectives of health education are:

**1. Informing people:**

Provide them with the scientific knowledge about the prevention of disease and promotion of health.



Health education is defined as any educational activity which aims to achieve a health related goal.



The three main objectives of health education are:

**2. Motivating people:**

People must be motivated to change their habits and ways of living as many current health problems are directly related with them.



Health education is defined as any educational activity which aims to achieve a health related goal.



The three main objectives of health education are:

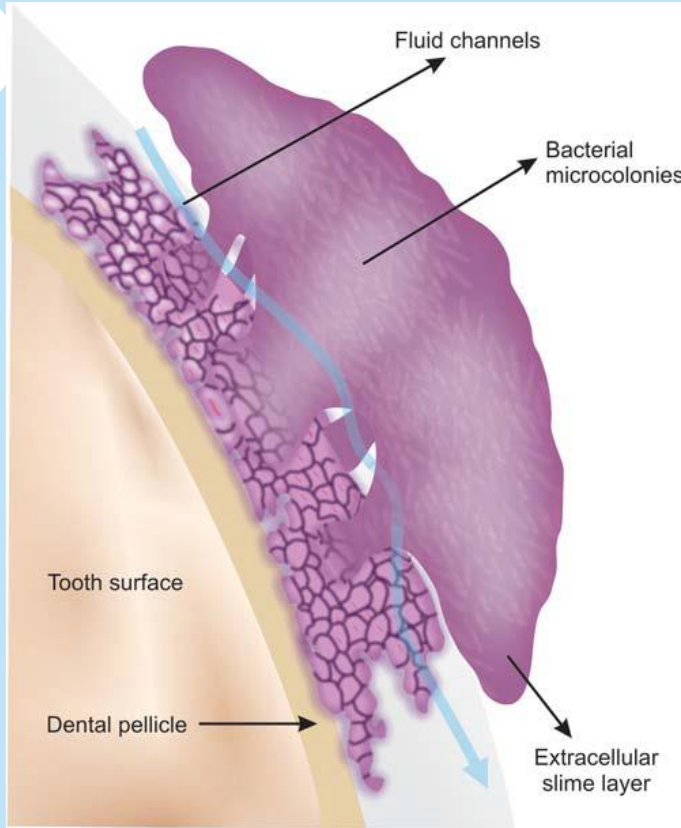
### **3. Guiding into action:**

The people should be encouraged to use wisely the health services available to them.



# 08 Preventive Strategies in Public Health Dentistry

# Dental Plaque



- Dental plaque (also called as dental plaque biofilm) is a dense, nonmineralized, complex mass of bacterial colonies in a gel-like intermicrobial matrix.
- Plaque control is the removal of microbial plaque and the prevention of its accumulation on the teeth and the adjacent gingival surface.

# Approaches in plaque control



Mechanical



Chemical

# Mechanical Plaque control

## Adjunctive aids



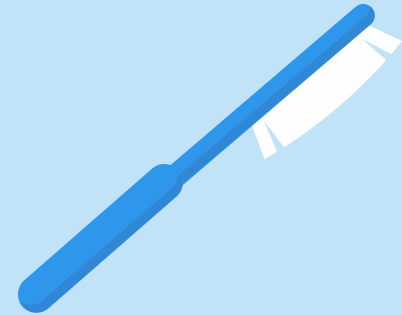
Tongue cleaner  
Dentifrices  
Mouthwash

## Interdental oral hygiene aids



Dental floss  
Tooth Pick

## Toothbrush



Toothbrush

# Chemical Plaque control

Fluorides



Oxygenating  
agents

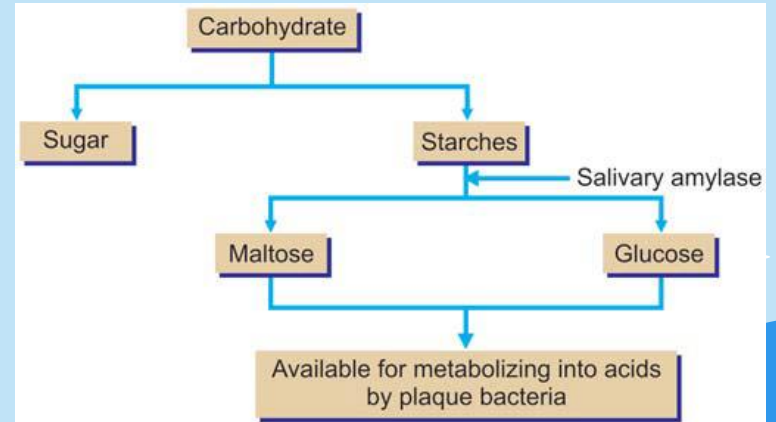
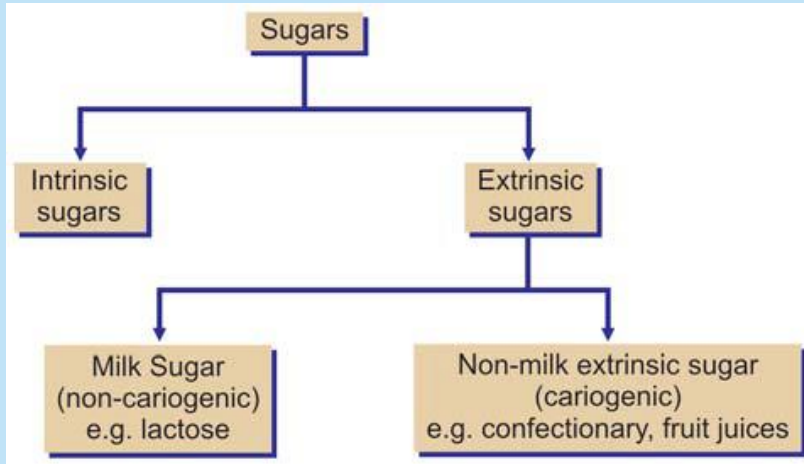


Antibiotics



# Diet and Dental Caries

- Sugars, particularly sucrose, are the most important dietary etiological cause of caries.
- Both the frequency of consumption and total amount of sugars is important in the etiology of caries.





# Diet and Dental Caries

- Increasing consumption of fresh fruits in order to replace non-milk extrinsic sugars in the diet is likely to decrease the level of dental caries.



# Diet and Dental Caries

## Cheese

- Studies have shown that several types of cheese are not only non-cariogenic but also have anti-cariogenic properties.
- Cheese stimulates salivary secretion and increases calcium concentration on the enamel surface thereby physical slowing the caries process.



# Diet and Dental Caries

## Milk

- Cow's milk contain lactose which may be classified as cariogenic.
- But lactose is least cariogenic of the dietary sugars and milk also contains calcium, phosphorus and casein which inhibit caries.



# Diet and Dental Caries

## Fibrous Foods

- Fibrous foods protect the teeth because they mechanically stimulate salivary flow.
- Other foods that are good gustatory and/or mechanical stimulants to salivary flow are peanuts, hard cheese.



# Diet and Dental Caries

## Black Tea

- Black tea contains fluoride, polyphenols and flavanoids.
- Black tea extract increases fluoride concentration and reduces the cariogenicity of a sugar rich diet.





**09**

## **Indices for Oral Diseases**

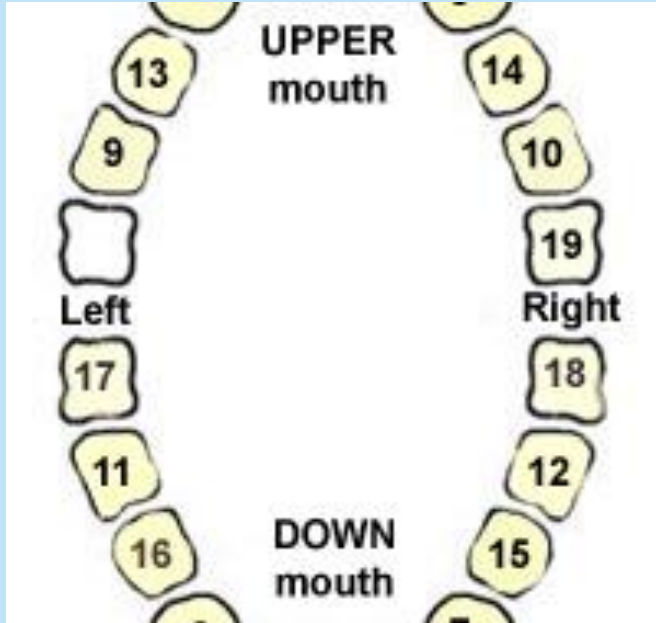
# Index



- An index is an expression of clinical observations in numerical values.
- A numerical value describing the relative status of a population on a graduated scale with definite upper and lower limits.



# IDEAL REQUISITES OF AN INDEX



- Should be simple to use and calculate
- Not time-consuming
- Is acceptable to the patient
- Requires minimum equipment Has clear-cut criteria that are easily understood
- Is reproducible in assessing the condition by the same or different examiner

# Dental caries index (DMFT)



- DMFT describe the amount (the prevalence) of dental
- caries in an individual. DMFT numerically expresses the caries prevalence and is obtained by calculating the number of teeth (T) which are:
- Decayed (D)
- Missing (M)  $\Rightarrow$  extracted
- Filled (F)  $\Rightarrow$  Filling or crown.

# Dental caries index (DMFT)



- The sum of the three figures forms the DMFT value.
- $DMFT = D + M + F$
- Divide the total DMF by the number of individuals examined.
- $Average\ DMF = \frac{Total\ DMF}{Total\ Number\ of\ Individuals\ Examined}$
- $Percentage\ needing\ restorations\ (\%) = \frac{Total\ Number\ of\ D\ Tooth}{Total\ Number\ Examined} \times 100$



**10**

## **Future Directions and Challenges**

# A. Challenges

## Aging Population

- Older adults often experience several medical and dental conditions simultaneously, which impacts their oral health status.
- Addressing the unique needs of older adults and promoting preventive measures are essential challenges for dental public health.



# A. Challenges



## Restoring Dental Services Post-Pandemic

- The COVID-19 pandemic disrupted dental services and oral health improvement programs.
- As we recover from the pandemic, dental public health advice becomes even more critical in restoring services and prioritizing population oral health

# B. Recent Advances



## Caries vaccine

- Recently a vaccine is being discovered, a protein called p1025.
- This protein tricks *Streptococcus mutans*, the main cause of tooth decay.
- The bacterium has a surface protein that hooks on to enamel.
- Researchers have found that p1025 mimics the protein of the bacterium, occupying all docking points.



## B. Recent Advances



### Technological Innovations

- **Teledentistry:** Remote consultations and virtual visits have become more common, allowing patients to receive advice and guidance without physical visits to dental clinics.

## B. Recent Advances



### Technological Innovations

- **Virtual Reality (VR):** VR technology is being used for patient education, distraction during procedures, and reducing dental anxiety.



**Thanks!**

Brush for at  
**least 2 minutes!**

# References

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