

## LESSON PLAN

**Course:** Community Health

**Topic:** Oral Epidemiology

**Audience:** Adult Learners (Senior Level Dental Hygiene Students)

**Time:** 50 minutes total

- Anticipatory set= 5 minutes
- Lesson content= 40 minutes
- Summary= 5 minutes

**Materials:** Computer, Projector, PowerPoint slides

**Instructional Objectives:**

Upon completion of the lecture, the student should be able to:

1. Define epidemiology and its significance in dental public health.
2. Analyze the multifactorial etiology of oral diseases using epidemiologic models.
3. Differentiate between risk factors, indicators, and markers with clinical relevance.
4. Evaluate epidemiologic study designs and their application in oral health research.
5. Apply epidemiologic principles to improve community-based dental hygiene practice.

**References:**

Healthy People 2030. (2018). *Oral Conditions - Healthy People 2030* | [odphp.health.gov](https://odphp.health.gov/healthypeople/objectives-and-data/browse-objectives/oral-conditions). Health.gov. <https://odphp.health.gov/healthypeople/objectives-and-data/browse-objectives/oral-conditions>

Nathe, C. N. (2017). Oral Epidemiology. In *Contemporary Practice for Dental Hygienist* (pp. 233– 262). essay, Julie Levin Alexander.

*Oral Health | Healthy People 2020*. (n.d.). Wayback.archive-it.org. <https://wayback.archive-it.org/5774/20220415164224/https://www.healthypeople.gov/2020/topics-objectives/topic/oral-health/objectives>

LESSON CONTENT	NOTES – MEDIA – Q/A
<p><b>I. ANTICIPATORY SET</b></p> <p>A. <u>Introduction</u></p> <p>Each day, dental professionals treat patients who have dental caries, periodontal disease, or oral cancer. What is the way to figure out how common these diseases are, who are most affected, and how prevention programs should be developed? All these answers come from Epidemiology.</p> <p>Epidemiology is the study of patterns, causes and distribution of oral diseases in populations; it also helps dental professionals in understanding risk factors, disease trends, and effective program strategies.</p> <p>B. <u>Gain Attention/Motivate</u></p> <p>Consider working in a community dental clinic where many patients come with periodontal disease or untreated caries.</p> <ul style="list-style-type: none"> <li>• How will we determine why these diseases occur more frequently in certain populations?</li> <li>• How can dental professionals help prevent these diseases at a community level instead of treating them individually?</li> </ul> <p>Understanding oral epidemiology allows dental professionals to identify disease patterns and develop public health strategies to improve oral health outcomes.</p> <p>C. <u>Activate Prior Knowledge</u></p> <p>Some questions to understand processed information - What are some common oral diseases you encounter during oral care?  Ever came across terms like incidence, prevalence, or risk factors in research articles or lectures?  Based on your understanding, why is it important to study disease patterns in populations rather than just individual patients?</p> <p>D. <u>Establish Rationale</u></p> <p>As future dental hygienists, knowledge of oral epidemiology will help you:</p> <ul style="list-style-type: none"> <li>• Recognize risk factors associated with oral diseases.</li> <li>• Interpret research findings and public health data.</li> <li>• Apply evidence-based decision making.</li> <li>• Support community oral health programs and disease prevention efforts.</li> </ul>	<p><b>PP Slide #1:</b> Title slide: Oral Epidemiology</p> <p><b>Note:</b> Introduce the topic and explain that epidemiology is an essential foundation for understanding oral disease trends and improving population oral health.</p> <p><b>Q:</b> Why is it important for dental hygienists to understand disease patterns in populations?</p> <p><b>A:</b> It helps identify risk factors, disease prevalence, and prevention strategies that improve community oral health.</p> <p><b>Note:</b> This session will be Q&amp;A based, so your attention is very important.</p>

By learning these principles, professionals can improve both individual patient care and population health outcomes.

E. Present Instructional Objectives

After today's lecture, you should be able to:

1. Define epidemiology and its significance in dental public health.
2. Analyze the multifactorial etiology of oral diseases using epidemiologic models.
3. Differentiate between risk factors, indicators and markers with clinical relevance.
4. Evaluate epidemiological study designs and their application in oral health research.
5. Apply epidemiologic principles to improve community-based dental practice.

PP Slide #2: Objectives

LESSON CONTENT	NOTES – MEDIA – Q/A
<p><b>I. Epidemiology and its Significance in Dental Public Health</b></p> <p>A. Definition: Study of patterns and determinants of the health and disease in defined populations</p> <ol style="list-style-type: none"> <li>1. Patterns such as: <ol style="list-style-type: none"> <li>a. nature</li> <li>b. cause</li> <li>c. control</li> </ol> </li> </ol> <p>B. Uses:</p> <ol style="list-style-type: none"> <li>1. Study: trends of disease help plan <ol style="list-style-type: none"> <li>a. Health services</li> <li>b. Public health programs</li> </ol> </li> <li>2. Assess: Disease within <ol style="list-style-type: none"> <li>a. Population</li> <li>b. Community</li> </ol> </li> <li>3. Identify: <ol style="list-style-type: none"> <li>a. Risk factors</li> <li>b. Cause-and-effect relationship</li> <li>c. Syndromes</li> </ol> </li> <li>4. Control: <ol style="list-style-type: none"> <li>a. Causes of diseases</li> <li>b. Conditions</li> <li>c. Injury</li> <li>d. Disability</li> <li>e. Death for prevention</li> <li>f. Elimination</li> </ol> </li> <li>5. Evaluate: Priorities and needs <ol style="list-style-type: none"> <li>a. Public health policies</li> <li>b. Activities</li> <li>c. Services</li> </ol> </li> <li>6. Research: Effectiveness of measure <ol style="list-style-type: none"> <li>a. Prevent disease</li> <li>b. Control disease</li> </ol> </li> </ol> <p>C. Distribution of Disease</p> <ol style="list-style-type: none"> <li>1. Endemic: Usual presence of disease in a particular geographic region <ol style="list-style-type: none"> <li>a. Malaria-Africa</li> </ol> </li> <li>2. Epidemic: Occurring suddenly and spreading rapidly <ol style="list-style-type: none"> <li>a. Measles-Texas</li> <li>b. Aka “outbreak”</li> </ol> </li> <li>3. Pandemic: Cross international borders <ol style="list-style-type: none"> <li>a. Coronavirus</li> </ol> </li> </ol>	<p><b>PP Slide #3:</b> Epidemiology</p> <p><b>Q:</b> Is it grounded in population thinking or thinking in terms of what will happen with the individual?</p> <p><b>A:</b> It is grounded in population thinking rather than focusing on one individual</p> <p><b>Note:</b> Refer box 18-1 on page #234 in textbook for uses</p> <p><b>PP Slide #4:</b> Distribution of Disease</p> <p><b>Note:</b> Epidemiology examines disease distribution by person, place, and time. These patterns help researchers identify causes and prevention strategies.</p>

D. Oral epidemiology: Study within epidemiology, specific to diseases confined to one component of the body, oral cavity

1. Example:
  - a. Dental caries with sugar consumption
  - b. Periodontal diseases
  - c. Oral cancer

## II. Multifactorial Etiology of Oral Diseases using Epidemiologic Models.

A. Multifactorial: A disease or condition has more than one cause.

1. Example:
  - a. Bacteria
  - b. Genetics
  - c. Chromosomal disorders
  - d. Nutrient deficiencies
  - e. Social
  - f. Economic factors etc

B. Determinants: A factor or event that can bring change in health.

1. Example:
  - a. Individual characteristics
  - b. Behaviors
  - c. Environment
    - I. Social
    - II. Economic
    - III. Physical

C. Epidemiology Triangle

1. Agent: Cause of disease
  - a. Biologic
  - b. Mechanical
  - c. "WHAT" factor
    - I. Specific bacteria-dental caries
    - II. Hard toothbrush-abrasion
2. Host: Contribute to the person's susceptibility or resistance
  - a. Genetic
  - b. Social
  - c. "WHO" factor
    - I. Tooth Morphology
    - II. Salivary flow
    - III. Personal behaviors
3. Environment: External factors that contribute to disease transmission and severity
  - a. "Where" factor

PP Slide #5: Oral Epidemiology

Q: Without oral epidemiology would providers be aware of the association of oral diseases, risk factors and oral conditions?

A: No

PP Slide #6: Disease is multifactorial

Note: Emphasize that oral diseases are multifactorial, meaning multiple factors contribute to their development.

Q: Can you name a disease that has multiple contributing factors?

A: Answers will vary; however, strong possibility of dental caries or periodontal disease.

PP Slide #7: Epidemiology Triangle

Q: What environmental factors may influence oral disease?

A: Diet, smoking, socioeconomic factors, and access to care.

Note: Tips on how to remember Who, what, where factor. Match the Letters. Who=Host, What=Agent, where=Environment

<p style="text-align: center;">I. Smoking II. Nutrition</p> <p>E. Measurement in Epidemiology</p> <ol style="list-style-type: none"> <li>1. Morbidity: Extent of disease, injury or disability in a defined population       <ol style="list-style-type: none"> <li>a. Example: 30,000 people diagnosed with oral cancer each year</li> </ol> </li> <li>2. Mortality: Death rate resulting from specific disease       <ol style="list-style-type: none"> <li>a. Example: 130000 people die from cancer</li> </ol> </li> <li>3. Incidence: Rate of new cases of a disease during or over a given time.       <ol style="list-style-type: none"> <li>a. Example: Tobacco users develop oral cancer lesions at a rate ranging from 5.2/1000 to 30.2/1000</li> </ol> </li> <li>4. Prevalence: Numeric expression of the number of existing cases of a disease or health condition in a population measured at a given point or period of time       <ol style="list-style-type: none"> <li>a. Example: Out of all adults with less than high school education, 28.4% are smokers</li> </ol> </li> <li>5. Eradication: Elimination of an infectious disease through surveillance and containment       <ol style="list-style-type: none"> <li>a. Example: Eradication of polio through vaccination</li> </ol> </li> </ol> <p>F. Other forms of measurement</p> <ol style="list-style-type: none"> <li>1. Count: Number of cases of the disease or condition in the population       <ol style="list-style-type: none"> <li>a. Example: 20 patients presented in the community dental clinic for the dental hygiene treatment with secondary herpetic lesions</li> </ol> </li> <li>2. Proportion: Type of ratio that expresses the amount of disease or health condition with a fraction that presents it in relation to the size of the population, can be expressed as a percentage       <ol style="list-style-type: none"> <li>a. Example: 20 patients out of 200 or 10% presented with herpetic lesion</li> </ol> </li> <li>3. Ratio: Expression of the magnitude of one occurrence of disease exposure in relation to another with a fraction</li> </ol>	<p>PP Slide #8: Measurement in Epidemiology</p> <p><b>Note:</b> These help researchers track disease patterns and evaluate public health programs.</p> <p><b>Q:</b> What is the difference between incidence and prevalence? <b>A:</b> Incidence measures new cases, while prevalence measures existing cases.</p> <p>PP Slide #9: Apply the definitions</p> <p>PP Slide #10: Other forms of measurement: Count</p> <p><b>Q:</b> Does the count provide enough information? Is count simplest form of measurement or complicated? <b>A:</b> No, it doesn't provide enough information. It is the simplest form of measurement</p> <p>PP Slide #11: Proportion</p> <p><b>Note:</b> Count becomes proportion when it becomes relative to the size of the population</p> <p><b>Note:</b> Remember Prevalence is equal to proportion</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p>4. Rate: Expression of disease in a population using a standardized denominator and including a time dimension</p> <p>5. Index: Abbreviated, standardized measurement used to express, severity of problems and aid in data collection and analysis</p>	<p>PP Slide #12: Ratio</p> <p>PP slide #13: Rate</p> <p>Note: Remember Incidence is Rate</p> <p>PP Slide #14: Index</p> <p>Q: Does it give more information than a count, proportion or rate</p> <p>A: Yes, it gives detailed information</p> <p>PP Slide #15: Apply the definitions in the given examples</p>
<p>G. Clinical assessment methods to measure</p> <ol style="list-style-type: none"> <li>1. Non-diagnostic but identifies unrecognized disease</li> <li>2. Types:       <ol style="list-style-type: none"> <li>a. Basic Screening           <ol style="list-style-type: none"> <li>I. Rapid assessment accomplished in short time by visual detection</li> <li>II. Tools used:               <ol style="list-style-type: none"> <li>1. Tongue blade</li> <li>2. Dental mirror</li> <li>3. Appropriate lighting</li> </ol> </li> <li>III. Provides information about               <ol style="list-style-type: none"> <li>1. Gross dental</li> <li>2. Oral lesions</li> <li>3. Oral disease</li> </ol> </li> </ol> </li> <li>b. Epidemiologic Examination           <ol style="list-style-type: none"> <li>I. Used with most dental indexes</li> <li>II. Dental tools used:               <ol style="list-style-type: none"> <li>1. Instrument</li> <li>2. Light</li> </ol> </li> </ol> </li> </ol> </li> </ol>	<p>PP Slide #16: Clinical Assessment Methods</p> <p>Q: Is the clinical assessment the same as clinical examination?</p> <p>A: No, they are different</p> <p>PP Slide #17: Basic Screening</p> <p>PP Slide #18: Epidemiologic Examination</p>
<p>H. Validity and reliability of measurement</p> <ol style="list-style-type: none"> <li>1. Validity: Accuracy of measurement</li> <li>2. Sensitivity: Ability to identify all screened individuals who have the disease</li> </ol>	<p>PP Slide #19: Terminology related to Validity and Reliability</p>

<ol style="list-style-type: none"> <li>3. Specificity: ability to identify only non-diseased individuals</li> <li>4. Predictive value: combination of specificity and sensitivity</li> <li>5. Reliability: Consistency or reproducibility of a measurement overtime</li> <li>6. Inter-rater reliability: Agreement among two or more examiners as they apply a test or index</li> <li>7. Intra-rater reliability: Consistency of a single examiner in the application of a test or instrument multiple times</li> <li>8. Calibration: Standardization of examiners as they apply epidemiologic measurements</li> <li>9. Positive reversal: Change made in logical direction</li> <li>10. Negative reversal: Change made in illogical direction</li> </ol> <p>I. Oral epidemiology Surveillance and Reports</p> <ol style="list-style-type: none"> <li>1. Surveillance: The observation of the disease process in populations</li> <li>2. Types:       <ol style="list-style-type: none"> <li>a. Passive: Data collected is voluntary           <ol style="list-style-type: none"> <li>I. Example: Authorities do not solicit the data: HIV reported by dental personnel</li> </ol> </li> <li>b. Active: Data collected out in the field to identify cases of disease           <ol style="list-style-type: none"> <li>a. Example: Basic screening survey</li> </ol> </li> </ol> </li> <li>3. Surveillance Activities is conducted by       <ol style="list-style-type: none"> <li>a. CDC</li> <li>b. US department of health and human services</li> <li>c. SEER: Surveillance, Epidemiology and End Results</li> <li>d. National Institute of Dental and Craniofacial Research</li> </ol> </li> </ol> <p>J. Healthy people 2020 and 2030 goals</p> <ol style="list-style-type: none"> <li>1. Vision is to create a society where people live long and healthy lives</li> <li>2. Four foundations of health measures       <ol style="list-style-type: none"> <li>a. General health status</li> <li>b. Health related quality of life and well-being</li> <li>c. Determinants of health</li> <li>d. Disparities</li> </ol> </li> <li>3. 2020 goal: To prevent and control craniofacial diseases, conditions and improve access to related services       <ol style="list-style-type: none"> <li>a. Specific focus: oral health</li> </ol> </li> </ol>	<p><b>Q:</b> Why is reliability important in epidemiologic studies?</p> <p><b>A:</b> It ensures results are consistent when measurements are repeated.</p> <p><b>PP Slide #20:</b> Terminology Continued</p> <p><b>PP Slide #21:</b> Terminology Continued</p> <p><b>PP Slide #22,23:</b> Apply the definitions in the given examples</p> <p><b>PP Slide #24:</b> Oral epidemiology Surveillance and Reports</p> <p><b>Note:</b> These help track disease trends and support public health planning.</p> <p><b>PP Slide #25:</b> Oral epidemiology Surveillance and Reports</p> <p><b>Note:</b> Refer to page #240,241,242 for detailed information</p> <p><b>PP Slide #26:</b> Healthy people 2020</p> <p><b>Q:</b> Why are programs like Healthy People important?</p> <p><b>A:</b> They guide public health priorities and measure progress in improving health outcomes.</p> <p><b>Note:</b> Information is from healthy people 2020 website</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p>b. Leading health indicator: 12 topics</p> <p>4. 2030 goal: Increase access to oral health care, including preventive services</p> <ol style="list-style-type: none"> <li>Baseline only: OH-07,11,6</li> <li>Improving: OH-03,02</li> <li>Target met or exceeded: OH-08,04</li> <li>Little or no detectable change: OH-01</li> <li>Getting worse: OH-05,09,10</li> <li>Developmental: OH-D01</li> </ol> <p>5. Evolution of healthy people program</p> <ol style="list-style-type: none"> <li>Collaborative</li> <li>Evolving</li> <li>Data driven</li> <li>Measures progress in 10 years</li> <li>Goals and achievement</li> <li>Key players <ol style="list-style-type: none"> <li>Office of Disease Prevention and Health Promotion</li> <li>Assistant Secretary for Health</li> <li>Health and Human Services</li> <li>National Center for Health Statistics</li> <li>Federal Agencies as well as non-HHS agencies</li> </ol> </li> </ol> <p><b>III. Differentiate between risk factors, indicators and markers with clinical relevance.</b></p> <p>A. Causality: A particular exposure results in a particular outcome</p> <ol style="list-style-type: none"> <li>AKA cause and effect</li> <li>Causation</li> <li>Routinely used in DH practice to make decisions</li> </ol> <p>B. Risk: Probability that a specifies event will occur</p> <p>C. Types of Risk attributes</p> <ol style="list-style-type: none"> <li>Risk factor: Modifiable attribute or exposure known to be associated with health condition or disease <ol style="list-style-type: none"> <li>Smoking or periodontal disease</li> <li>Identified with longitudinal studies</li> <li>Established risk role</li> <li>Used to infer causality</li> <li>Important in making recommendations</li> </ol> </li> <li>Risk indicator: Modifiable attribute <ol style="list-style-type: none"> <li>Possible risk role</li> <li>Cannot be used to infer causality</li> </ol> </li> </ol>	<p><b>PP Slide #27:</b> Healthy people 2020 goal</p> <p><b>Notes:</b> Refer to box 18-3 in textbook for 12 topics</p> <p><b>PP Slide #28:</b> Healthy people 2030</p> <p><b>PP Slide #29:</b> 2030 goals</p> <p><b>PP Slide #30:</b> 2030 goals</p> <p><b>Note:</b> For more information visit healthy people 2030 website</p> <p><b>Pp Slide #31:</b> Evolution of healthy people</p> <p><b>PP Slide #32:</b> Risk and Causality</p> <p><b>PP slide #33:</b> Risk Factor</p> <p><b>Note:</b> Relate smoking and periodontal disease in terms of risk factor.</p> <p><b>PP Slide #34:</b> Risk Indicator</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<ul style="list-style-type: none"> <li>c. Applied with care in making decisions</li> <li>d. Identifies with <ul style="list-style-type: none"> <li>I. Cross-sectional</li> <li>II. Correlational</li> <li>III. Limited Longitudinal</li> </ul> </li> <li>3. Risk marker: Increased probability of disease but is not considered to have a causal role in its development <ul style="list-style-type: none"> <li>a. AKA risk predictor</li> <li>b. Demographic risk factor</li> <li>c. Doesn't control disease</li> <li>d. Non-modifiable attribute <ul style="list-style-type: none"> <li>I. Age</li> <li>II. Gender</li> <li>III. Race</li> <li>IV. SES etc</li> </ul> </li> <li>e. Identify with <ul style="list-style-type: none"> <li>I. Cross-sectional</li> <li>II. Correlational</li> </ul> </li> </ul> </li> </ul>	<p>PP Slide #35: Risk Marker</p>
<p><b>IV. Epidemiological study designs and their application in oral health research.</b></p> <p>A. Epidemiologic Studies</p> <ul style="list-style-type: none"> <li>1. Null Hypothesis: Negative statement <ul style="list-style-type: none"> <li>a. Does not propose relationship between two variables</li> </ul> </li> <li>2. Alternative Hypothesis: Positive Statement <ul style="list-style-type: none"> <li>a. AKA research hypothesis</li> <li>b. Proposes a relationship or difference between two variables</li> </ul> </li> </ul> <p>B. Experimental studies: Study are manipulated to try to affect the outcome, with one or more variable manipulated</p> <ul style="list-style-type: none"> <li>1. Purpose: Test a hypothesis <ul style="list-style-type: none"> <li>a. Establish a cause-and-effect relationship</li> <li>b. Power vs manual toothbrush</li> </ul> </li> <li>2. Experimental Group: receives experimental intervention</li> <li>3. Control Group: does not receive the intervention <ul style="list-style-type: none"> <li>a. Types <ul style="list-style-type: none"> <li>I. Passive: receives no treatment</li> <li>II. Active: receive standard or current treatment</li> <li>III. Placebo: fake treatment that stimulates the experiment treatment</li> </ul> </li> </ul> </li> <li>4. Types of variables <ul style="list-style-type: none"> <li>a. Independent: manipulated</li> <li>b. Dependent: measured to determine the effect of the independent variable</li> </ul> </li> </ul>	<p>PP Slide #36: Epidemiologic Studies</p> <p>Notes: Studies help determine disease causes and evaluate interventions.</p> <p>PP Slide #37: Experimental Studies</p> <p>Q: Does control group receive the treatment?</p> <p>A: No</p> <p>PP Slide #38: Types of variables</p> <p>Q: In a study comparing electric vs manual toothbrushes, what</p>

<ul style="list-style-type: none"> <li>c. Extraneous: other variables that influences variables of interest</li> <li>5. Types of trials <ul style="list-style-type: none"> <li>a. Clinical: well-controlled and alter natural progression <ul style="list-style-type: none"> <li>I. Efficacy: test whether an agent or regimen works <ul style="list-style-type: none"> <li>1. Electric toothbrush to reduce gingivitis</li> </ul> </li> <li>II. Effectiveness: To test in everyday condition when efficacy is established <ul style="list-style-type: none"> <li>1. Electric toothbrush in general population of varied <ul style="list-style-type: none"> <li>a. Ages</li> <li>b. Abilities</li> <li>c. Oral health status</li> </ul> </li> </ul> </li> </ul> </li> <li>b. Field: carried out on people</li> </ul> </li> </ul> <li>C. Non-experimental Studies: Occurrence of health and disease as they naturally occur in a population <ul style="list-style-type: none"> <li>1. AKA observational studies</li> <li>2. Variables are not manipulated</li> <li>3. Classifications <ul style="list-style-type: none"> <li>a. Descriptive: Used to answer questions <ul style="list-style-type: none"> <li>I. Measured at one point in time</li> <li>II. Replaced to determine change and trends</li> <li>III. Variables are measured and reported</li> <li>IV. Example: description of oral hygiene habits in a population surveyed</li> </ul> </li> <li>b. Analytic: AKA developmental studies <ul style="list-style-type: none"> <li>I. Answer questions and test hypothesis</li> <li>II. Types of variables: <ul style="list-style-type: none"> <li>1. Exposure: Thought to affect the disease <ul style="list-style-type: none"> <li>a. Like independent variable</li> </ul> </li> <li>2. Outcome: Thought to be affected by exposure <ul style="list-style-type: none"> <li>a. Like dependent variable</li> </ul> </li> </ul> </li> <li>III. Types of analytic studies <ul style="list-style-type: none"> <li>1. Cohort: One population or subset with common characteristics is observed and measured over time <ul style="list-style-type: none"> <li>a. Longitudinal</li> <li>b. Prospective</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul> </li>	<p>would be the independent variable?</p> <p>A: Type of toothbrush used.</p> <p>PP Slide #39: Types of trials</p> <p>PP Slide #40: Clinical Trial</p> <p>Note: In field trial people may or may not be patients</p> <p>PP Slide #41: Non-experimental Studies</p> <p>PP Slide #42: Descriptive Study</p> <p>PP Slide #43: Analytic Study</p> <p>PP Slide #44: Types of Analytic Study</p> <p>Q: Which study observes a group over time to track disease</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



LESSON CONTENT	NOTES – MEDIA – Q/A
<p><b>SUMMARY:</b>            After this lecture, you will be able to understand fundamental concepts of oral epidemiology, which is the study of the distribution and determinants of oral diseases in populations. It helps dental professionals understand how diseases occur, who are the most affected, and how prevention strategies can be developed.</p> <p>We explored key epidemiologic measurements such as prevalence, incidence, ratios and rates, and how these tools help researchers measure disease patterns. We also understood risk factors, risk matters, and risk indicators that help in identifying populations at greater risk for oral disease.</p> <p>We also reviewed epidemiology study designs which include experimental and observational studies allowing researchers to investigate cause and effect relationships and evaluate prevention strategies.</p> <p>Understanding oral epidemiology is important for dental hygienists as it supports evidence-based practice, public health planning, and disease prevention methods. By implementing epidemiological data and research findings, dental professionals can contribute to improving oral health at both individual and community levels.</p>	<p><b>PP Slide #47:</b> Key concepts learned</p> <p><b>Note:</b> Thank the learners for their attention and participation.</p> <p><b>Q:</b> What concept from today's lecture do you think will be most useful in your future dental hygiene practice?</p> <p><b>A:</b> Answers will vary</p>

## Test Items

**Objective #1: Define epidemiology and explain its significance in dental public health.**

**Test Item #1:** Epidemiology is best defined as the study of:

- a. Diagnosis and treatment of oral diseases in individuals
- b. Pattern, causes and control of diseases in populations
- c. Laboratory techniques used in dentistry
- d. Dental hygiene procedures used to prevent disease

**Objective #2: Analyze the multifactorial etiology of oral diseases using epidemiologic models.**

**Test Item #2:** The term multifactorial disease means that a disease:

- a. Is caused only by one microorganism
- b. Occurs only in certain geographic areas
- c. Develops from multiple contributing factors
- d. Can only be prevented by medication

**Objective #3: Differentiate between risk factors, indicators, and markers with clinical relevance.**

**Test Item #3:** Smoking is considered which type of attribute for periodontal disease?

- a. Risk factor
- b. Risk marker
- c. Risk predictor
- d. Risk indicator

**Objective #4: Evaluate epidemiological study designs and their application in oral health research.**

**Test Item #4:** In 2-3 sentences define nonexperimental study and list three classifications.

**Objective #5. Apply epidemiologic principles to improve community-based dental hygiene practice. Explain why oral epidemiology is important in dental hygiene practice.**

**Test Item #5:** Explain why oral epidemiology is important in dental hygiene practice in 3-4 sentences.

**Correct Answer Key:**

1. B

2. C

3. A

4. Occurrence of health and disease as they naturally occur in a population is called non-experimental studies. It is also known as observational studies. Three classifications of non-experimental studies are descriptive, analytic and ecological.

5. Oral epidemiology helps dental professionals understand the distribution, causes, and risk factors of oral diseases within populations. It allows researchers and clinicians to identify risk factors and determine which groups are most affected by certain conditions. This information is used to develop prevention programs, improve access to care, and support evidence-based practice. Ultimately, epidemiology helps improve oral health outcomes at both the individual and community level.