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Epidemiology test

300 level

20/10/25.

1. Define epidemiology and explain its main objectives.

Epidemiology can be defined as the study of the distributionof the disease its determinants also hea lth-related events, diseases, or health-related characteristics among populations.

Objectives are:

- Identifying the causes and risk factors of diseases

- Determining the distribution and prevalence of diseases

- Developing strategies for disease prevention and control

- Evaluating the effectiveness of public health interventions

2

. Differentiate between descriptive and analytical epidemiology, providing one example of each.*

- *Descriptive epidemiology*: Describes the characteristics of a disease or health-related event, such as time, place, and person. Example: A study describing the demographic characteristics of patients with Ebola in a particular region.

- *Analytical epidemiology*: Investigates the causes and risk factors of diseases. Example: A study e xamining the relationship between smoking and High blood pressure.

3

Discuss the components of the epidemiologic triangle and how they interact in the spread of an infe ctious disease.*

The epidemiologic triangle consists of:

- *Agent*: The microorganism that causes the disease (e.g., bacteria, virus)

- *Host*: The human or animal that harbors the disease

- *Environment*: The external factors that facilitate disease transmission (e.g., water, air, vectors)

These components interact to spread disease when the agent is transmitted to a susceptible host th rough a conducive environment.

4.

Explain the concept of 'determinants' in epidemiology and give two examples of biological and enviro nmental determinants.*

- Determinants:

Factors that influence the occurrence of disease.

1- Biological determinants:

  - Genetics

  - Immune status

- 2 Environmental determinants:

  - Air pollution

  - Water quality/pollution

5.

Describe the three levels of prevention in public health, and provide a real-life example for each.*

- 1 Primary prevention : Prevents disease before it occurs. Example: Vaccination against infectious di seases.

2 Secondary prevention:

Detects disease early, preventing complications. Example: Screening for HIV/AIDS,Hapertictis B

-3 Tertiary prevention:

Reduces disease impact after it occurs. Example: Rehabilitation programs for patients with heart dis ease.

6.

How did John Snow contribute to the development of modern epidemiology? Describe the method h e used during the cholera outbreak.*

John Snow identified the source of a cholera outbreak in London by mapping cases and finding a lin k to a contaminated water pump. His method involved:

- Observing patterns of disease occurrence

- Collecting data on water sources

- Intervening by removing the contaminated pump.

7.

Compare and contrast incidence and prevalence. Why is it important to understand both when stud ying a disease like diabetes?*

- Incidence: The number of new cases of a disease over a specified period.

- Prevalence: The total number of cases of a disease at a particular point in time.i.e

(New cases plus Old cases)

Understanding both is crucial for:

- Assessing disease burden

- Identifying trends and patterns

- Developing public health strategies

8.

What are the common types of epidemiological study designs, and how does a cohort study differ fr
om a case-control study?*

Common study designs:

- Cohort studies

- Case-control studies

- Cross-sectional studies

-(a)Cohort study : Follows a group over time to examine the development of disease.

- (b)Case-control study: Compares individuals with a disease (cases) to those without (controls) to i
dentify potential risk factors.

9.

Define and differentiate between relative risk (RR) and odds ratio (OR), including when each is typic
ally used.*

- (a) Relative risk (RR)*: Measures the ratio of disease risk in exposed vs. unexposed groups.

- (b) Odds ratio (OR)*: Measures the association between exposure and disease, often used in case-
control studies.

(c) RR is typically used in cohort studies, while OR is used in case-control studies.

10. Explain the role of epidemiological surveillance in managing public health. How can it help during
an emerging epidemic?

Epidemiological surveillance involves monitoring and tracking disease trends to inform public health action. During an emerging epidemic,

surveillance helps:

- Detect disease outbreaks early

- Track disease spread

- Inform control measures

- Evaluate intervention effectiveness

By providing timely data, surveillance enables public health officials to respond quickly and effectivel y to emerging epidemics.