

NAME: AKINWUMI AWAWU OMOSHALEWA

TOPIC: EPIDEMIOLOGY

(1) Define epidemiology and its main objectives.

Epidemiology is the study of the distribution and determinants of health- related events, disease or health-related characteristics among populations.

- (i) Identify the causes and risk factors of disease
- (ii) Determine the distribution and prevalence of disease
- (iii) Develop strategies for prevention, control and treatment
- (IV) Provide data for public health policy

(2) Differentiate between descriptive and analytically epidemiology, providing one example each.

(i) Descriptive Epidemiology: Describes who, what, where and when (person, place,time) disease pattern occurrence, and the tools include survey, case report, case series, correlation study, cross sectional study incident and prevalence rate.

Example: Tracking the number of malaria cases in a district.

(ii) Analytically Epidemiology: Investigates the why and how disease occur. it also involves test hypotheses about relation between exposure and outcome, cases and control, exposure and unexposure. the tools involves case control study, cohort study and risk ratio.

Example : A case-control study examining the relationship between smoking and lung cancer.

(3) Discuss the components of epidemiology triangle and how they Interact in the spread of infectious disease.

The epidemiology triangle consists of

- (i) Agent: The pathogen causing the disease (e.g, bacteria, virus)

(ii) Host: The human or animal that harbors the disease

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

These components interact to facilitate disease transmission. For example, in malaria. the agent is the plasmodium parasite, the host is the human, and the environment includes the mosquito vectors and stagnant water.

(4) Explain the concept of 'determinants' in epidemiology and give two examples of biological and environmental determinants.

Determinants are factors that influence the occurrence of disease or health-related events.

(1) Biological determinants:

Genetics (e.g, Inherited traits)

Microbiome (e.g, gut bacterial)

(2) Environmental determinants:

Air pollution

Water Quality

(5) Describe the three prevention in public health and provide a real-life example for each.

(i) primary prevention: preventing disease before it occurs.

Example: vaccination against infectious diseases

(ii) Secondary prevention: Detecting disease early to prevent complications.

Example: Screening of breast cancer through mammography.

(iii) Tertiary prevention: managing disease to prevent further complications.

Example: Rehabilitation programs for patients with heart disease.

(6) How did John snow contribute to the development of modern epidemiology? Describe the method he used during the cholera outbreak.

John snow identified the source of a cholera in London in 1954 by mapping cases and tracing them to a contaminated water pump. His work laid the foundation for modern epidemiology by demonstrating the importance of

- (i) Mapping disease clusters
- (ii) Identifying environmental risk factors
- (iii) Using data to inform public health interventions

(7) Compare and contrast incident and prevalence. why is it important to understand both when studying disease a disease like diabetes.

- (i) Incidence: The number of new cases of a disease over a specified period.
- (ii) Prevalence: The total number of cases of a disease at a specific point in time.

Understanding both is important for

- (i) Assessing disease burden: Prevalence helps understand the overall impact of a disease.
- (ii) Identifying risk factors: Incidence helps identify new cases and potential risk factors.

(8) What are the common type of epidemiology study, and how does a cohort study differ from a case- control study?

Common study designs:

- (i) cohort studies: Follow a group over time to examine the development of disease.
- (ii) Case- control studies: Compare individuals with a disease (cases) to those without (controls) to identify potential risk factors.

Cohort studies differ from case-control studies in that they:

- (i) Follow participants over time
- (ii) Can establish temporal relationships between exposure and disease

(9) Define and differentiate between relative risk (RR) and odds ratio (OR), Including when which is typically used.

(i) Relative risk (RR): Measures the risk of disease in an exposed group compared to unexposed group

Typically used in cohort studies.

(ii) Odds ratio (OR): Measures the odds disease in an exposed group compared to an (unexposed group

Typically 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 interventions. During an emerging epidemic, surveillance:

(i) Provides early detection: identifies outbreaks quick, allowing for rapid responses.

(ii) Informs interventions strategies: Helps develop targeted Interventions based on data.

(iii) Monitors effectiveness: Tracks the impact of Interventions to adjust strategies as needed.

