Olanrewaju Kabirat Omowumi _epidemiology.pdf

1. Epidemiology: can be define as how disease are distribution in a population and the factor that determine the distribution.

Objectives

1.To identify the cause of disease by investigating determinant or risk for the disease

2.To control and prevent disease by informing public health facilities and intervention and health promotion strategies

3. To evaluate preventive and therapeutic measures e.g assess how effective intervention like vaccine and screening or treatment

4.To study the natural history and prognosis of disease e.g understand how disease develop and progresses if untreated

5. To describe the health status of population by indentifying patterns and frequency of disease (WHo, WHERE, WHEN)

2.Discriptive epidemiology

Discriptive epidemiology:this focus on what,who,where,when it describes the pattern of disease occurrence e.g who affected by malaria and in which region

Analytical epidemiology

Analytical epidemiology: focus on why and how the disease occur e.g does sleeping under mosquito net reduce malaria infection

3.Discuss the component of epidemiologic triangle and how they interact in the spread of an infectious diseases

1.Agent: is the cause of disease _the microgamism or pathogen responsible for infection e.g Bacteria, viruses e.t.c

2.Host: is the organism (usually human or animal) that can get infected by the agent e g Age, immunity, Nutritional status e.t.c

3.Environment: this includes all external factors that affect the agent in the host, influencing the opportunity for exposure e.g physical factor, socioeconomic factor, biological factors e t.c

Interaction between the component

1.Tge agent must present and capable of infecting the host

2. The host must be susceptible to the agent (no immunity or resistance).

3. The environment must support transmission (e.g poor sanitation,over crowding, favourable climate for vectors).

4. Explain the concept of determinant in epidemiology and give two examples of biological and environment derminant

-- Determinant factors or exposures that increase or decrease the risk of disease.

Examples of biological determinant

1.Age and sex, Genetic makeup

Examples of environment derminpant

1.Air pollution,poor sanitation

5. Describe the three levels of prevention in public health and provide a real life examples for each

1. Primary prevention: to prevent the onset of diseases before it occur

examples are :-

1.vaccination against diseases like measles,polio or covid 19.

2. Health education about balance diet , exercise and not smoking

3. Use of insecticide treated mosquito nets to prevent malaria

2. Secondary prevention: To detect and treat a disease at it's early stage before it's causes major harm

Examples are :-

1. Blood pressure screening to detect hypertension early.

2. Monograms for early detection of breast cancer

3. HIV testing to identify and manage infection early

3:Tertiary prevention::- To reduce the impact or complication of an already established diseases

Examples are:-

1. Psychotherapy for stroke patients to restore morbility

2. Insulin therapy and dietary management of diabetes patient

3. Support groups and counseling for people living with HIV/AIDS.

6. John snow's contribute to the modern epidemiology...

:- investigated a choleral outbreak in London and trace the source to a contaminated water pump.

:-Method used during the choleral outbreak

__by using of early forms mapping and stastical analysis

7. INCIDENCE/PREVAIEMCE

:- Incidence measure the number of new cases of a disease that occur in specific population during a specific period of time .

:-prevalence measures the total number of existing cases (both new and old)of a disease in a population at a specific point or over a period of time .

IMPORTANT

1. Incidence tell us how many new people are developing diabetes a year

This helps to identify emerging risk factor,such as poor diet,obesity or lack of exercise

2. Prevalence tell us how many people currently have diabetes in a population

This helps in planning health care services such as clinic, medication and patient education program

8. Types of epidemiology study

1. Descriptive study

2. Experimental study

:- descriptive study describe the occurrence of disease e.g case report,cross sectional study .

:-Environmetal study researcher actively manipulate one or more factor e.g (a treatment or intervention) to study it's effect.

How does a cohort study differ from a case control study

1. A cohort study follows people over time from exposure to outcome

2. A case study control work background, starting from the outcome ànd looking for past exposure.

9. Definition

1. Relative ratio:-its compares the risk of developing a disease or outcome among the exposed

group to the risk among the unexposed group

2. Odd ratio :- it compares the odd of exposure among cases to the odd of exposure among control

Differentiate between relative ratio and odd ratio

Relative ratio.

Used in clinical studies or trial where incidence can be measured

Odd ratio

Used in case study where incidence can't be directly measured

When each us typically used

1. Relative ratio used in prospective cohort study and randomized control trial to measure how much more or less likely the exposed group is to develop a disease compared to the unexposed

2. Odd ratio used in case study especially when the disease outcome is rare or when the actual rik cannot be directly confirmed

10. The role of epidemiological in public health

1. Early detection of disease :-surveliance helps indentify new cases or unusual increases in disease occurrence quickly

2.Epidemiological surveillance plays a critical role in managing public health by continuously collecting, analyzing, and interpreting health data to detect and respond to diseases effectively. It serves as an early warning system that helps prevent small outbreaks from becoming large epidemics.

Here’s a detailed explanation:

1. Role of Epidemiological Surveillance in Public Health

1. Early Detection of Diseases:

Surveillance helps identify new cases or unusual increases in disease occurrence quickly. This allows health authorities to take timely action before the disease spreads widely.

2. Monitoring Disease Trends:

It tracks changes in the frequency, distribution, and pattern of diseases over time, helping identify high-risk populations or regions.

3. Guiding Public Health Actions:

Data from surveillance inform policy decisions, resource allocation, and planning of control programs (e.g., vaccination campaigns or sanitation measures)

4. Evaluating Interventions:

It helps measure the effectiveness of prevention and control programs, such as immunization coverage or mosquito control effectiveness.

5. Detecting Emerging or Re-emerging Diseases:

Surveillance helps in recognizing new pathogens or the reappearance of controlled diseases (e.g., Ebola, COVID-19, cholera

___How Surveillance Helps During an Emerging Epidemic

1. Early Warning and Rapid Response:

Detecting unusual disease clusters early allows for quick containment through isolation, contact tracing, and targeted interventions

2. Understanding the Epidemic Pattern:

Surveillance provides information on who is affected, where, and when, guiding the design of appropriate response strategies

3. Resource Mobilization:

Data helps prioritize distribution of medical supplies, vaccines, and healthcare workers to the most affected areas.

4. Communication and Public Awareness:

Surveillance findings support accurate public information campaigns, reducing panic and promoting preventive behaviors.

5. International Collaboration:

During global health threats, surveillance systems allow data sharing between countries and agencies (e.g., WHO, CDC), facilitating coordinated action.,