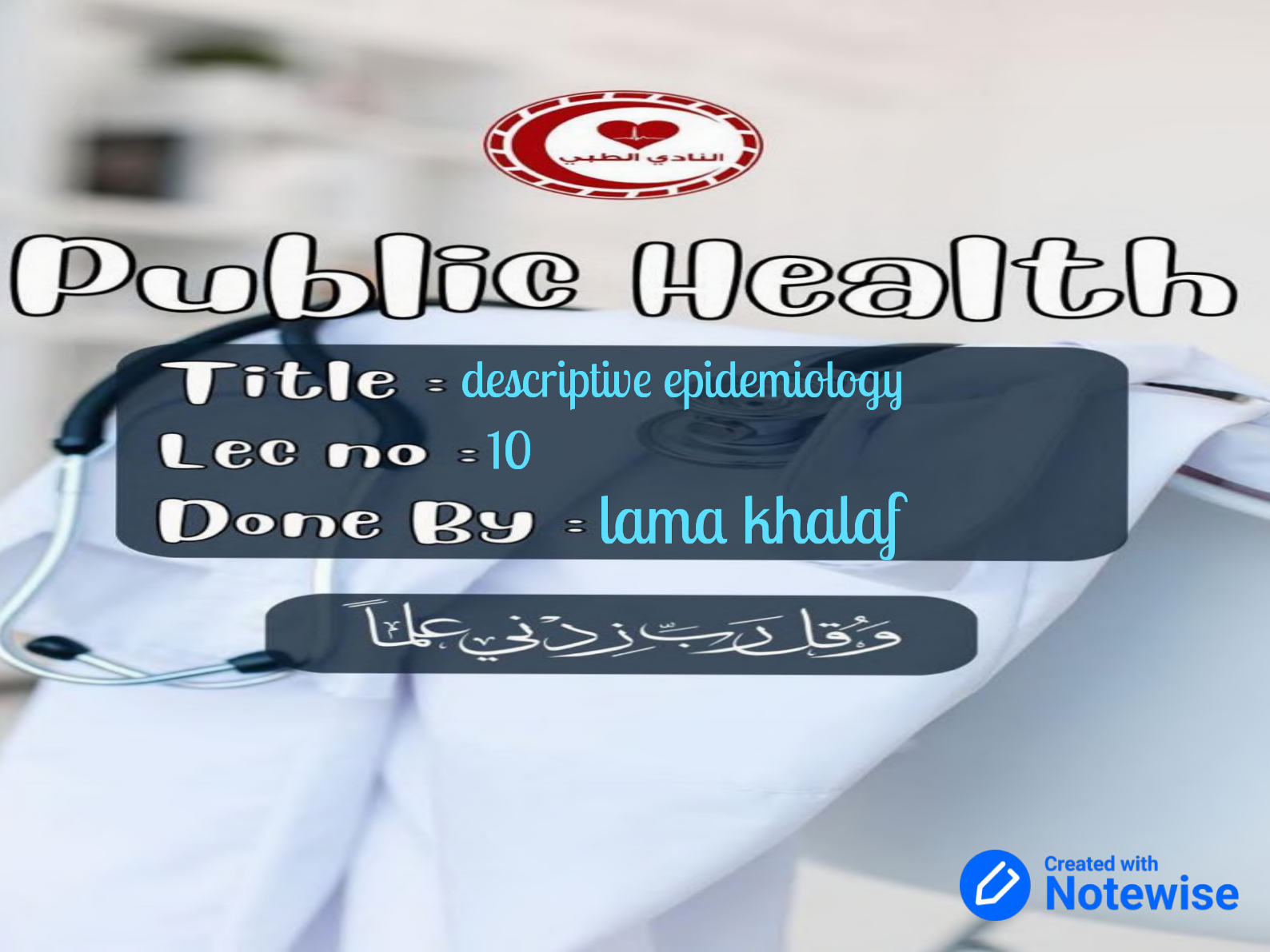
النادي الطبي
Public Health
Title : descriptive epidemiology
Lec no : 10
Done By : lama khalaf
وقل رب زدني علما
Created with Notewise

قبل ما نبدا بالمحاضرة الجديده في كم نقطة الدكتورة حكتهم:

١.السنوات و التواريخ و الاسماء ووو مطلوبين

2.we use the constant for comparison with others..فلو حطينا 1000او 10000
المهم نثبتو للكل عشان يكون ال denominator ثابت
يعني انا عم بقارن منطقه A و منطقه B لو استخدم مليون او الف المهم استخدم الثابت نفسو للمنطقتين..

-we usually use 1000 but sometimes we have to use 100,000 cauz if the numerator is low and the denominator is the population هيطلع النتيجة رقم صغير كتير و هاد الرقم ما يفيدني بإشي لانو بدي رقم محسوس

DESCRIPTIVE EPIDEMIOLOG

- we describe disease and health related events like we say this population is healthy because of... health doesn't mean having no disease

- also it is the description of a disease in certain are regarding who are the the individuals infected,at what time of the year and where exactly

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for ex: breast cancer is more common in women in certain age group due to some risk factors **we are not going to explain why it's more common in females**

also let's say vision problem in second year medical students.. its more common in males **also we aren't going to say why it's more common in them**

Learning Objectives

At the end of this lecture ,the student is able to:

1. to describe the differences or variations in the occurrence of diseases or health related events regarding :

    A. Persons (individual characteristics)
    B. Time
    C. Place

but we aren't going to say Why

2. Give explanations for these variations.

explore the causes → Find new methods.

3. Understand the role of descriptive epidemiology in describing the population and helping in the exploration of variation to aid in the planning of the health services.

in certain are in specific time of the year gastroenteritis cases increase so we have to do description method to evaluate health services and know if we can make them better

DESCRIPTIVE EPIDEMIOLOGY

- Includes activities related to characterizing the distribution of diseases within a population.

not just diseases also health related problems like polution causing bronchitis

- A way of organizing and analyzing health data in order to understand variations in disease frequency geographically and over time, and how disease (or health) varies among people based on a host of personal characteristics (person, place, and time).

this helps in identifying health problems, establishing people needs and establishing health care services

we don't have to use time,place and people all together in description we can use only place..it depends on the criteria we are using

- This makes it possible to identify trends in health and disease and provides means of planning resources for populations.

- In addition, descriptive epidemiology is important for generating hypotheses (possible explanations) about the determinants of health and disease.

for ex we had increase in gastroenteritis in in certain ares.. we will put a theory that what caused this disease is eating from a certain restaurant.. بعد هيك بنصير ندور. اكتر عن الموضوع

descriptive epidemiology **only puts the hypothesis**

- By generating hypotheses, descriptive epidemiology also provides the starting point for analytic epidemiology, which formally tests associations between potential determinants and health or disease outcomes.

hypotheses ⇝ analytical studies
(descriptive epidemiology) (analytic epidemiology)

Specific tasks of descriptive epidemiology are the following:

school environments بالمدارس بتابعو الصحة النفسية و الجسدية الطلاب

1. Monitoring and reporting on the health status and health related behaviors in populations

بس نطلع vaccination جديد
we monitor the vaccination coverage rate and we see why they didn't take it

2. Identifying emerging health problems

emerging disease: new diseases that did not exist before like AIDS was an emerging disease in the 80's

pre-emerging diseases:امراض كانت موجودة و اختفت و رجعت طلعت

3. Establishing public health priorities for a population

monitoring health status and services and see where the gaps are and try to provide them with health care services according to their needs

vaccination, maternal and child services, environmental health services..

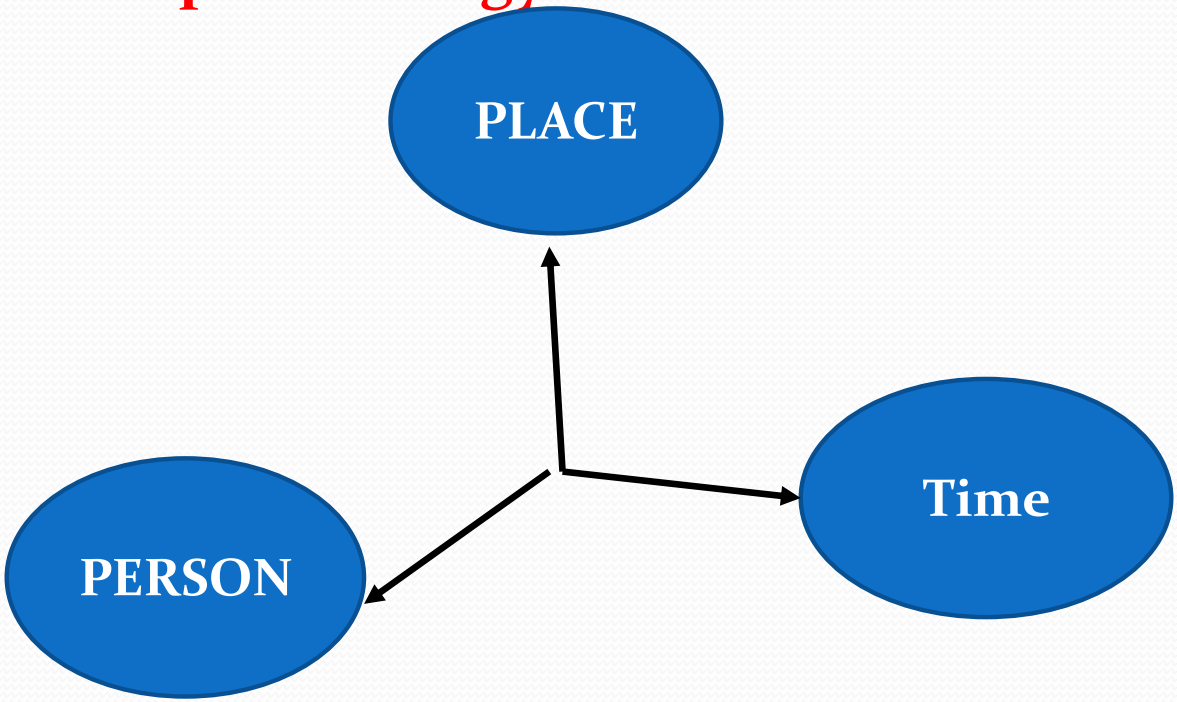
4. Evaluating the effectiveness of intervention programs and

for example we want to know how many women have breast cancer in the population so we have to know those women's age, ask them if they are using any family planning method(we are just going to describe the people having breast cancer) but we can't say this woman is having breast cancer because she is taking contraceptive pills cauz this needs analytical methods

5. Exploring potential associations between "risk factors" and health outcomes in order to generate hypotheses about the determinants of disease.

يعني احنا بنحكي breast cancer is high among women taking contraceptive pills but I can't say there is association between using contraceptives and breast cancer

Descriptive Epidemiology



Think of this as the standard dimensions used to track the occurrence of a disease.

cauz they are related to the variation of health status between population

Three groups of variables are commonly used in descriptive epidemiology. These are:

A. Characteristics of **persons** affected such as:

- age,
- sex,
- marital status,
- education,
- occupation,
- habits,
- genetics and
- ethnic groups.

B. Characteristics **place**

The distribution of the disease may have:

- international,
- national (limited to one country,
- continental,
- local: only part of a country or urban-rural pattern?

C. Characteristics of **time** in which persons were found affected.

Does the distribution follows,

- secular trend (over many years and decades),
- seasonal trend (within the same year),
- recurrent pattern or the occurrence of disease after special events, e.g., raining. ?

Distribution of disease with age

The variation of disease distribution with age may be explained as follows:

like there is difference between type of diseases that occur among children (communicable diseases) and among adults (chronic and non-communicable diseases) or accidents that are more common in babies and elderly people

1. Accuracy of diagnosis. Disease is less likely to be ascertained in extreme age groups. This leads to under estimation of certain causes of death in the very young and the very elderly people. In some instances, basic population data are lacking on such extreme age groups.

because they have multiple health problems

for fresh new doctors they face a problem with writing death certificate (time,cause of death)in older age group it's difficult to know the cause of the death because they have alot of diseases

for kids they can't express their feelings and can't interpretate their words so mostly we depend on the mother to help us so this also make the diagnosis not accurate

2. Variation in intensity and duration of exposure to risk factors.

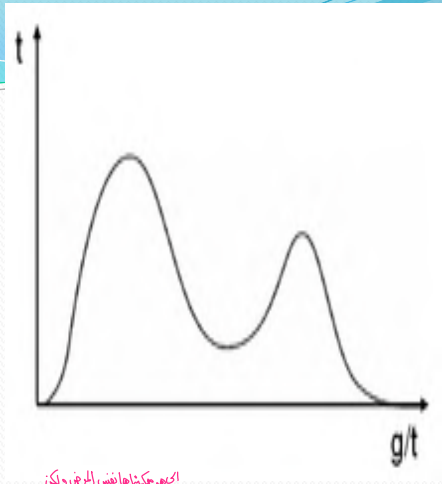
in older age group they have been exposed for so many risk factors for along time so accumulation of risk factors and exposure increase risk of disease occurrence

immunological status of extremities of ages isn't the same as other age groups

3. Variation in immunity and susceptibility. People are not constant in their immunological response and immunological status and are not necessarily similar to each other in that respect.

4. Bimodality:

In some instances, the distribution of disease frequency with age may have more than one peak (bimodal) as in case of the incidence of Hodgkin's **disease,** leukemia, testicular Cancer and tuberculosis ; with age.



young age group yes the disease occurrs in these two age groups
old age group
first exposure لانو primary بكون بس بالاطفال
secondary بكون بالكبار بالسن
الجين هيكتشاها نفس الجرثوم ولكن بتختلف من عمر لعمر

This bimodality may suggest the heterogeneity عدم تجانس of data and the possibility that we are dealing with two disease entities rather than with one disease.

For example, the first peak in the incidence rate of tuberculosis in young children is definitely primary (exogenous) tuberculosis. On the other hand, the peak late in life is mainly secondary (endogenous) tuberculosis.

5. Ageing or biological clock:

physiological changes occur like cell death or degeneration

Sometimes, people become very old-aging and lose the ability to carry out even simple tasks, yet they have no apparent disease.

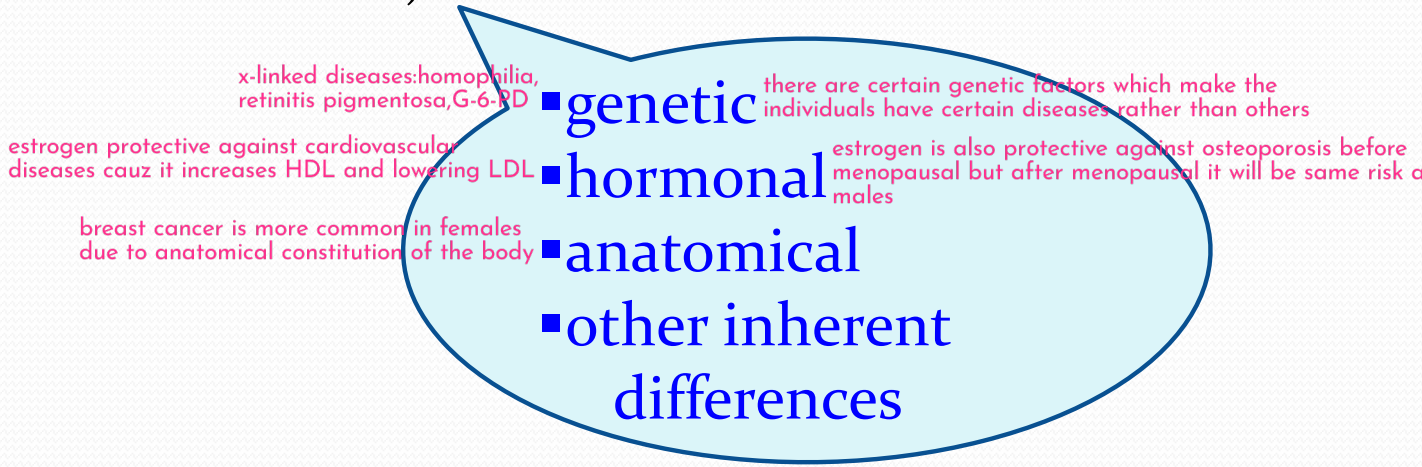
like cataract cauz eye lins doesn't regenerate after 40
physiological changes occur and causing cloudy area in the lens
also bones with time osteomalacia occur and with time this causes fractures
dementia loss of memory due to degeneration of brain cells

They probably follow a pre-coded biological clock, which determines the life span.

Distribution of disease with Sex

- In general, males have higher rates of illness and death than females do for a wide range of diseases.

- For some diseases, sex-related difference is because of:



- These inherent differences affect their susceptibility or physiologic responses.

- For example, premenopausal women have a lower risk of heart disease than men of the same age. This difference is attributed to higher estrogen levels in women. after menopausal it's equal.
- On the other hand, the sex-related differences in the occurrence of many diseases reflect differences in opportunity or levels of exposure. For example, hand/wrist disorders i.e., Carpal Tunnel syndrome occurs almost twice as often in females than in males.

ضغط من للjoints على الnerves
causing numbness and difficulty in moving the hand

specially house wifes.
also with people working on the computer for along period of time

This may be attributed to their higher level of exposure to occupational activities that require repetitive hand/wrist motion such as typing or keyboard entry or at homework.

Distribution of disease with marital status

In many studies it was reported that death rates and suicidal rates are higher among non-married people (single, widowed and divorced) than they are in married people. This is true for both males and females. Such variation might be difficult to explain but two explanations are possible:

a. Marriage stabilizes life and reduces the risk of exposure to hazardous behavior. Married people may feel more responsible not only for their lives but for the care and life of their spouses and children. They may avoid certain risky behaviours.

b. Unmarried (single) are not healthy to start with and they prefer not to marry. The higher risk of death and suicide among them is perhaps related to their poor health or due to unhealthy lifestyle or unstable life.

Or they already have health problem so they didn't get married because of that.

Socioeconomic status.

- Socioeconomic status is difficult to quantify. It is made up of many variables such as occupation, family income, educational achievement, living conditions, and social standing, housing.. socio-economic status definition defers between countries but those are constant for all of them
- The frequency of many adverse health conditions increases with decreasing socioeconomic status.

people with low socio-economic status,low income,kow housing condition,no proper water supply causing certain health problems like malnutrition causing anemia also less use of health care services

- For example, tuberculosis is more common among persons in lower socioeconomic status. due to over-crowding

high socio economic condition have good access for health services but there diet is full of fast food increasing risk of cardiovascular diseases, obesity,gout

- Infant mortality and time lost from work due to disability are both associated with lower income.

also low socio-economic status is related to disability cauz lack of early intervention this causes complications and disability in the future another point of view when having a disability this makes people loose their job and eventually leading to low socio-economic status

- These patterns may reflect more harmful exposures, lower resistance, and less access to health

- Or they may in part reflect an interdependent relationship : does low socioeconomic status contribute to disability or does disability contribute to lower socioeconomic status?

- Some adverse health conditions are more frequent among persons of higher socioeconomic status. These conditions include breast cancer, gout, obesity and tennis elbow.

- Again, differences in exposure account for at least some of the differences in the frequency of these conditions.

Association of disease distribution with place

The following criteria are essential to demonstrate an association of disease distribution with place:

1. High frequency rates of the disease are observed in all ethnic groups living in that place. and in all age groups
   like malaria in Africa it occurs with kids,men, women and even animals
2. Healthy people entering the place become affected by the disease at a rate similar to that of the indigenous population.
3. People who leave the place and move to other places do not experience high frequency rates of the disease.
4. Species other than man may show similar pattern of the disease

Characteristics Relating to Place

International

For example, there was a substantial difference in the incidence of stomach cancer in Japan & the US.

There are also substantial differences in genetics , climate, culture , diet and access to health care services .

Variation within countries:

- **Local**

  i.e. gastroenteritis is higher among children in areas who lacks the proper water supply.

▪Urban-rural :

over crowding, pollution, accidents in cities but also good water supply and good sanitation

but also in rural there is diseases associated with agriculture or animals

Due to differences in:

- population density,
- levels of sanitation,
- deficiencies of medical care,
- education and
- environment factors, pollution is higher in cities

These may result in variation in:

➢ Chronic bronchitis, cardiovascular diseases, accidents are more frequent in urban than rural areas.

for example ancylostoma duodenale is more common in farmers due to walking barefoot

➢ Skin and zoonotic diseases and soil transmitted helminthes may be more frequent in rural than urban areas.

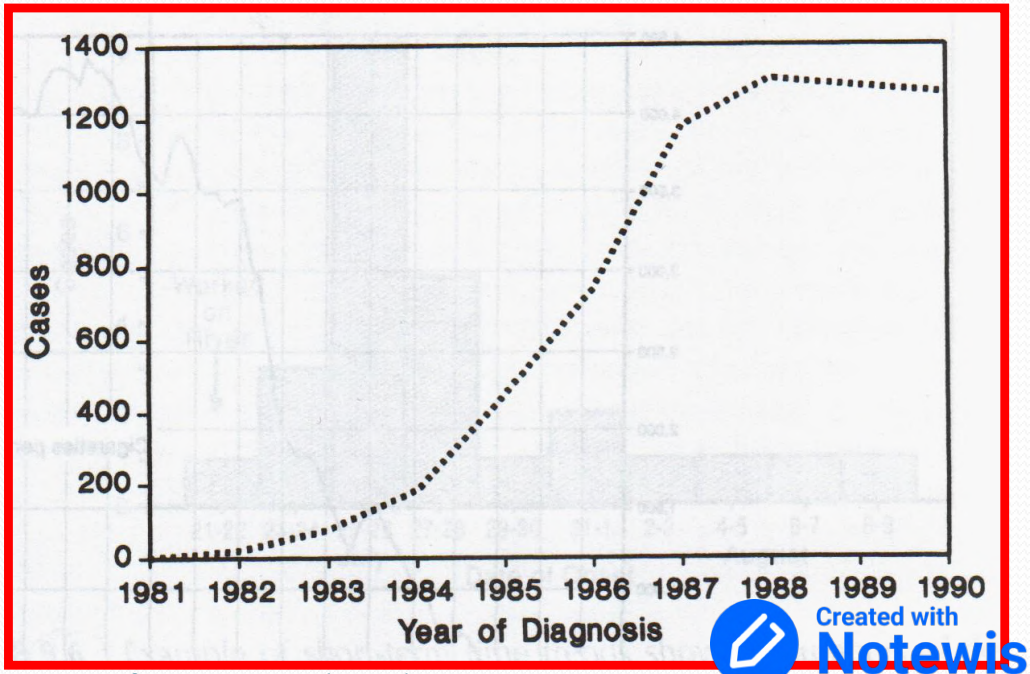
➢ Incidence of goiter is higher in the mountainous area and lower in other places.

➢ Incidence of schistosome is higher in the villages where they use river for swimming or other needs.

↳ cooking & drinking

Disease variation with time

- **Secular change (long-term)**
- **Cyclic trends**
- **Seasonal variation**
- **Point epidemics**



Secular changes

اختفاء المرض for hundreds of years و ممكن يرجع يطلع بعدها due to environmental changes

- It refers to changes in the occurrence of disease over a long period of time. E.g.: Coronary disease, diabetes showing consistent upward trend and a decline in TB, polio in developed countries during the past 50 yrs. و في امراض اختفت تماما زي الpox virus

- The changes occur over years or decades. Examples are the changes in cancer, cardiovascular disease.

- Such secular changes which show a clear rise in the disease frequency with time (years or even decades) as has been shown with the rise in mortality rate due to lung cancer in some European countries during the twentieth century could be explained as follows:

في زيادة حقيقه بعدد الحالات

1. The rise **indicates real increase** in the incidence of the disease in response to:

تعرضنا ل micro-organism جديد زي كورونا

a. Massive exposure to disease agents.

b. Change in lifestyle of the people and like diabetes, CVD

c. Failure of adaptation to social change. there is policies provided by the government but there is no awareness from the people.

2. The rise is artificial due to:

a. Improved diagnosis of disease which lead the identification of cases which were previously missed. هم اهلا" مريضين بس ما كانو يفحصو هلأ صارو بفحصو فزاد عدد الحالات

improvement in reporting and registeration
في دكاتره بنسو يكتبو معلومات المريض في دكاترة بنسو يكتبوها اصلا و بكتبو التشخيص غلط

b. Change in classification of disease.

international classification of the disease في عنا منظمة اسمها
كل سنة بغيرو تصنيف بعض الامراض و كل مرض الو رقم معين

c. Improved recording of cases.

certain diseases are more common among elderly people

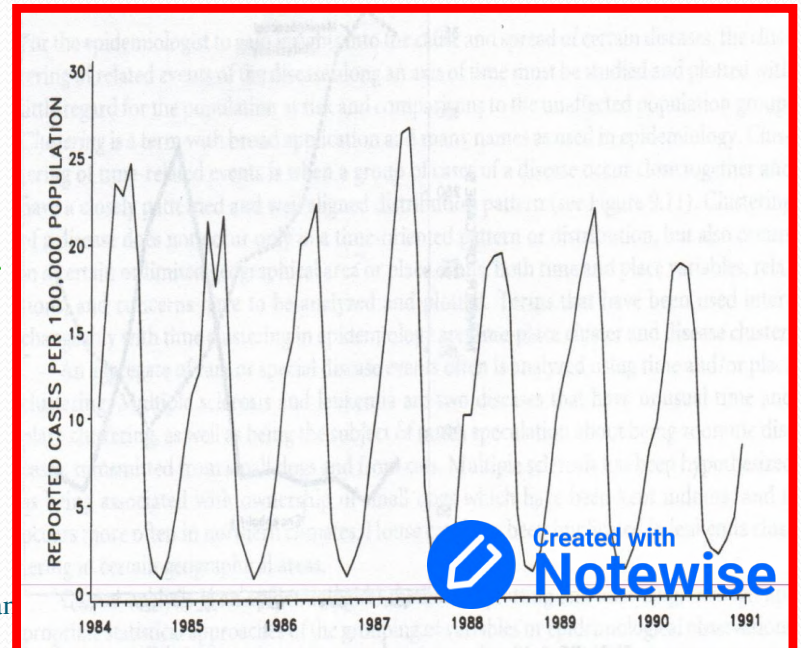
d. Ageing of the population/ change in population at risk

Cyclical trends: كل كم سنه برجع يطلع ال disease

- Cyclic trends: recurrent alterations in occurrence , interval or frequency of disease.
- Some diseases occur in cycles spread over short periods of time (days, weeks, months or years) . Eg: Influenza pandemics are known to occur at intervals of 7-10 yrs due to antigenic variations.
- Non-infectious conditions may also occur in this trend.

E.g: Automobile accidents are more frequent on weekends. due to alchol drinking

- cyclic trends due to factors:
  - ✓ Immigration
  - ✓ School year بداية السنة المدرسيه بطلع عنا certain epidemics like common cold
  - ✓ Military deployment

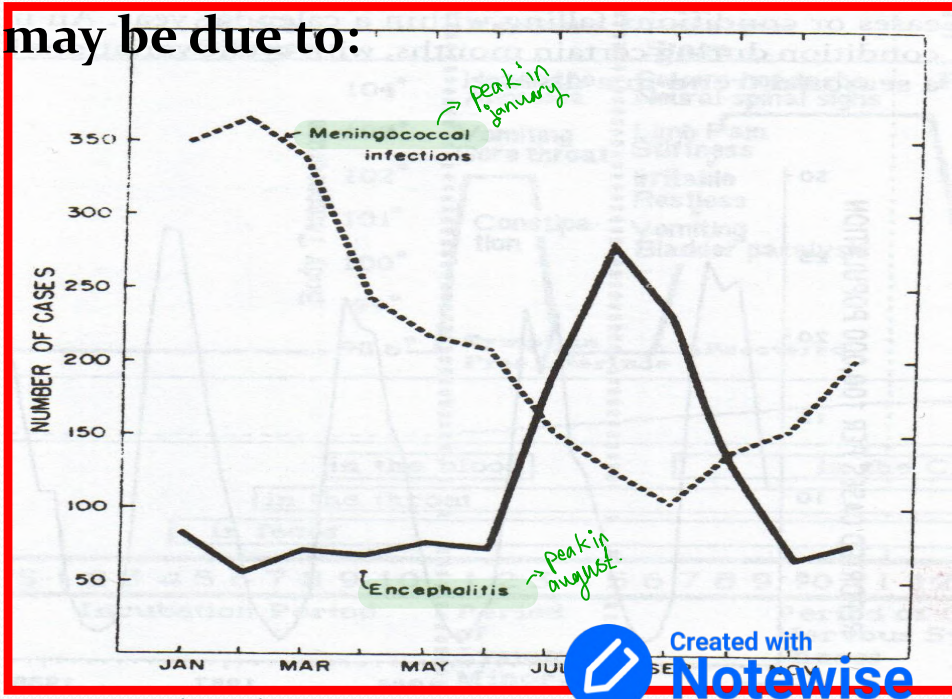


in summer gastroenteritis, حالات الغرق بسبب السباحة
in winter common cold
malaria after winter due to mosquitoes growth after raining

Seasonal changes

A change of disease frequency within the year reflects a change in population immunity (susceptibility), change in the environmental situation in favor of disease agent development or multiplication, and its transmission to new host or both.

- **Seasonal fluctuations may be due to:**
  - *Environmental factors*
  - *Occupational activities*
  - *Recreational activities.*



- Seasonal variation can be used to suggest possible etiology .i.e. malaria, influenza, meningococcal menininingitis, asthma.inspring

inflammation of the meninges

encephalitis: inflammation of the brain it self

- Non-infectious diseases and conditions may sometimes exhibit seasonal variation.

E.g: Sunstroke, hay fever.

Time clustering

تجمع عدد من الحالات في وقت معين فقط

Time Place Cluster/disease cluster

A group of cases occur close together & have a well aligned distribution pattern {*in terms of time and place*}

Cluster analysis-used for rare or special disease events.

- Time clustering data can sometimes be used to trace the "beginning" to the introduction of a specific causal agent certain causative agent تعرضو ل
  - ✓ Thalidomide & birth defects

    First marketed in Europe in 1950's as sleeping pill and to treat morning sickness in pregnant women

In the late 1950s and early 1960s, more than 10,000 children in 46 countries were born with deformities, such as phocomelia, as a consequence of thalidomide use.

used for motion-sickness and sleeping pills.


Malformations due to maternal ingestion of thalidomide (Schardein 1982 and Moore 1993).


thank you
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