الكلية : كلية طب العام

الفرع : طب االسرة والمجتمع

المرحلة : الرابعة

أستاذ المادة : د بديعه ثامر يحيى

اسم المادة باللغة العربية: وبائيات

اسم المادة بالانكليزي:Epidemiology

اسم المحاضره الثانيه باللغة العربيه : قياسات مؤشرات الصحه

اسم المحاضرة الثانيه :Measurements (indicators) of health -

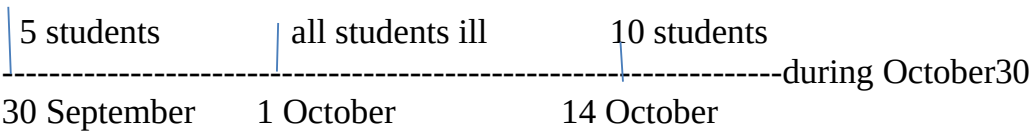
2- Measurements (indicators) of health:

Q3- A class has 100 students, during the month of October, some of the students became ill with sore throat. Calculate rates for sore throat in this class based on the following:

On 30 September, 5 of the students who attended class reported sore throat. All of them continued to be ill on 1 October but recovered within 3 days On 14 October , 10 students had sore throat and 4 of them were absent due to illness . During October, 30 different students had sore throat and 8 of them were absent due to illness. None of these students was ill at the beginning of month.

Calculate:
a- Point prevalence rates.
b- Period prevalence rates.
c- Incidence rate of sore throat for October .

Sol:



$$\text{Point prevalence rate} = \frac{\text{no. of existing cases at a point of time}}{\text{Total population}} \times K$$

$$= \frac{5}{100} \times 100 = 5\% \quad \text{on 30 September}$$

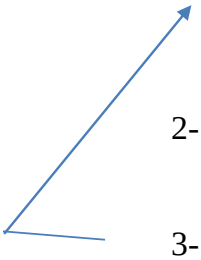
$$\text{Period prevalence} = \frac{\text{No. of existing cases of a disease during a period of time}}{\text{Total population}} \times K$$

$$= \frac{5+30}{100} \times 100 = 35\% \quad \text{During October}$$

1- point prevalence rate = $\frac{\text{No. of existing cases at a point of time}}{\text{total pop.}} \times K$

At beginning = $\frac{28}{25000} \times 1000 = 1.12 \setminus 1000$

At end = $\frac{28 + 30 - 17}{25000} \times 1000 = 1.6 \setminus 1000$



2- period prevalence rate = $\frac{28 + 30}{25000} \times 1000 = 2.3 \setminus 1000$

3- point prevalence rate

4- case fatality rate = $\frac{\text{no. of death}}{\text{cases}} \times 100$

$= \frac{2}{28 + 30} \times 100 = 3.5\%$

5- Cause-specific death rate = $\frac{\text{No. of death}}{\text{total pop}} \times 1000$

$= \frac{2}{25000} \times 1000 = 0.08 \setminus 1000$

Q5- In a small town of 200000 population , 5000 cases of neurological illness was diagnosis in year 2012 . This disease is characterized by mild neurological symptoms that can be treated using analgesic and tranquilizer . But in 10 of these cases , they progressed to disabling disease and 2 of them died . In addition to this , the nation –wide incidence is 5 per 1000 . (incidence in non- exposed) .

Calculate :

1- Incidence rate of disease .
2-case fatality rate .
3-cause specific mortality rate .
4-Relative Risk .
5-Attributable risk .
6- Attributable risk percentage .

Sol:

$$\text{1-Incidence rate} = \frac{\text{No. of new cases}}{\text{Pop. At risk}} \times k = \frac{5000}{200000 - 2} \times 1000$$

= 25 \1000

$$\textbf{case fatality rate} = \frac{\text{no. of death}}{\textbf{cases}} \textbf{ X 100} = \frac{2}{\textbf{5000}} \textbf{X1000}$$

= 0.4\ 1000

No. of death **2**

3-Cause-specific death rate = ---------- X 1000 = ----------X1000
total pop **200000**

= 0.01\1000

Ie **25\1000**
4-Relative risk = ---------- = ---------- = 5
Io 5\1000

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Calculate :

1- Incidence rate of disease .

2-case fatality rate .

3-cause specific mortality rate .

4-Relative Risk .

5-Attributable risk .

6- Attributable risk percentage .

Sol:

$$\text{1-Incidence rate} = \frac{\text{No. of new cases}}{\text{Pop. At risk}} \times k = \frac{5000}{200000 - 2} \times 1000$$

= 25 \1000

$$\textbf{case fatality rate} = \frac{\text{no. of death}}{\textbf{cases}} \textbf{ X 100} = \frac{2}{\textbf{5000}} \textbf{X1000}$$

= 0.4\ 1000

$$\text{3-Cause-specific death rate} = \frac{\textbf{No. of death}}{\textbf{total pop}} \times 1000 = \frac{\textbf{2}}{\textbf{200000}} \times 1000$$

= 0.01\1000

$$\text{4-Relative risk} = \frac{\textbf{Ie}}{\textbf{Io}} = \frac{\textbf{25\1000}}{\textbf{5\1000}} = 5$$

5-AR = Ie – Io = 0.025 – 0.005 = 0.02

$$\textbf{6-AR\%} = \frac{\textbf{AR}}{\textbf{Ie}} = \frac{\textbf{Ie – Io}}{\textbf{Ie}} = \frac{\textbf{0.025 – 0.005}}{\textbf{0.025}} \textbf{ X100}$$

= 80%

Q6- In city X with a population of 99000 . Its residents can be divided into three age groups: 25-44 , 45-64 , and 65 and older, each comprising one third of the population . In 2011 , 100 cases of hepatitis B occurred in city X . Of these 100 cases , 20 between the ages of 25-44 , 10 between the ages of 45- 64 , and 5 over the age of 65 ultimately proved fatal . Prior to 2011 , city X had never reported a case of hepatitis B .

1-What is the 2011 crude mortality rate .
2-What is the incidence rate .
3- What is the Age-specific mortality rate for pop over 65 years of age .
4- What is the Case fatality rate.

Sol:

Age group	Population	H.B death
25 – 44	33000	20
45 – 64	33000	10
65 +	33000	5

Total no of death in a given time

crude mortality rate = ----------X K

total population

(20 +10+5 Death H.B) + (N H.B death 65)

=---------- X 1000 = 1\ 1000

99000

No. of new cases 100

2-Incidence rate = ---------- X k = ----------

Pop. At risk 99000 – 35

= 1 \1000

No. of deaths in age 65+ year

3-Age-specific mortality rate = ----------X K

No. of the population in the same age group

5

= ---------- X 1000 = 1.5 \ 1000

33000

$$\textbf{4-case fatality rate} = \frac{\text{no. of death}}{\textbf{cases}} \textbf{ X 100}$$

$$= \frac{\textbf{20 +10 +5}}{\textbf{100}} \textbf{X 100 = 35 \%}$$