**CMED 305 (2017-2018)**

**Practical Exercise on: Incidence & Prevalence and measurement of risk (Solutions)**

**Prevalence:**

**A.** Calculate the prevalence of cataract in a 15000 population aged between 60 to70 years in the time period of summer months from June to August in city X, where 300 people were diagnosed to have cataract.

No. of people with cataract = 300

No. of population = 15000

Period prevalence = (300/15000)\*100 = 2%

**B**: In a classroom study involving 100 subjects, 15 students reported to have been suffering from influenza on January 1st.

Calculate the point prevalence of 15 students suffering with influenza on a cold winter day on January 1st in a class of 100 students.

No. of students with influenza = 15

Class strength = 100.

Point prevalence on 1st January = (15/100)\*100 = 15%.

**Incidence:**

**A**: A study followed 3,000 males ages 45 years and older for 5 years to assess the development of MI. During the study period, 150 men developed MI, who accumulated a total person-time of 14,625 person-years. Calculate the incidence proportion and the incidence rate.

No. of men who developed MI by the end of the 5 years = 150

Total no. of men followed over the 5 year period = 3000

Total person-time (time during which people were at risk) accumulated by the end of the study= 14625

Incidence proportion = number of cases / population at risk = 150 / 3000 = 0.05 = 5%

Incidence rate = number of cases / person-time at risk = 150 / 14625 = 0.01 or *1 case in 100 person years*

**B**: In a follow up study of 2000 IGT women, 150 women were diagnosed to have type 2 diabetes at the end of the follow up period. Calculate the incidence proportion.

No. of women developing diabetes = 150.

No.of women followed over a period = 2000

Incidence rate of the disease = (150/2000)\*100 = 7.5%

*We can also say 75 cases per 1000 population*

**Attack rate:**

**A:** The cholera investigation report found 22 persons to be positive for cholera among 200 persons who drank water from the same source. Calculate the attack rate.

No. of cholera cases = 22, No. of people at risk = 200

Attack rate = (22/200)\*100 = 11%

**Risk Difference**

Users of tobacco were surveyed for development of leukoplakia. Incidence of leukoplakia is given among the exposure group and the control group. Calculate the risk difference.

Incidence of leukoplakia among tobacco users = 19%

Incidence of leukoplakia among non-tobacco users = 5%.

Risk Difference = 19-5=14% .

**Relative risk (Risk Ratio):**

1.A total of 160 children underwent measles vaccination at a camp, of which 20 children from vaccinated group developed measles. While 5 from the control group developed the disease. Calculate the relative risk for the following and interpret what it means.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Measles + | Measles - | Total |
| Vaccination | 20 | 140 | 160 |
| No vaccination | 5 | 7 | 12 |
| Total | 25 | 147 |  |

Relative Risk = (A / (A+B)) / (C / (C+D)) =

= 20/ (20+140)/ (5/ (7+5)) =

(20/160)/ (5/12) =

0.125/0.41 = 0.3

The risk ratio is less than 1 which indicates there is a possible protective effect of vaccination.

2.About 300 workers were employed in an asbestos factory, of which 107 developed lung disease. Out of 250 controls from another factory, 24 developed the lung disease. Draw the contingent table and estimate the risk ratio for developing lung disease.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Lung disease + | lung disease - | Total |
| Asbestos factory  exposure | 107 | 193 | 300 |
| No exposure | 24 | 226 | 250 |
| Total | 131 | 419 | 550 |

RR= 107/(300)/24/(250)

= 0.36/.09 = 4

So it indicates that workers from the asbestos factory are at 4 times higher risk of developing lung disease than the non exposed group.