**TASKS to the Second Module on Epidimiology Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date**

 **Group**

**Question 1.**

A case-control study was conducted at an Iowa clinic between September 2004 and November 2005 among farmers to assess the relationship between lung cancer and behavioral and clinical risk factors. They specifically focused on pesticide use at work as the exposure. The 61 cases had lung cancer; the 58 controls did not have lung cancer. A total of 50 of the cases and 20 of the controls reported pesticide use.

**a.** Complete the following 2x2 table.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

**b.** Calculate the exposure odds ratio between lung cancer and pesticide use at work. Show your work!

**c. Calculate the disease odds ratio between lung cancer and pesticide use at work. Show your work!**

**d. State in one sentence the interpretation** of the odds ratio.

Q 4. Calculating Attributable Proportion

In another study of smoking and lung cancer, the lung cancer mortality rate among nonsmokers was 0.07 per 1,000 persons per year. The lung cancer mortality rate among persons who smoked 1–14 cigarettes per day was 0.57. Lung cancer deaths per 1,000 persons per year.

**Question. Calculate the attributable proportion.**

Q5. Within 10 days after attending a June wedding, an outbreak of cyclosporiasis occurred among attendees. Of the 83 guests and wedding party members, 79 were interviewed; 54 of the 79 met the case definition. The following two -by-two table shows consumption of wedding cake (that had raspberry filling) and illness status.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Ill | Well | Total |
| Ate wedding cake? | Yes | 50 | 3 | 53 |
| No | 4 | 22 | 26 |
|  | Total | 54 | 25 | 79 |

Questions.

1) The best measure of association to use for these data is a/an:

a. Food-specific attack rate

b. Odds ratio

c. Rate ratio

d. Risk ratio

2) The best estimate of the association between wedding cake and illness is:

 6.1

 7.7

 68.4

 83.7

 91.7

 94.3

3) The attributable proportion for wedding cake is:

 6.1%

 7.7%

 68.4%

 83.7%

 91.7%

 94.3%

Q6. A case-control study was conducted at an Iowa clinic between September 2004 and November 2005 among farmers to assess the relationship between lung cancer and behavioral and clinical risk factors. They specifically focused on pesticide use at work as the exposure. The 61 cases had lung cancer; the 58 controls did not have lung cancer. A total of 50 of the cases and 20 of the controls reported pesticide use. Complete the following 2x2 table.

|  |  |
| --- | --- |
|  |  |
|  |  |

Questions.

1. Calculate the exposure odds ratio between lung cancer and pesticide use at work.

2. State in one sentence the interpretation of the odds ratio.

Q7. Suppose that an investigation of the association between regular physical activity and cardiovascular disease (CVD) between 1970 and 2000 revealed that the incidence rate of CVD among men who engaged in regular physical activity was 25 per 100,000 man-years of follow-up while the rate among men who did not engage in regular physical activity was 68 per 100,000 woman-years of follow-up.

Questions.

a) Using these data, create a 2X2 table and compute the incidence rate ratio of CVD for men who are physically active versus men who are not physically active.

b) State in words the interpretation of this incidence rate ratio.

|  |  |  |
| --- | --- | --- |
|  | CVD | Total |
| Regular Exercise |  |  |
| No Regular Exercise |  |  |

Q8. In a case control study of 300 of women designed to examine whether exposure to pesticides during pregnancy leads to a heart defect in the baby, there are 100 cases and 200 controls. Among the cases, 40 are exposed and among the controls 40 are exposed.

Questions.

1) What is the crude relative association between exposure to pesticide during pregnancy and heart defects (show your 2x2 table)?

2) Interpret your relative measure in one sentence.

 Cases Controls Total

Pesticides

No Pesticides

 Total

Q9. During the 20th century there had been a remarkable increase in the incidence of lung cancer, both in the United Kingdom and in the US. R.Doll and B.Hill identified lung cancer patients in 20 London hospitals and enrolled a comparison group of non-cancer patients who had been admitted to the same hospitals (The Doll and Hill Study on Lung Cancer,1948). The cancer patients and non-cancer patients were matched by age, gender, and hospital. Among the 1298 males in the study there were 649 with lung cancer and 647 of these were “smokers”. Among the 649 males who did not have cancer, 622 were smokers, and 27 were not. There were 120 females in the study. There were 60 females with lung cancer, and 41 of these admitted to smoking. There were 60 females without cancer, and 28 of these admitted to smoking.

Questions.

1) Using these data to set up two-by-two tables to perform a stratified analysis and calculate the crude (OR) and stratum-specific measures (OR) of association that focus on the strength of association.

2) To provide a comparison Crude OR on gender.

**Crude analysis**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Cases | Controls | Total  |
| Exposed  |  |  |  |
| Non-exposed  |  |  |  |
| Total  |  |  |  |

Crude OR?

Stratified analysis

Males

|  |  |  |  |
| --- | --- | --- | --- |
|  | Cases | Controls | Total  |
| Exposed  |  |  |  |
| Non-exposed  |  |  |  |
| Total  |  |  |  |

Odds Ratio males= ?

Females

|  |  |  |  |
| --- | --- | --- | --- |
|  | Cases | Controls | Total  |
| Exposed  | 41 | 28 | 69 |
| Non-exposed  | 19 | 32 | 51 |
| Total  | 60 | 60 | 120 |

Odds Ratio females =?

Q10. A study will start on January 1, 2013 and run until December 31, 2016 to examine whether women exposed to solvents during pregnancy have an increased risk of having a child with leukemia. Mothers with children who develop leukemia between the ages of 1 year to 5 years will be enrolled into the study. Mother's of children with newly diagnosed leukemia who are reported to the Cancer Registry will be asked to enroll into the study. Controls will be a random sample of mothers of children born during the same years as the case children. An interviewer will visit the mothers at their homes to administer the study questionnaire. Women who indicate that they were exposed to solvents during pregnancy will be considered exposed and women who indicate that they did not use solvents will be considered unexposed. All children are born in the same state.

1) What type of study design is this?

2) If the interviewers are not blinded to case status, what would be a concern?

3) In this study, how can researchers minimize recall bias?

 a. selecting controls from children who are sick

 b. control for it in the analysis

 c. having strict selection criteria

 d. increasing the sample size