1.

Researchers are conducting a prospective cohort study of the association between being an office worker who uses a computer daily and carpal tunnel syndrome.

A total of 300 exposed and 300 unexposed participants are enrolled and followed for 10 years. A total of 25 exposed and 17 unexposed had the outcome of interest over the follow-up period.

1a.

What is the *relative risk* for developing carpal tunnel syndrome? (2 points)

1b.

Interpret the *relative risk* in a sentence. (2 points)

1c.

What is the incidence attributable to daily computer use? (2 points)

1d.

If 60% of the population uses a computer daily at work, how much carpal tunnel could we prevent if we implemented a national work-place ergonomics program (and thus eliminated the exposure of daily computer use)? (HINT: PAR) (4 point

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2a.

Investigators are interested in the association between coffee consumption (exposure) and Osteoporosis (disease). They decide to conduct a case-control study and select 200 cases and 200 controls. Among the cases, 138 drink coffee. Among the controls, 119 drink coffee. Calculate the appropriate measure of association and interpret the results in a sentence. (4 points)

|  |  |  |
| --- | --- | --- |
|  | Osteo+ | Osteo- |
| Coffee+ |  |  |
| Coffee- |  |  |

2b.

Investigators read recent studies that identified smoking as a risk factor for osteoporosis. They were worried that smoking might be a confounder in their study. Does smoking meet the definition of a potential confounder in their analysis? (state the three criteria in your response) (3 points)2c.

To be sure, investigators decided to stratify their analysis by smoking. In their study population, there were 200 smokers, 158 of whom drank coffee, and 200 non-smokers. Among the smokers who were cases (had osteoporosis), 96 were coffee drinkers and 24 were not coffee drinkers. Calculate the stratum specific ORs. Is there evidence of confounding by smoking? Why or why not? (6 points)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | smokers | |  |  | Non-smokers | |
|  | Osteo+ | Osteo- |  |  | Osteo+ | Osteo- |
| Coffee+ |  |  |  | Coffee+ |  |  |
| Coffee- |  |  |  | Coffee- |  |  |

2d.

What would you conclude in your final report (**give the OR(s) and interpret the results in a sentence**). (3 points)

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3.

Investigators wanted to know whether maternal age modified the association between maternal smoking and low birth weight. The initial analysis from their case-control study gave the following results:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Cases | Controls |  |
| E+ | 42 | 158 |  |
| E- | 21 | 175 |  |
|  | 63 | 333 | 396 |

They then stratified their data by maternal age (above and below 35 years):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Age: 35+ | |  |  | Age: <35 | |
|  | Low birth wt+ | Low birth wt- |  |  | Low birth wt+ | Low birth wt- |
| Smoking+ | 12 | 133 |  | Smoking+ | 30 | 25 |
| Smoking- | 11 | 123 |  | Smoking- | 10 | 52 |

Does age modify the association between smoking and low birth weight? How do you know? (10 Points)