HLSC 2003 Epidemiology
Assignment 5: Oct 16, 2014
ANSWERS

1. Study type: Prospective cohort study (1 point)

2. What is the study exposure and outcome: Exposure: Maternal veganism Outcome: Infant SIDS (1 point)

3. Is the exposure a risk or protective factor? Protective factor (0.5 point)

4. What is the relative risk in this study? 0.6 (1 point)

5. Study critique

    1. Is association due to chance? No, because the confidence interval does not include 1. (1 point)

    2. Could association be due to error? (If there is error name type and why it is a concern) (2 points)

        - Correct Answer: Selection bias – Loss to follow up: Serious threat to validity because more than half the sample dropped out before study complete. Those who remained in study may not be representative of all pregnant women (they will likely be healthier).

    Optional additions to answer:
        - Measurement Error - Interviewer bias – Not a problem as hospital records used, and coroners established a SIDS diagnosis independent from the study.
        - Measurement Error – Recall bias – Not a problem because it is a prospective cohort study.
        - Random Error – Not a problem as confidence interval is small.

    3. Could the association be due to confounding? (Explain why or why not using steps to assess confounding for each uncontrolled variables noted in results section) (3 points)

        - YES – women who choose to be vegans are known to be better educated, have a higher income, smoke less and exercise more than women who choose not to be vegans. High education, income, smoking and regular exercise are also associated with SIDS (i.e., these are 3rd variables associated with exposure ***and*** outcome).

        - It would not make sense for these variables to be on the causal pathway (i.e., being vegan does not *make* a pregnant woman become wealthy or better educated. Being vegan may be associated with exercising more regularly, but being vegan does not *make* a person exercise).

        - Therefore education, income and exercise meet the definition for confounding and should have been considered during data collection or analysis. The association documented between maternal veganism and SIDS may have actually been due to these confounders (i.e., the relative risk between veganism and SIDS may actually be 1.0).

4. Who does the association apply to? (i.e., do the study findings apply to babies born in Portugal or could the association also be generalized to babies born in other countries? Explain why or why not) (2 points)

    - From a biological perspective, the impact of a vegan diet on a developing fetus (and the resulting likelihood of SIDS) should be the same for babies born in Portugal compared to other countries. Thus, the association may be biologically relevant for babies born outside Portugal, given what constitutes a vegan diet in Portugal is similar to other countries.

5. Is the association a cause-and-effect relationship? (6 points)

Hill's Postulate	Criterion Met	Briefly State Why or Why Not
1. Strength of association	Yes	0.6 is a moderate association
2. Repetition	No	This is the first study to examine this association
3. Temporal sequence	Yes	Cohort study so direction of association is known
4. Dose response relationship	No	Dose response relationship was not assessed
5. Biological plausibility	No	None provided by authors
6. Experimental evidence	No	This was not an experimental study design

6. Based on your critique of this study (via the 5 steps), how much confidence do you place in the findings (1 = no confidence should be placed in these findings; to 5 = the Government of Canada should advise all pregnant women to follow a vegan diet immediately): (0.5 point)

   Groups who circled 1 or 2 will be marked correct: 1 2 3 4 5

7. Main study concerns (2 points)

   Any 2 of the following will be marked correct:

   1. Confounding: The association documented between maternal veganism and SIDS may have actually been due to uncontrolled confounders (i.e., the relative risk between veganism and SIDS may actually be 1.0).

   2. Loss to Follow-Up: More than half the sample dropped out. Those who remained may not be representative of all pregnant women (they will likely be healthier).

   3. Hill's Postulates: Only 1 criterion was met.

   4. Hill's Postulates – Repeatability: This is the first study to document such an association.

   5. Hill's Postulates – Biological Plausibility: None established by the authors.