Introductory causal inference journal club

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Paper 1. Hernán MA. The C-Word: scientific euphemisms do not improve causal inference from observational data.

Summary.

Examples of research questions:

1) Do the sorts of people who drink a glass of red wine daily have lower risk of heart disease?
2) Does drinking a glass of red wine daily lower the risk of heart disease?

Q1 is interested in association.
Q2 is interested in causation.

Paper 1.

Being explicit about scientific aims to quantify causal effects, even when using observational data, improves study design by helping to

- specify an exact research question (e.g. exposure, dose, frequency, population, etc.)
- better adjust for confounding, the distorted association between variables, using subject-matter knowledge and a plausible causal structure

Even if there's no guarantee a causal model is correctly specified, it's only possible to have an informed scientific discussion by being explicit that the research aim is causal.

Discussion

Comments or clarifications?

Discussion:

1. Does anyone disagree with Hernán (e.g. do you think using 'association'/'correlation'/'link' words are better)? Why?
2. How are RCTs imperfect, and how are these limitations overcome?
3. How else are observational data limited at allowing causal inference? Do these problems only affect observational studies?