Pitfalls in Epidemiology: From Study to Thesis

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Pitfalls

- A hidden or unsuspected danger or difficulty
- A covered pit used as a trap

Epidemiologic studies: pitfalls in interpretation
Westhoff CL Dialogues Contracept 1995 Winter;4(5):5-6,8

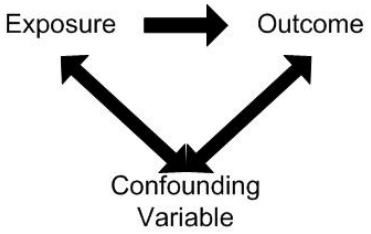
Researchers should design epidemiologic studies in such a way as to avoid or minimize known or suspected biases

Clinicians should consider the aforementioned concerns when interpreting the results of epidemiologic studies

- use well-designed studies and large sample sizes
- Meta-analysis is used increase sample sizes
- In fact, the studies in the meta-analysis tend to be confounders

- They must be prepared to address validity and clinical relevance
- To do so, they need to be familiar with basic study designs and associated issues to provide appropriate counseling and informed clinical decision making

Outline



- Pitfalls in development of proposal
- Pitfalls in data collection and management
- Pitfalls in data analysis

Clinical prediction rules

RCT

Real world studies

Proposal

- **Role of chance, bias and confounding**
- **Sample size estimation**

Sample size

- Common pitfalls The calculation of the sample size is troubled by a large amount of imprecision, because investigators rarely have good estimates of the parameters necessary for the calculation
- Unfortunately, the required sample size is very sensitive to the choice of these parameters

The effects of selecting alpha and the power

Estimating the difference and SD

Post hoc sample calculations

Reporting of sample size calculations

Data collection and management

- equipment failure, environmental hazards, and transcription errors
- Lack of internal consistency – purpose isn't met by design, instruments or methods won't result in answers to the question OR – a+ b can't add up to c
- Not enough data or those that you have are not convincing/credible/ well organized - etc = No "golden thread" each section has its own focus but does not tie back to the focus of your study
- Do's Develop and describe the findings of the thesis thoroughly so that you are completely credible to the reader

Data analysis

- Use statistics without being confident that your analysis answers the questions you are asking
- Treat a write-up like a diary, with EVERYTHING in it rather than just what worked or was properly designed
- “Misses the plot” Qualitative • Doesn’t answer the question • No clear path from data to results • Leaves us asking questions Quantitative • Misuse of statistical measures (descriptive, inferential, comparative, relational what are you using and why?) • Your reader should not have to understand statistics to understand your findings or results • Measures used for no apparent reason