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

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

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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

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- 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
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