Hypothesis and Study Design

Amir A. Ghaferi, MD, MS
Associate Professor of Surgery and Business
Division Chief of General Surgery, AAVA
Director of Bariatric Surgery, AAVA
Director, Michigan Bariatric Surgery Collaborative
University of Michigan
Disclosures

• No financial disclosures

Lubitz, Carrie C., M.D.

Hey guys. You have both reached out to me about what to cover in your talks. I know these talks are tough - which is why I asked the two of you to give them. I know it is nearly impossible to make these fun, but if anyone can do it...
Audiences begin to lose attention after roughly 10 minutes of hearing the same presenter stanford.io/2e9VxYb

10 Tips For Giving Effective Virtual Presentations
What to know before you go live.
Outline

- Finding your inspiration
- Understand what’s known and unknown
- Formulate a hypothesis
- Choose a study design
- Write
Scientific Method

1. Ask a Question
2. Research
3. Hypothesis
4. Experiment
5. Analysis
6. Conclusion
Examples of questions

• What is the role of NK cells in regulating macrophage-mediated adipose tissue inflammation
• Do we prescribe too many opioids after surgery?
• What are main drivers of variations in hospital mortality rates following high risk surgery?
• Are laparoscopic simulators useful in improving technical skills amongst residents?
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Formulate a hypothesis

- Clear
- Simple
- Testable
- Defined
Examples of hypotheses

- Systemic NK cell ablation attenuates intra-abdominal adipose tissue macrophage infiltration in murine obesity
- Following laparoscopic cholecystectomy, patients have >50% of their opioid pills left over
- Failure to rescue is the main driver of variation in hospital mortality after pancreatectomy
- Structured, weekly practice on laparoscopic simulators improves resident OSATS scores more than OR cases alone
• Finding your inspiration
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Study Types

Study Goal

Descriptive
- Survey
- Qualitative
- Case Series

Analytic
- Experimental
  - Randomized Controlled Trial
  - Non-randomized controlled trial
- Observational
  - Cohort (Prospective)
  - Cross Sectional
  - Case Control
• Finding your inspiration
• Understand what’s known and unknown
• Formulate a hypothesis
• Design your study
• Write
Write… something

- Review article
- Methods paper
- Research paper
- Pilot grant
- Large grant proposal
Summary

• Find something you are passionate about
• Ask an interesting question
• Do your research
• Run with it

What's your story?
Thank you

@AmirGhaferi

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<th>Qualitative</th>
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<td>• Discovering frameworks</td>
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<td>• Theory generating</td>
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<td>• Sample size core issue in reliability of data</td>
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<td>• Models of analysis: fidelity to text or words of interviewees</td>
<td>• Model of analysis: parametric, non-parametric</td>
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