Starting University Clinical Careers Efficiently, Scholarly, and Successfully

Developing Your Research Question

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What Is a Research Question?

• Research is a rewarding process.

• To do research successfully, you must start with the right research question.

• A research question:
  • Is the fundamental core of a research project, study, or literature review.
  • Focuses the study, determines the methodology, and guides all stages of inquiry, analysis, and reporting.

Reference: Research Rundowns: Writing Research Questions
The Importance of a Solid Foundation for Your Research Project

Research Question
You Must Know What Is Already Known

- You need to know if the question that you are interested in has already been answered.

- This will help you identify the “next-step.”
  - **Existing publications**: PubMed, Google Scholar, etc.
  - **Existing grants**: NIH reporter
    https://projectreporter.nih.gov/reporter.cfm
  - **Hint**: Don’t just go to your usual sources!

How to Get Started

1. Decide what you want to know about the specific concern or issue.

2. Turn what you want to know about the specific concern into a question.

3. Ensure the question is answerable.

4. Check to make sure the question is not too broad or too narrow.

Reference: Study.com: Writing Research Questions: Purpose & Examples
The Foundation for Your Research Question is PICO

- **Participants / Population**
  - Who are the relevant patients?

- **Intervention / Indication**
  - What is the management strategy, diagnostic test or exposure that you are researching?

- **Comparator / Control**
  - Is there a control or alternative management strategy, test, or exposure?

- **Outcome**
  - What are the patient-relevant consequences?

Clinical Examples of Using PICO to Formulate Research Questions

**Example 1**
- **Patient/Population**: In patients with acute MI
- **Intervention/Exposure**: does early treatment with a statin
- **Comparison**: compared to placebo
- **Outcome**: decrease cardiovascular mortality?

**Example 2**
- **Patient/Population**: In women with suspected coronary disease
- **Intervention/Exposure**: what is the accuracy of exercise ECHO
- **Comparison**: compared to exercise ECG
- **Outcome**: for diagnosing significant CAD?

**Example 3**
- **Patient/Population**: Do medical students
- **Intervention/Exposure**: who complete a culinary medicine elective
- **Comparison**: compared to students on class waitlist
- **Outcome**: have increased self-efficacy to counsel patients about nutrition?

Reference: Florida State University Maguire Medical Library - Evidence-Based Medicine: Clinical Questions
Example 4

In amputees
are pain medications
compared to other medications
effective?

Research Question needs to be specific!

P
• In middle aged, male amputees suffering phantom limb pain

I
• is gabapentin,

C
• compared with placebo,

O
• effective in decreasing pain symptoms?

When studying the effect of the intervention over time, PICO becomes **PICOT**

Developing A Research Question Is An Iterative Process

• **Iterative components include:**
  • basic dimensions of the clinical problem
  • plausibility and feasibility of the design
  • colleagues you will work with
  • resources you can muster to address the question, and
  • contingencies that emerge as you conduct the trial

• **Competing considerations:**
  • what you want to do and what is possible to do
  • ability to measure the variables and collect and analyze the data from your proposed population

# Additional Information and Resources


Developing Your Research Question

Summary of Key Points

- Your research question is the foundation of your study
- Must be an answerable question at the intersection of what is/isn’t known
- Use PICO (or PICOT) framework to specify patients/population, intervention/exposure, comparison and observations
- You must be able to answer the research question with the team and resources available to you
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Questions?

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