

Assisting Trainees in the Research Process

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What is research?

- Research is a structured inquiry that utilizes acceptable scientific methodology to solve problems and creates new generally applicable knowledge.
- Scientific research is systematic, controlled, empirical, and critical investigation of natural phenomena guided by theory and hypotheses about the presumed relations among such phenomena.

Why do research?

- It contributes to the accumulating knowledge of humankind.
- Research is needed for the growth and stability of a discipline.

What's the program director's role in the research process?

Mentoring is a “helping”, guiding, encouraging relationship.

- Mentors can be most helpful by engaging in the following:
 - ◆ Listening to trainee's ideas about research interests
 - ◆ Asking questions about trainee's research ideas

What's the program director's role in the research process?

- Mentors can be most helpful by engaging in the following:
 - ◆ Helping the trainee to identify research questions
 - ◆ Helping the trainee to avoid pitfalls
 - ◆ Helping the trainee to understand and know the steps involved in conducting research

What's the program director's role in the research process?

- Mentors can be most helpful by engaging in the following:
 - ◆ Making sure that IRB approval has been requested and secured before launching the study
 - ◆ Being available
 - ◆ Helping establish dates and “timelines”
 - ◆ Encouraging publication of research

Research Question/Research Idea or Topic

- How do I generate a research question?
 - ◆ Sources:
 - ★ From my own clinical experiences
 - ★ From the literature
 - ★ From my own interests/inquisitiveness
 - ★ From conversations with colleagues or discussions with others
 - ★ From medical presentations
 - ★ From cases

Research Question/Research Idea or Topic

◆ Considerations:

- ★ How much evidence is there already in support of my question or hypothesis
- ★ Select a question that is of interest/generates excitement
- ★ Select a question that counts for something
- ★ Select a question that is publishable

Research Question/Research Idea or Topic

- ◆ Characteristics of a Good Research Question (Cummings, et al, 1988):
 - ★ Feasible
 - ★ Interesting
 - ★ Novel
 - ★ Ethical
 - ★ Relevant

Framing the Research Question

- Hypothesis: Statement of difference
- Null Hypothesis: Statement of no difference

Review of Literature

- Why engage in a Review of Literature?
 - ◆ Prevents “re-inventing the wheel” (It is okay to borrow from what has already been done)
 - ◆ Helps to identify evidence of support/or non-support of your hypothesis
 - ◆ May discover a methodology that you believe is worthy of duplicating

Review of Literature

- Selection of Literature (articles, books, videos)
 - ◆ Select broadly
 - ◆ Select material published within the past 5 years
 - ◆ Search for “closeness” or similar to your own Research Question
 - ◆ Search for studies that show support of your Research Question

Review of Literature

- Writing the Review of Literature
 - ◆ “Funnel Concept” (From the non-specific to the specific)
 - ★ Begin by mentioning studies that are related but not necessarily specific
 - ★ Describe the article/study: “In 1995, Bell conducted a study involving 50 female students who were enrolled at Ohio University. The results from the study showed..... Similarly, Fraser (1997) examined 40 females at The Ohio State University and found.....
 - ★ Only mention those things that are most critical
 - ★ Be brief in describing each study

Methodology

- *****Danger Zone*****
- Provides the “Road Map” to collecting information
- “How am I going to approach generating information regarding my hypothesis?”
 - ◆ WHO-will comprise the Sample?
 - ◆ WHEN-will data be collected?
 - ◆ HOW-will data/information be collected?
 - ★ Charts
 - ★ Instrument administered
 - ★ Meds administered

Methodology

- ◆ WHAT-will be collected?
- ◆ HOW-will the data be organized, manipulated, subjected to tests?
- ◆ Statistics
- ◆ Describe in detail your approach (Methodology)
 - ★ Careful attention to details
 - ★ Be specific
 - ★ Think through the process of data collection

Methodology

- In your thinking, try to account for intervening variables that cause variability (uncontrolled variability)
 - ★ Inconsistent administration of treatment/administration of an instrument/drugs
 - ★ Dissimilarity of patients/subjects
 - ★ Previous treatments
 - ★ ****Once the study is “launched”, adjustments may create contamination of results, ethical issues, and waste

Methodology

- Be honest in your drafting of Results about what you encountered that was unanticipated
- The “hallmark” of a great Methodology is the degree to which it can be replicated

Budget

- Consider all cost that might be incurred:
 - ◆ Payment to subjects
 - ◆ Payment to those assisting in gathering data, analyzing data
 - ◆ Payment for clerical assistance
 - ◆ Mailing/stamps
 - ◆ Equipment Purchases

Budget

- (cont.)
 - ◆ Printing/copying
 - ◆ Travel

IRB Proposal

- Research Question
 - Brief Summary of Literature
 - Methodology
 - Consent Form (if applicable)
 - Significance of the study
- ◆ Do not “launch” the study until IRB approval is provided

Conduct the Study

- Train those who will collect the data/administer the instrument/meds
- Monitor for consistency
- Pay close attention to the Methodology

Analyze the Data

- Take good notes
- Let your data do the talking
- Try to be detached

The Results of the Study

- Report the findings
- Did the study's findings support the hypothesis or the null hypothesis?

Conclusions

- Report agreement or disagreement with previous studies
- Recommendations regarding the use of your findings
- Recommendations regarding future research

References/Sources of Literature

- Books, Articles, Tapes