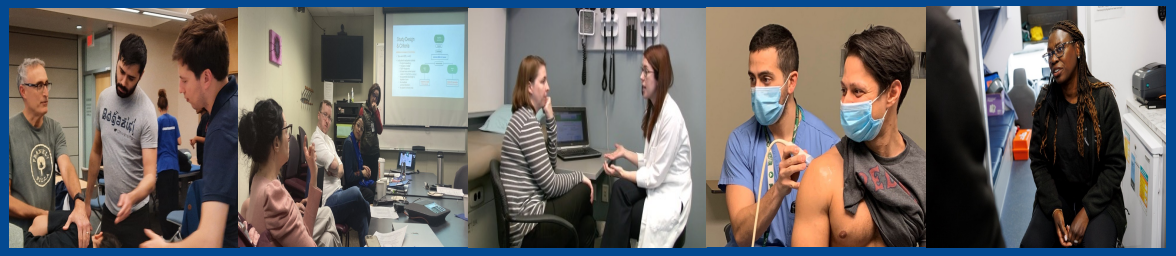
Qualitative Versus Quantitative Methods

M. Diane McKee, MD, MS
Philip Day, PhD
Scott Hebert, MS

UMass Memorial Health

UMass Chan MEDICAL SCHOOL



Celebrating 50 Years of
UMass Family Medicine
50 FAMILY MEDICINE PROUD!
Educating the next generation of clinicians to serve all communities.

Objectives

1. Describe approaches to align scholarship goals with appropriate evaluation methods;

2. Describe the benefits and limitations of qualitative and quantitative methods;

3. Identify departmental and institutional resources for conducting scholarship

OVERVIEW OF QUANTITATIVE AND QUALITATIVE APPROACHES

Qualitative Inquiry

- Can be at odds with worldview of biomedicine - we are trained to think mechanistically and use deductive reasoning
- Explores social interactions and their meaning
- Offers insight into social, emotional, and experiential phenomena
- Role of “bias” very different than in quantitative studies

Qualitative Approaches

- Data is words or images
- Aim: complete detailed description
- Data is rich, contextualized
- Often used for initial exploration
- Design emerges as study unfolds
- Researcher is the data gathering tool
- Researcher is immersed in the data
- Smaller samples

Quantitative Approaches

- Data in form of numbers/statistics
- Aim: count items, statistical tests of inference
  - representative sample
  - larger samples
- Researcher knows clearly in advance what she is looking for
- All design decisions made before data is collected
- Researcher uses instruments (surveys, chart review tool, existing data) to collect uniform quantifiable data
- Researcher tends to remain objectively separated from the subject matter

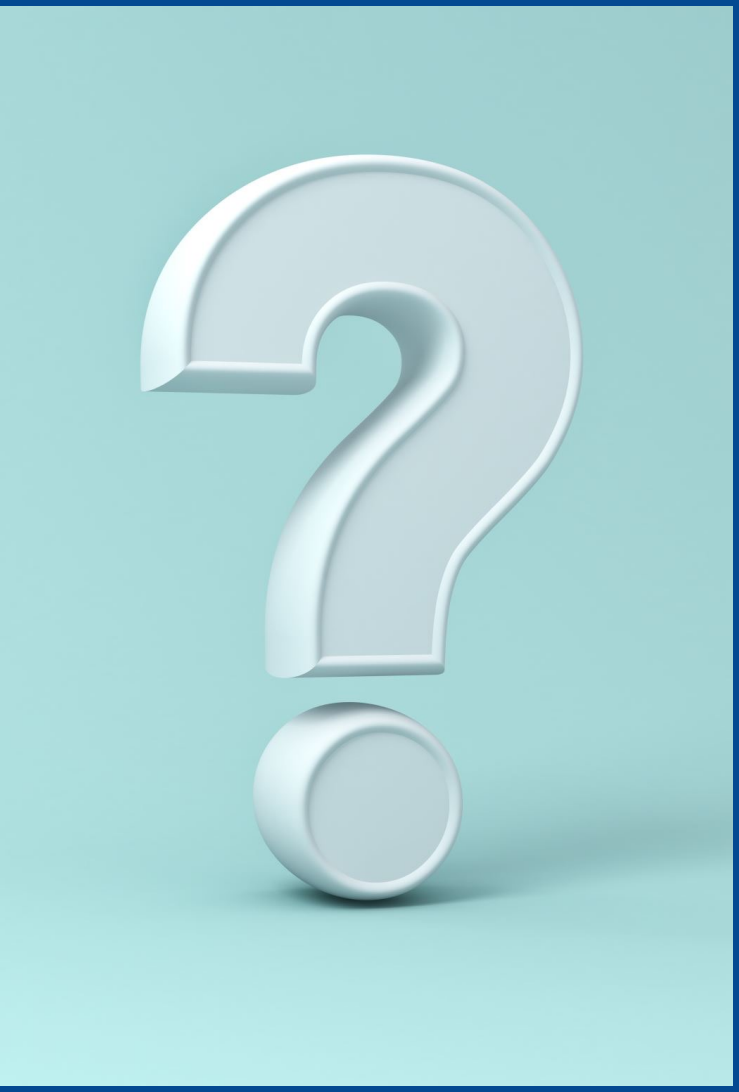
FORMULATING THE RESEARCH QUESTION

Observation

Study

Question

Answer



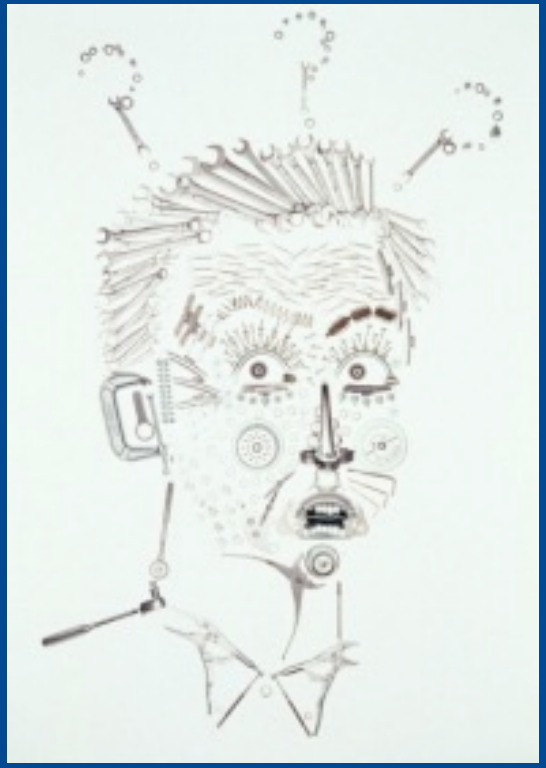
Preliminary Thoughts

- The research question is what you are attempting to answer or address
  - How is X related to Y?
  - Why do X patients have higher levels of Y than Z patients?
  - Is there a better way to do X based on (observed) Y?
  - What is it like to be/do/experience X?
- It is not the method that you will use or
- The expected outcome/contribution to the field

Origins of a research question

Origins of a research question

A research question defines, describes, and delimits the phenomenon you want to study



Source of inspiration:

- Build on experience
- Review of published literature
- Skeptical, doubting, questioning attitude
- Creativity
- Observation
- Teaching
- New technology

Practice

Review the following scenario and draft (2) research questions, one quantitative and one qualitative.

- With successful vaccination, cervical cancer caused by HPV can be prevented. Even though approved for adolescents of any gender, upon reviewing clinic records you notice that only 35% of male patients are vaccinated, compared to 70% of female patients.

QUESTION REVIEW

Developing THE RESEARCH QUESTION

DEVELOPING THE RESEARCH QUESTION

- The challenge in searching for a research question is the difficulty of finding an important one that can be transformed into a feasible and valid study plan
  - Important vs. interesting
- Uncertainty about something in the population that the investigator seeks to resolve through measurement among his/her study subjects
  - Types of measurement

DEVELOPING THE RESEARCH QUESTION

Reviewing the literature helps you move from interesting to important

- "Future research should…"
- Limitations
- Important differences in study population

Developing a good research question is an *iterative process* including consultations, familiarity with the literature, and pilot testing recruitment and measurement strategies

- Why iterative?

FROM QUESTION TO METHOD SELECTION

From Question to Method

Answering the research question

- Quantitative: describes trends or the relationship between variables
- Qualitative: Detailed exploration of phenomena that expands understanding

From Question to Method

Purpose of the research

- Quantitative: be specific and narrow
  - Seek to understand measurable and/or observable variables
- Qualitative: be general and broad
  - Seek to understand participants' experiences

From Question to Method

Data Collection

- Quantitative: surveys, validated instruments; large number of participants
- Qualitative: open-ended questions, interviews and focus groups; selective group of individuals with direct experience

From Question to Method

Analyzing/Interpreting the Data

- Quantitative: statistical analysis; compare to existing outcomes in the literature
- Qualitative: iterative textual analysis; build from specific experiences to general meaning

Mixed Methods

- Careful selection of the right method for the question
- Triangulation of methods
- Qualitative not always subservient to quantitative methods

Methods Decisions

- Data collection strategy
- Who should analyze the data
- Analysis plan
- Potential sources of bias

Focus Groups

- Group discussion
- Multiple groups ideal
- Ideally homogenous strangers
- Takes advantage of group discussion

In-depth Interviews

- Open-ended questions
- Focus on personal stories, lived experience
- Sample size depends on data saturation
- Appropriate for sensitive or embarrassing topics

Qualitative Analysis

- A systematic process
- Bias is acknowledged, accounted for
- Text coded using pre-determined template or developed upon reading of the data
- Hypotheses generated and tested by reviewing the data

Other considerations

- Qualitative
  - Time to prepare guide and collect data << time for analysis
- Quantitative
  - Time to analyze<< time to develop high quality instrument

Group Discussion

- Align (1) quantitative research question with specific methods
- Align (1) qualitative research question with specific methods

FMCH Resources

- Qualitative
  - Numerous faculty with qualitative or mixed methods expertise
  - Limited research assistant/coordinator staffing
  - Qualitative software?

FMCH Resources

- Quantitative
  - Survey development
  - Data base development
  - EHR data extraction
    - OCI analyst
    - Research informatics ($)
  - Data management
  - Data analysis

Getting Started

- Consultation
  - Honing research question
  - Research or evaluation design
  - IRB
  - Librarian – Andrew Haggarty
- Resource allocation

Example #1

- Analyzing telehealth usage in/on the Cape and Islands according to rurality
- Group of medical students including AHEC and Huppert scholar(s)
- Process

Example #2

- What specific biopsychosocial needs do adults over the age of 80 have?
- Stacy Potts, Philip Day, and two groups of medical student summer researchers
- Process

Questions?

- Thank you!