By the completion of this presentation, the participant will be able to:

- Describe three characteristics of a descriptive study
- Explain two components of a correlational study
- Discuss the major strengths and weaknesses for one type of descriptive study

For more detailed information, please consult Polit and Beck’s “Nursing Research: Generating and Assessing Evidence for Nursing Practice.”
Research Design Blueprint

- Action plan for conducting research study
  - Techniques and procedures
  - Reduces researcher bias
  - Controls for extraneous variables
  - Controls for other sources of variances

- Produces credible, high quality research findings
  - Clear and detailed
  - Understand study aim & purpose
  - How research was conducted
  - Evaluate the research process
  - Reproduce research study

Robust Research Design

Considers the following:
- Environment
- Equivalence
- Treatment
- Measurement
- Extraneous variables
- Data analysis

Research Design

<table>
<thead>
<tr>
<th>APPROACH</th>
<th>TYPES</th>
<th>DESIGN</th>
</tr>
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<tbody>
<tr>
<td>QUALITATIVE (discovers)</td>
<td>PHENOMENOLOGICAL</td>
<td>See Module 8</td>
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<td>GROUNDED THEORY</td>
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<td>ETHNOGRAPHIC</td>
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<td>PHILOSOPHICAL</td>
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<tr>
<td>QUALITATIVE or QUANTITATIVE (describes)</td>
<td>CORRELATIONAL</td>
<td>Nonexperimental (Observational)</td>
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<tr>
<td></td>
<td>DESCRIPTIVE</td>
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</tr>
<tr>
<td>QUANTITATIVE (explains; cause &amp; effect)</td>
<td>EXPERIMENTAL</td>
<td>Experimental</td>
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<tr>
<td></td>
<td>QUASIXPERIMENTAL</td>
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QUANTITATIVE RESEARCH CHARACTERISTICS

PHILOSOPHY
• Hard Science
• Concise and limited focus
• Reductionistic
• Objective
• Logistic and Deductive Reasoning

TECHNIQUES
• New Knowledge
• Tests Theory
• Explains & Predicts
• Uses Instruments
• Numbers
• Statistical Analysis
• Generalization

TERMINOLOGY

<table>
<thead>
<tr>
<th>RESEARCH APPROACH</th>
<th>SOCIAL SCIENCE TERM</th>
<th>MEDICAL RESEARCH TERM</th>
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<tr>
<td>QUANTITATIVE</td>
<td>EXPERIMENTAL</td>
<td>Randomized Control Trial; Randomized Clinical Trial (RCT)</td>
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<td>QUASI-EXPERIMENTAL</td>
<td>Controlled Trial: Controlled Trial without randomization</td>
</tr>
<tr>
<td></td>
<td>NONEXPERIMENTAL: DESCRIPTIVE CORRELATIONAL RETROSPECTIVE PROSPECTIVE</td>
<td>Observational Studies Case-Series Case-Control Cross-Sectional Cohort Prevalence Incidence</td>
</tr>
</tbody>
</table>
Nonexperimental Quantitative Research

Descriptive Design
• Describes phenomena in real life situations that does not manipulate variables
• Examines characteristics of a single sample in order to generalize to a single population
• Describes, groups, and classifies concepts
• Generates new knowledge when little or no knowledge is available
• Develops models & theories

Descriptive Research Design

Case Study
• In-depth analysis and systematic description of one patient or one group of similar patients
• No manipulation of variables
• Common in nursing 40-50 years ago, but are now less frequent
• Can be used:
  – as evidence to support or invalidate theories
  – to generate new hypotheses for testing
  – to demonstrate effectiveness of therapeutic techniques

Case Study: Advantages
• Wealth of detail
• Wide variety of information
• Clues & ideas for further research
• Understand a topic, concept, issue in general in order to study it in greater detail
### Descriptive Research Design

#### Case Study: Disadvantages
- Hard to control
- Do well and easy to do badly
- Tell if it has been done badly
- Conclusions only apply the one case
- Does not create conclusions beyond the one case.
- Subjective: Researcher decides
  - What to look for or ignore
  - What to record or not record
  - What is important or not
  - What clues to follow or drop
- One is often unable to determine if researcher examined
  - The most important topic, clues
  - What was eliminated or not
- Disadvantages explain why case studies are now out of vogue

#### Case-Series Design
- Simple descriptive account of interesting characteristics seen in a group of people
  - Short time period
  - Important descriptive role as a precursor to designing other research studies to:
    - Evaluate causes
    - Explanations of observations
    - Acknowledges observed characteristic bias

#### Cross-Sectional Design
- Also called Survey, Prevalence, Incidence, Epidemiologic Studies
- Analyze data collected on a group at one time period
  - Subject and information obtained in a short time frame
  - “What is happening”
- Most common research design in nursing
- Diagnose or stage a disease
- Usefulness of new or current diagnostic procedures
- Establishing norms
- Gain insight into a topic or learn people’s perceptions (surveys)

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Nonexperimental Quantitative Research

Descriptive Correlational Design
- First: Describes variables
- Second: Examines relationships amongst these variables
  - Does not infer cause-and-effect relationships
- Facilitates the identification of many interrelationships in a particular situation
  - Situation may have occurred or is currently occurring
  - No attempt to control or manipulate the situation

Correlational Design
- Primary purpose is the examination of relationships
  - Examine relationships between 2 or more variables
  - No manipulation of variables
- Determine if a relationship exists between variables
  - None, weak, moderate, or strong
- Determine type of relationship between variables
  - Positive relationship or negative relationship

Case-Control Design
- Retrospective in nature
  - Presents phenomenon linked to past phenomenon: “What has happened?”
  - Looking back in time to detect causes or risk factors for the presence or absence of an outcome
- Example: Case-Control Studies
  - Cigarette smoking ▶ lung cancer
  - People with lung cancer = cases
  - People without lung cancer = controls
  - Differences between groups = smoking
Correlational Research Design

One Group Designs: Single Group

- Descriptive design re: no random selection of subjects
  - Convenience or volunteer sample
- Examine characteristics of a single group
- Natural setting
- Measurements made about the group
- Subjects serve as own control
  - Measure group X1, X2, or more
  - Still one group

EXAMPLE:

- Satisfaction surveys one group over 12 month time period
- Use the resulting descriptions to draw conclusions about that groups’ satisfaction scores

Correlational Research Design

One Group Designs: Time Dimension

Interrupted Time Series

- Involves more than one pre and post test measurement
  - Equal number of measurements before and after the intervention
  - The time periods must be constant and equal

Longitudinal Time Series

- Follows one group to examine and measure changes in same subjects over an extended time period

Correlational Research Design

One Group Designs: Time Dimension

Strengths

- Allows examination of sequences and patterns of change over both
  - single time period
  - Interrupted time periods

Weaknesses

- Multiple measurements over an extended period
- Subject drop out
  - Threatens instruments validity & reliability
- Distorted data
  - Subject keeps a copy of the survey and duplicated responses
- Hawthorne effect
Correlational Research Design

One Group Design: Summary

- Correlational
- No random assignment
- Characteristics of single sample
- Pre test/post test
- Time series or multi-variant
- Longitudinal

Nonexperimental Quantitative Research

Comparative Descriptive Design

- Describes variables & examines differences in 2 or more groups
  - Occurs naturally in a setting
  - No manipulation of variables
- Results obtained from the final analysis are frequently not generalized to a population

Multiple Group Designs

- Group comparative designs
  - Simple 2 group design
  - Post-test design
  - Pre/Post Test Design
  - Time Series Design

ADVANTAGES

- Comparison of group on dependent variables
- Examines differences between groups
- Examines differences within groups
  - Are they coherent groups?
  - Are there true differences between groups?
  - Did change occur re: multiple variables within groups?
Correlational Research Design

Multiple Group Designs:
- Multiple Group Time Series

Memory loss in the Elderly
- Groups: (1) Ginkgo Bilbo (2) Plavix, & (3) No medication (control)
- Measure via memory test (Pre-test)
- Low dose & high dose of medications
- Measure via memory test (Post-test)
- Repeat
- Which group demonstrates the best memory scores

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- Which group demonstrates the best memory scores

Correlational Research Design

Multiple Group Designs:
- Multiple Group Time Series

• Compare 2 or > groups on natural phenomenon
• Sometimes called descriptive studies
• Sometimes called inferential studies
• Concerns are raised when comparing naturally occurring phenomenon in multiple groups
  ▪ May be better addressed by using quasi-experimental procedures that are inferential, as opposed to correlational procedures

Summary & Conclusions

Descriptive Correlational Design
- Philosophical commonalities
- Lack of variable manipulation & variable control
  ▪ Can result in possible bias – see Module 10!
- Partner with seasoned researchers and statisticians
  ▪ Develop competencies needed to conduct quality research studies
  ▪ Produce credible research findings
  ▪ Impact patient care
References to Consider


For more information please contact: Nursing.Research@kp.org
http://nursingpathways.kp.org/scal/research/index.html