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

- Outline the differences between structured and unstructured data collection methods
- Explain two criteria for selecting a data collecting technique
- Describe the major strengths and weaknesses for one type of data collection technique
Data Collection Plan

- Well designed data collection
  - Enhance the quality of the data
  - Ensure the usefulness of study evidence
- Poor quality data undermines study results

Garbage In = Garbage Out

“A prime consideration in selecting a data collection method should be the conceptual congruence between the constructs of interest & the method, and the quality of data that method yields” (Polit & Beck, 2008)

Data Collection Methods

- Most Common Approaches used in Nursing Research
  - Self Reports
  - Observation
  - Biophysiologic Measures

Types of Observation Data

- Scientific Structured Observation
  - Molar
  - Molecular
- Unscientific Unstructured Observation
  - Unknown
  - Participant

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Data Collection Techniques

- **Structured**
  - Quantitative research studies
  - Data collected from study participants
    - Response categories are specified *in advance*
      - Self-administered questionnaires
      - Interviews
      - Observations

Scientific Observation

- Different than ordinary observations during daily life
  - Objective
  - Systematic
  - Examines specific behaviors, activities, conditions, & characteristics
    - Identify what you want to observe *before* you make the observation

Structured Observation

- Molar Approach: observe large units of behavior & treat them as a whole
  - Combining several verbal and nonverbal behaviors to determine one global behavior
  - Susceptible to observer error re: ambiguity in observations
Structured Observation

Molecular Approach
- Small, specific behaviors and/or verbal phrases are the observational units
  - Reduces behavioral observations to concrete & specific elements
    - Action, gesture, phase = separate entity
  - May fail to understand how smaller elements contribute to the whole pattern

Data Collection Techniques

- Unstructured
  - Most qualitative research studies
  - Data collected from study participants
    - Interview
      - Participant asked questions without a predetermined plan regarding the content or flow of interview information
    - Observation
      - No formal, predetermined plan for observing, counting, naming, or recording the information

Unstructured Observation

- Unknown: concealed observation
  - Real-world setting data
    - One way mirrors, hidden cameras/people
    - Behaviors might change if aware of researcher
  - Unethical when done without consent
- Participant: social interaction
  - Participation in the observation of a group or culture
Interviews

Unstructured Interviews
Grand Tour Questions: Broad, open-ended question that leads to more focused questions guided by responses
Descriptive Questions: Participants describe experiences in own words
Contrast Questions: Differences between the meaning of terms & symbols

Focused or Semi-structured Interviews
• Pre-prepared written topic guide
  – List of areas or questions to be covered
  • May have follow-up or probing questions
– Participants speak to the listed topics freely and in their own words

Structured Interviews
• Instrument = interview schedule
  – Questions asked orally via face-to-face or telephone interviews
• Various degrees of structure
  – Open-ended vs. closed-ended questions:
    • Open: “What prevented you from making the appointment?”

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Interviews

**Closed Ended Questions-Examples**

**Rating/Bipolar**

On a 0-10 scale (0=extremely dissatisfied, 10=extremely satisfied), how satisfied were you with your clinic visit today?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>

**Checklists**

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experienced verbal abuse at work in the last...</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced verbal abuse at home in the last...</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Check a nursing research text for more examples*

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Questionnaires

**Self Administered Questionnaires (SAG)**

- Open and/or closed-ended questions distributed via in person, mail, e-mail, or web
- **Advantages**
  - Reduced time and cost versus interviewing
  - Anonymous
  - Less interviewer bias
  - Easy to analyze
- **Disadvantages**
  - Low response rates
  - Survey fatigue: too long or too many given

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Scales

- Nurse researchers often use pre-existing scales that are valid and reliable, rather than develop their own
  - Measures degrees of something
  - Produces a numeric score
  - Examples: Likert, Visual Analogue
- Although some scales and instruments are either free or in the public domain, many must be purchased from the publisher or developer and/or require the author’s permission to use.
Scales

Semantic Differential (SD) Scales
- Used to measure psychosocial traits
- Rate a concept on a series of bipolar adjectives
  - Effective/ineffective; active/passive, good/bad
- Advantages: flexible & easy to construct
- Disadvantages: Adjective pairs can be inappropriately linked to the concepts

Visual Analogue Scale (VAS)
- Respondent places an X along a 100mm line, from which a 1 to 100 score can be obtained

Delphi Technique
- Survey technique for obtaining expert panel opinion & judgment on a specific topic or concern
- Individual experts are asked questions in a series of survey rounds
  - Summary data circulated between rounds
  - Final goal: Expert consensus; forecasting
    - Example: Rand Corporation surveys
Existing Databases

• Many healthcare institutions have pre-existing databases with patient outcome measures and nurse sensitive indicators
  – Quality Improvement & Risk Management
  – CalNOC (Collaborative Alliance for Nursing Outcomes)
    • Fall, Pressure Ulcers, Restraints
• Economical method of measuring trends
• Quality of data entry and database maintenance has been questioned

Physiologic Measures

• Increased use of measures
  – Assess biophysiologic status of patients
  – Evaluate clinical outcomes

Types of Measures

– In vivo: in or on living organisms
  • Body temp, BP, HR, Oxygen Saturation
– In vitro: outside living organisms
  • Serum lab values

Advantages

• Accurate & precise
• Objective
• Valid measures of targeted variables
  – Thermometer always measures temperature
• Available equipment in most healthcare settings

Disadvantages

• Measuring tool might affect the variable
  – Arterial line might block artery & alter pressure
• Artifact interference
• Possible Injury
Data Collection: Summary

- Available Resources
- Tool Reputation, Availability & Familiarity
- Tool Validity & Reliability
- Norms & Comparability
- Population Appropriateness
- Administration Issues
- Ethics – just because you can do doesn’t mean you should do it!

Conclusions

- When selecting data collection methods & instruments consider the following:
  - Is the technique appropriate to the research question & study design?
  - Do you understand the practical, technical, financial, and ethical issues?

- Quality data collection methods ensure that data results are appropriate, accurate, robust, and MEANINGFUL

References to Consider


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