

Nursing Research Series

Essentials of Science: Methods, Appraisal and Utilization

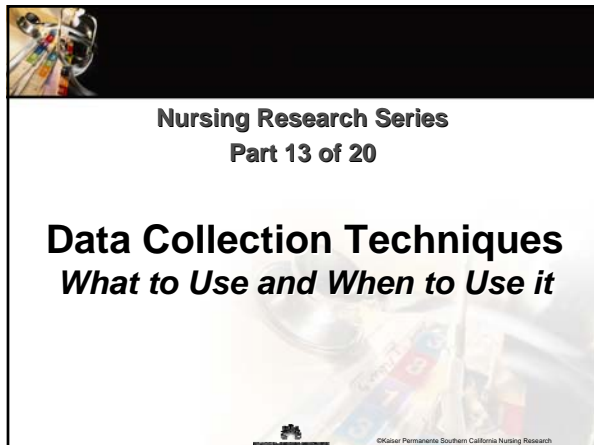


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*Essentials of Science:
Methods, Appraisal and Utilization*


 Southern California Nursing Research

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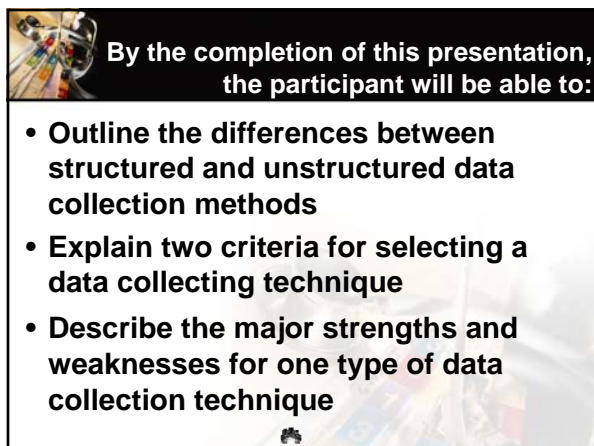


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Part 13 of 20

Data Collection Techniques
What to Use and When to Use it


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**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

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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 Observation
 - Molar
 - Molecular
- Unscientific 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

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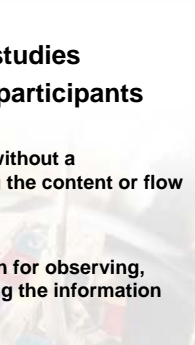
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Structured Observation


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

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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



Interviews

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





Interviews

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? 0 1 2 3 4 5 6 7 8 9 10			
	Question: Have you...	3 months	6 months	
Checklists	Experienced verbal abuse at work in the last...	1	2	3
	Experienced verbal abuse at home in the last...	1	2	3

Check a nursing research text for more examples

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

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.


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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



Scales

Visual Analogue Scale (VAS)

Visual Analog (vertical or horizontal line)	Always Happy — X — Always Depressed
Always Happy X Always Depressed	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

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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




Physiologic Measures

- | <u>Advantages</u> | <u>Disadvantages</u> |
|--|---|
| <ul style="list-style-type: none">• Accurate & precise• Objective• Valid measures of targeted variables<ul style="list-style-type: none">– Thermometer always measures temperature• Available equipment in most healthcare settings | <ul style="list-style-type: none">• Measuring tool might affect the variable<ul style="list-style-type: none">– Arterial line might block artery & alter pressure• Artifact interference• Possible Injury |

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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!

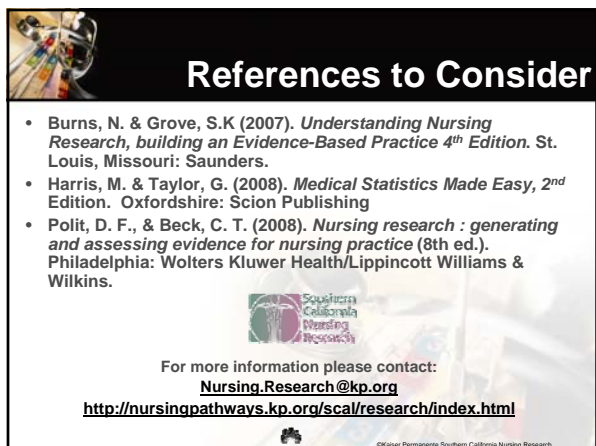
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Conclusions


- 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**

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References to Consider

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