Methods of Data Collection

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Outlines

- Data Sources
- Self-Reported Methods
- Observational Methods
- Biophysiologic Methods
- Implementing the Data Collection Plan
Data Collection Process

- Questions related data collection
  - What data will be collected
  - How will the data be collected
  - Who will collect the data
  - Where will the data be collected
  - When will the data be collected

- Factors affecting data collection method
  - Research question
  - Hypotheses
  - The design
  - Amount of knowledge about the variable of interest
Data Sources

Existing Data

- Historical Research
  - Past written records: periodicals, diaries, letters, newspapers, legal document, etc
  - Authenticity and accuracy are they key factors
- Secondary analysis
  - Use data gathered in a previous study to answer new research questions
  - Can be done in both quantitative and qualitative research
  - Nursing records are a rich source of secondary analysis
Types of Data Collection Methods

- Self-report
  - Participants response to questions posed by researcher

- Observation
  - Researcher observes participants’ behavior, characteristics, etc

- Biophysiologic measure
  - Lab. tests, BP, Wt,... etc
Dimensions of Data Collection Methods

- **Structures**
  - Same info. is gathered for all participants
  - Minimum structure revealed more naturalistic data

- **Quantifiability**
  - Data are subject to statistical analysis

- **Obtrusiveness**
  - Degree to which participants are aware of the study

- **Objectivity**
  - Quantitative research seeks objective data and objective data collection methods
Self-Report Methods

- Ask participants to report their own experience
- Can be ranged from tightly structured to loosely structured
- Unstructured and semi-structured techniques
  - Offer flexibility in gathering info.
  - No specific set of questions that must be asked in a special order
  - Participants are encouraged to tell their stories in naturalistic, narrative fashion
  - Very suitable method when the researcher does not have a clear idea of what he does not know
Types of Unstructured Self-Reports

- Completely unstructured interviews
  - No preconceived view of the specific content
  - The aim is to elucidate the respondents' perception without imposing of researcher’s views
  - Started with grand tour question
- Focused interview
  - List of topic covered by the interview
  - Encourage conversation
  - Use topic guide to ensure that all the question areas are covered
Types of Unstructured Self-Reports

- **Focus group interview**
  - Interview with groups (5–15 persons) simultaneously
  - The interviewer usually called “Moderator”
  - Limitations: some people are not comfortable to share their experience in public

- **Life histories**
  - Narrative self-disclosure about life experiences

- **Critical incidents technique**
  - Gather data about human behavior by studying specific incidents relating to behavior under investigation

- **Dairies**
  - Researcher ask participants to write daily log concerning some aspect of their life
Structured Self-Report Techniques

- Appropriate when the researcher knows in advance exactly what he is needs to know
- Usually used in quantitative research
- Instrument is usually used to collect the data
- Interview schedule: questions are asked face-to-face or by phone
- Questionnaire: respondents complete the instrument themselves (paper-and-pencil format)
Structured Self-Report Techniques

- Question Form
  - Close-ended or fixed-alternative questions
    - Response alternatives are designed by the researcher
    - Difficult to construct and time consuming process
    - Easy to administer and analyze
    - More efficient
    - May neglect some aspect related to topic of interest
  - Open-ended question
    - Allow respondents to respond to the question in their own words
    - Provide richer info.
    - Some respondents may dislike to be forced for
Structured Self-Report Techniques

- **Question Form**
  - Demographic questions
    - Age, gender, educational level, religion, income, etc
  - Contingency Questions
    - Determine whether respondent should answer certain questions is contingent on their answer to other questions
  - Filler questions
    - Questions that have no direct relationship with the purpose of the study
Interview vs. Questionnaires

- **Questionnaires**
  - Much less costly and require less time
  - Offer the possibility to complete anonymity
  - No bias in the responses

- **Interview**
  - Response rate is higher
  - Some people can’t fill questionnaires
  - Less prone to misinterpretations
  - Produce additional info. through the observation
Special Forms of Structured Self–Reports

- Composite scales
  - Designed to assign a numeric score to participants with respect to aspect being measured
  - **Likert Scale**: example of composite scale
    - Composed of declarative statement and participant is asked to indicate the degree which they degree or disagree about it
    - Statement are usually positively and negatively worded
    - Sometimes are called “Summated rating scale”
  - **Semantic Differential (SD)**
    - Response against given concept with bipolar adjectives (e.g., good/bad, strong/weak etc)
  - **Visual Analog Scale (VAS)**
    - Used to measure clinical experiences such as pain, dyspnea, etc
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<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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*Items marked with an asterisk have reversed wording. The numbers on items with reversed wording should be reversed before summing the responses for the ten items. For example, on item 3, “strongly agree” becomes 4, “agree” becomes 3, “disagree” becomes 2, and “strongly disagree” becomes 1.

Semantic Differential (SD)

Semantic scale

Good ———— Bad
Extremely  Quite  Slightly  Neither  Slightly  Quite  Extremely

Semantic Differential Scale

important ———— unimportant
expensive ———— inexpensive
useful ———— useless
strong ———— weak
quick ———— slow
Example:

0  No Pain

10  Worst Possible Pain

100 mm

Electrostimulation

3 weeks

Extreme pain
Scales permit efficient quantification
Good for group-level comparisons
Can be administered orally or written
Limitations:
- Social desirability response set bias
- Extreme response set bias
- Acquiescence response set bias (yea-sayers or nay-sayers), researcher may use counterbalancing strategy
Special Forms of Structured Self–Reports

- **Vignettes:**
  - Brief descriptions of events or situation to which respondents are asked to act
  - Can be written situation or videotaped
  - May be followed with open–ended or closed–ended questions

- **Projective Techniques:**
  - Verbal, drawing, photography, etc

- **Q Sorts:**
  - Participants are asked to sort certain number of cards according to specific dimension
Advantages:
- Permit gathering of info. that is not possible to be gathered by other means
- Permit gathering of data that already occurred in the past or in future
- Feelings, values, opinion, attitudes, etc are best known by the self-report
Evaluation of Self-Report Methods

- **Disadvantages:**
  - The issue of validity and accuracy
  - Unstructured are extremely time consuming
  - Unstructured are not appropriate for capturing the measurable aspects of a phenomenon e.g., incidence, prevalence, magnitude, etc
Critiquing Self-Reports

- What was the data collection method used in the study?
- How the instrument was administered
- What was the response rate?
- Was the data collection method appropriate to the research questions and design?
Observational Methods

- Many phenomena are more suitable for observation than self-report (e.g., sleep-wake state, environmental conditions, etc).
- Observation is focused and specific.
- Concealment: to prevent reactivity.
- Duration may extend from few seconds to years.
- Can be recorded by many means.
Unstructured Observational Methods

- Used mainly by the qualitative research.
- Sometimes called naturalistic observation
- **Participant observation**: observer occupying a participating role
- The observer–participant role: participation–nonparticipation continuum
- Four phase strategy
  - Primarily observation
  - Primarily observation with some participation
  - Primarily participation with some observation
  - Reflective observation
Gathering Unstructured Observational Data

- The physical setting: where questions
- The participants: who questions
- Activities; what questions
- Frequency and duration of activities: when questions
- Process: how questions
- Outcomes: why questions
Gathering Unstructured Observational Data

- Single positioning
- Multiple positioning
- Mobile positioning
Recording Unstructured Observational Data

- **A log**: record of events and conversation
- **Field notes**: more broader include the observer’s understanding and synthesis of events
  - **Observational notes**: objective description of events
  - **Theoretical notes**: interpretive attempts
  - **Methodologic notes**: instructions or reminders about how sequent observations will be made
  - **Personal note**: comments by the observes about own feelings
Structured Observational Methods

- **Categories and Checklists:**
  - List all possible behavior or activities

- **Rating Scales:**
  - Rate some phenomenon in terms of points
  - Used to reflect the intensity and magnitude dimension

- **Observational sampling:**
  - Time sampling
  - Event sampling
Evaluation of Observational Methods

Advantages:
- Many nursing problems are better suited to an observational approach than self-report.
- Provide deep and wide variety of info.
- Human is the tool of measurement.

Disadvantages:
- Possible ethical difficulties
- Reactivity
- Distortion and biases
  - Emotions
  - Personal interest
  - Anticipation of what is to be observed
  - Hasty decision
Critiquing Observational Methods

- What was the method used in the study?
- Is the method appropriate to the nature of the study (structural or unstructural)?
- How did the researcher record his observation?
- Was the observation focused and specific?
- What steps were taken to minimize observer biases?
Biophysiologic Measures

- Use of biophysiologic measures in nursing research:
  - Study of biophysiologic processes
  - Effect of nursing intervention on human physiological process
  - Correlate physiologic functioning with health outcomes
Types of biophysiological measures

- **In vivo measures**
  - Performed within living organisms

- **In vitro measures**
  - Gathered from participants by extracting some biophysiological material from them and subjecting it to laboratory analysis
    - Chemical measures
    - Microbiologic measures
    - Histologic measures
Evaluation of Biophysiologic Measures

- **Advantages:**
  - Accurate, precise and sensitive
  - Objective
  - Participant unlikely to be able to distort measurement
  - Instruments used are valid and reliable
  - May biophysiologic measures are not expensive

- **Disadvantages:**
  - Interferences that create artifacts in biophysiologic measures
  - High degree of interaction among the major biophysiologics systems
Critiquing of Biophysiological Measures

- Was using biophysiological measure suitable to the research question?
- Was the measured used appropriately handled and measured?
- Was the proper instrument used in the study?
- Does the researcher appear to have the necessary skills?
Questions and Answers