研究方法與設計

曾月霞
臺中護專助理教授
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Types of research design

- Cross-sectional designs
  - Data are collected at a fixed point in time
  - Processes evolving over time (cohort comparison design)
    - Nursing skills among classes of 4 different academic years

Types of research design

- Longitudinal designs
  - Data are collected at more than one point in time
  - Trend studies
  - Cohort studies
    - Age-related groups (1960s vs. 1970s)
  - Cross-sequential design

Types of research design

- Retrospective designs
  - Present phenomenon is linked to other phenomena that occurred in the past
  - Relationship about smoking and lung cancer
- Prospective designs
  - Presumed causes and then goes forward in time, what will happen?
  - Need long time follow-up

How to select a research design

- Based on the amount of knowledge existing
- Appropriate to the research questions
- Other consideration
  - Ethics: "No harm!"
  - Time
  - Cost
  - others

Experiment research design

True experiment design
Quasi-experimental design

True experiment research

- A true true experiment is a scientific investigation characterized by three properties
  - Manipulation
  - Control
  - Randomization

Manipulation

- The experimenter does something to at least one group of the subjects in the study
- "Something" referred to as the experimental treatment or intervention
- The experimenter consciously varies the independent variable and observes the effect that the manipulation has on the dependent variable of interest

Control

- The experimenter introduces one or more controls over the experimental situation, including the use of a control group.
- A control group is to ensure that the groups are identical on some influencing variables, e.g., sex and age etc.
- To verify the effects being caused by the intervention (internal validity)

Randomization

- The experimenter assigns subjects to a control or experimental group on a random basis
- If subjects are placed in groups randomly, there is no systematic bias in the group with respect to attributes that may effect the dependent variable under investigation (equalizing groups)
- Random assignment to groups, not random sampling

Randomization

- Matching
  - Advantages
  - Disadvantages
- Random numbers
  - Advantages
  - Disadvantages
- Cluster randomization
  - Advantages: Reduced contamination
  - Disadvantages: Large sample size

True experiment designs

- Basic experimental designs
  - After-only design (post-test only design)
- Repeated measures design (crossover design)
  - Subjects exposure to more than one exp. treatment

Quasi-experimental design

- Lack of control or randomization
  - Nonequivalent control group design
    - Not randomly assign subjects to groups
  - Time series design
    - One group pretest-posttest design
  - Time series nonequivalent control design

Comparison of different experiment designs

- True experimental design is most powerful to test cause-and-effect relationship (internal validity), but make randomization and equal treatment within groups difficult
- Quasi-experimental design is less powerful in testing cause-and effect relationship, but is more practical and feasible

Nonexperimental research

Descriptive research design
Correlational research design
Comparative research design

Reasons for nonexperimental research

- Variables cannot be manipulated
  - Human inherent characteristics
  - Manipulation could cause harm
- Cannot conduct exp. Research
- Appropriateness of research questions
  - Descriptive studies

Descriptive research

- To observe, describe, and document aspects of a situation as it naturally occurs
- Mean, frequency, and percentage are often used

Correlational research design

- Also refer to survey research
- Understand relationships among variables
- Cannot infer causal relationships

  smoking ——— lung cancer

  smoking ⟶ lung cancer
- Correlation does not prove causation

Comparative research design

- To understand differences between groups in a natural situation
- Groups are equalized, except for with or without the independent variables
- Cannot infer causal relationship

Qualitative research design

What is Qualitative Research

- A holistic approach to questions
- The focus is on human experience
- There is a high level of researcher involvement with subjects

Types of Qualitative Research

- Phenomenology
- Grounded Theory (theory development)
- Ethnography (culture)
- Anthropology (race)

Phenomenology

- Husserl (1913) – tried to be objective, rational, and disinterested inquiry. Bracketing – suspending any belief about the reality of an object so that the thing itself, in itself, could be known.
- Heidegger (1962) – Being in the world hermeneutical – interpretative approach

One cannot bracket or separate self from the world

  - Parse (1987)

Phenomenology

- Research question – describe lived experience
  - What does it feel like to be a parent?
  - What is the living experience of hospitalization?

Phenomenology

- Sampling
  - Purposive sampling

Phenomenology

- Data analysis
  - Giorgi methodologies (descriptive phenomenology) (See page 52)
  - Van Kaam (Duquesne school; existential-phenomenological psychology)
  - Parse's approach is consistent with Giorgi's approach
  - Scientific explication: use of frequency to decide the order of categories

Grounded Theory

- Symbolic interactionism – human behavior is developed through interaction with others. Individuals are active participants in creating meaning in a situation. Focus on social interactive process between the individual and others and actions
- The purpose of Grounded Theory is to generate explanatory theories of human behavior

Grounded Theory

- Research question
  - What is the underlying processes of coping with chronic illnesses?

Grounded Theory

- Sampling
  - Purposeful sampling
    - To account for all behavioral variation within a group, diverse samples are desired to ensure the data that cover the wide ranges of behavior in various situation. (Analytic generalizability, not statistical generalizability)
  - Theoretical sampling

Grounded Theory

- Data analysis
  - See handout

Ethnography

- The culture patterns (about something, e.g., health care)
- An approach to develop concepts and understanding human behavior form insider's views.

Ethnography

- Research question
  - What is a surgical care unit like?
  - What is Taiwan Native culture?

Ethnography

- Sampling
  - Purposive sampling in order to get the BEST informants who can "tell it like it is"
  - Opportunistic sampling to get the greatest opportunities to gather the most relevant data

Ethnography

- Data collection
  - Complete observer
  - Observer-as-participant
  - Participant-as-observer
  - Complete participant

Ethnography

- Data analysis
  - Content analysis to derive patterns or themes; data coding from concrete to abstract; similar codes are groups together into categories (search for patterns)
  - Data analysis and data collection proceed simultaneously