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Data Collection Defined

- Process by which the researcher collects the information needed to answer the research question
- Task of data collection begins after a research design has been defined
- Involves gathering relevant data to answer a stated problem
- Data is observable and measurable

Source: Prinha Bhandari, Scribbr Methodology, https://tinyurl.com/y684458d

Methods and Tools

- Methods - steps or strategies

- Techniques - means of gathering data with the use of specific tools

- Instruments and Tools - measures the concept that researchers use to collect data

Source: University of Wisconsin Eau Claire Lib Guides, https://tinyurl.com/24ucxav9

Selection of Methods

- Phenomenon - any problem, issue, or topic that is chosen as the subject of an investigation
- Type of research subjects
- Type of research study - randomized control trial, cohort, case-control, and qualitative
- Size of sample and distribution of target population
- Time frame of study
- Availability of resources

Data Collection Methods

Primary- critically analyze answers to research questions

- Qualitative
    - Interviews
    - Focus Groups
    - Observation
    - Case Studies
- Quantitative
    - Correlation
    - Regression

Secondary - data previously published in journals

Source: Benedictine University LibGuides, https://tinyurl.com/2kv2adfv

Quantitative Data Collection Methods

Qualitative Data Collection Methods

Clinical Research Sampling Methods

- Target Population - whole population

- Sample Population - study population

- Sampling Types
  - Probability - all subjects have equal chance of being selected
  - Non-probability - non-equal chance of being selected

Probability Sampling Method

- **Simple Random Sampling -** whole population is accessible

- **Stratified Random Sampling -** populations are divided into smaller subgroups based on shared characteristics, and then randomly selected among these groups to form the final sample

- **Systematic Random Sampling -** subjects included in sample using a fixed interval

- **Cluster Sampling -** large population divided by geographical location into clusters

Non-Probability Sampling Method

- **Convenience Sampling** - widely used in clinical research, investigators enroll subjects according to their availability and accessibility

- **Judgmental Sampling** - subjects are selected by choice

- **Snowball sampling** – used when existing study subjects recruit future subjects, as the sample builds up like a snowball, enabling more data to be gathered

Source: Scribbr.com Non-Probability Sampling, https://tinyurl.com/3dpryydf

Table 3: A range of random and non-random sampling methods.

Random sampling		Non-random sampling	
Simple	Sample chosen randomly from a population Equal possibility of being selected	Convenience	Subjects chosen by availability/presence (e.g. patients on a particular day)
Systematic	Population is ordered or ranked Sample at regular intervals (e.g. every 10th) until the sample size is reached Does not give an equal chance of selection	Purposive or Theoretical	Selection of subjects with specific traits (e.g. experienced and inexperienced) Preferred method for qualitative research Poor generalisability in quantitative (bias)
Stratified	Population grouped by a characteristic (e.g., male/female, inpatient/outpatient) Sample randomly and equally from groups Avoids unequal representation or bias	Snowballing	Subjects asked to nominate others who fit the inclusion criteria
Quota	Stratified with specific numbers per group Groups may be unequally represented	Volunteer	Canvassing or advertising for subjects Inviting people to fill-out a questionnaire
Cluster	Population divided into sub-populations or clusters (e.g. electorate, health service) Randomly select clusters as needed Include all individuals in selected clusters		

Source: Tony Smith, *Journal of Medical Radiation Sciences*, 2009