TOOLS FOR DATA COLLECTION AND DATA ANALYSIS IN NURSING RESEARCH AT GRN NAUTH WORKSHOP ON 24TH MAY 2021 BY DR. FLORENCE T. SIBEUDU DEPARTMENT OF NURSING SCIENCE, NNAMDI AZIKIWE UNIVERSITY, NNEWI CAMPUS
Presentation outline

- Data collection defined
- Developing questions for data collection
- Types of data
- Methods for data collection/data collection tools
- Data analysis defined
- Steps in quantitative data analysis
- Steps in qualitative data analysis
Data collection - Gathering specific information to proffer solutions to relevant questions.
Different dimensions of the concept: Life expectancy, absence/presence of symptoms, measure of physical strengths, severity of symptoms

Operationalize the variables:
Questions: How would you rate your health for someone of your age group on a scale of 1 to 5?
What is your level of education?
Types of data

- Qualitative / Quantitative Data
- Discrete / Continuous Data
- Primary / Secondary Data

Types of government (categorical)/Number of students
Whole number/Fractional number
Collected by the researcher/collection by someone else
Types of data

Categorical (Characteristics):

a. Nominal (Label, no order)  
   gender

b. Ordinal (Ordered)  
   educational level

Numerical:

a. Interval: ordered units that have the same difference.

b. Ratio: the same as interval values, with the difference that they do have an absolute zero

c. Discrete (can be counted not measured)  
   Number of children

d. Continuous (can be measured not counted)  
   Temperature measurement

you can use one label encoding, to transform ordinal data into a numeric feature.
Methods for data collection & collection tools

1. Interview
   - Types: Structured, semi-structured and unstructured (IDI)
   - Tools: Questionnaire, question guide, computer, Audio recorder, digital camera and camcorder

2. Questionnaire
   - Types: Fixed-alternative, scale, and open-ended.
   - Tools: Paper questionnaire, on-line questionnaire

3. Document Reviews
   - Types: In-depth analysis & shallow reviews of Reports, research journals, website articles, newspapers
   - Tools: Data abstraction template, checklist.

4. Observation
   - Types: Participant/non-participant; simple/behavioural; direct/indirect; covert/overt
   - Tools: Checklist, senses, digital camera, pictures, field note.

5. Focus Group Discussion
   - Types: Two-way, Single, dual moderator, Duelling moderator, respondent moderator,mini & online
   - Tools: Question guide, recorder, field note, camera.

6. Ethnography
   - Direct observation, conversation, interviews, document and artifact collection.
   - Tools: Senses, checklist, data abstraction template, question guide, field note, recorder, camera
Data analysis defined

- **Data Analysis** is the process of systematically applying statistical and/or logical techniques to describe, illustrate and evaluate data which provide a way of drawing inductive inferences from the data.
1. **Data management** – Test run your software and finally perform data cleaning.

2. **Understanding variable types** – Identify your dependent or independent variables and their measurement scales (nominal, ordinal, interval, and ratio).

3. **Run descriptive statistics** – Summarize the basic features of your data set through measures of **central tendency** (mean, mode, and median), **dispersion** (range, quartiles, variance, and standard deviation), and **distribution** (skewness and kurtosis).

4. **Run appropriate inferential statistics** – This allows researchers to assess their ability to draw conclusions that extend beyond the immediate data. Differences between two or more groups; Changes over time; or Relationship between two or more variables.

5. **Make sure you selecting the right statistical test** – This relies on knowing the nature of your variables; their scale of measurement; their distribution shape; and the types of question you want to ask.

6. **Look for statistical significance** – This is generally captured through a ‘p-value’, which assesses the probability that your findings are **more than coincidence**. The lower the p-value, the more confident can be that findings are genuine.

*SPSS, STATA, EPI-INFO, MS-EXCEL*
1. Transcription: Write down all discussions verbatim on a paper.


3. Categories: Form similar ideas/points: fear.

4. Themes: Develop themes which reflect your interpretation of what pertains across your data: lack of emotional control.

5. Using quotations: Use quotations to illustrate categories and themes to keep the analysis firmly grounded in the data.

6. Draw conclusions: *NVivo; Atlas Ti; Quirkos*
Conclusion

• My professional colleagues!
• To produce quality scientific evidences by nurses and for nursing policies and practices, we must develop skills for data collection and analysis.
Thank you
References

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