METHODS OF DATA COLLECTION: QUESTIONNAIRE AND OTHER TOOLS

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LEARNING OBJECTIVES

- Name and describe the different methods of data collection
- Identify the uses and limitation of questionnaire and observation checklist in data collection
- State the characteristics of a well designed questionnaire and observation checklist
- Describe the sections of a questionnaire
- Explain the steps of designing a questionnaire and observation checklist
- Distinguish between the phrasing and responses of questions designed to collect knowledge and attitudes

PERFORNANCE OBJECTIVE

Design a quality questionnaire and observational checklist for data collection

METHODS OF DATA COLLECTION

Tools for data collection

Six main tools for data collection

- Test
- Interview
- Focus group
- Questionnaire
- Observation
- Secondary data

Tests

- Examples are tests for personality, IQ, aptitudes, psychological status
- Provides a quantification of a subjective status
- Usually already available for use
- Have high psychometric properties
  - Valid (measures the intended status)
  - Reliable (give the same results on repeated application)

Major Limitations

1. Expensive if we have to purchase the test
2. Psychometric properties need re-evaluation when used in different language other than the original and on different populations

Interview

- Usually a structured interview is used in research
- Provides mostly qualitative data
- Interviewer ask participants a series of questions in a specific order and record their response using their own words
- Provides in-depth information
- Interviewer may ask participants to explain more (asking them what do you mean? Can you explain further?)

Major Limitations

1. Expensive as it is time consuming
2. Difficulty in analyzing participants response (content analysis)

Focus group discussion

- Includes a small number of participants (6- 12), the researcher who guide the discussion using a series of guiding questions
- Role of researcher is to keep the discussion going
- The discussion is recorded for further analysis of the content
- Provides qualitative data related to concepts and ideas

Major Limitations

1. Expensive in application (expert in focus group and repeated application on a number of groups)
2. Difficult in content analysis and interpretation of the findings

Questionnaire

- Relies on self report
- Filled by the participant (self administered) or the interviewer (interview questionnaire)
- Usually designed specifically for the study and by the investigators
- Effective for the collection of data from large sample
- Provides quantitative data

Major Limitations

1. Interviewer bias if the procedure is not standardized
2. Recall bias form the part of participants

Observation

- Observation of participants in a natural or structural environment (laboratory)
- Allows the recording of what is actually done than relying on self-report
- Examples: Observation of physician's performance, observation of mothers' behavior with children
- It is either
  - Structured: Using a checklist to record the findings based on task analysis
  - Unstructured: Researcher takes note to record the findings

Major Limitations

1. Expensive and difficult in analysis when applied in laboratory setting using unstructured interview

Secondary data

- Archived data that was collected for purposes other than the research
- Example is the use of hospital records (using a transfer sheet)
- Provides a detailed data on each individual cases
- Time saving since the data are available

Major limitations

1. Some of the data necessary to meet the research objectives are not available
2. Possibility of missing information
3. Difficulty in the interpretation and analysis of free text data

QUESTIONNAIRE: USES AND DESIGN

USES OF QUESTIONNAIRE

- Knowledge - what people know
- Opinions, attitudes, beliefs, values - what people think about
- Practice based on self report - what people do
- Attributes - what are people's characteristics

STRENGTHS OF QUESTIONNAIRE

- The study involve large samples
- A straightforward answer is required
- Standardization of data from identical questions
- Interest is on "what" occurs rather than "why" or "how"

LIMITATIONS OF QUESTIONNAIRE

- Superficial _____

  Difficult to capture the richness of meaning

- Don't deal with context_____

  Information is collected in isolation of environment

- Information is not causal_____

  Cannot attribute cause-effect relationships

- Information is self-report _____

  Does not necessarily reflect actual behavior

TYPES OF QUESTIONS

Exploratory questionnaires

- Collect "qualitative" data not for statistically evaluation
- series of open-ended questions, with probes or prompts

Formal standardized questionnaires

- Test and quantify a hypotheses then analyzed statistically
- characterized by specific
  - Wording and order of questions (receives the same stimuli)
  - Explanations for each question (handle questions consistently)
  - Response format (rapid completion of the questionnaire)

WELL DESIGNED QUESTIONNAIRE

- Meet the research objectives
- Obtain the most complete and accurate information possible.
- Ease to give information and to record the answers
- Ease in data processing and analysis
- Brief and to the point
- Organized to maintain interest of respondent(s)

WELL DESIGNED QUESTIONNAIRE

Consider all parties involved

Interviewer:	Easy to follow and can be completed in the time specified
Respondent:	Enjoy the interview experience Questions phrased to allow truthful answer Want to know the return for their opinion
Data-processor:	Questionnaire which will result in data which can be processed efficiently with minimum error.

- Respondent's identification data

  Name, address, date of the interview, name of the interviewer, unique identifier

- Introduction

  credentials of the research institute, the purpose of the study and aspects of confidentiality

- Instructions

  How to move through the questionnaire such as which questions to skip and where to move to if certain answers are given.

- Information

  Main body of the document and is made up of the many questions and response codes

- Classification data

  Characteristics of the respondent, particularly related to their demographics

1. Decide the information required
2. Decide on question content
3. Decide on the form or type of the question
4. Develop the question wording and structure
5. Put questions into a meaningful order
6. Put questions in appropriate format
7. Check the length of the questionnaire
8. Pre-test the questionnaire
9. Develop the final survey form

1. Decide on the information required

   Extensive review of the literature and "key studies"

2. Decide on the content of the questionnaire

   Questions should generate data directly related to the study questions

   Include only necessary questions (avoid redundancy)

3. Decide on the types of question(s)

- Closed ended
- Open ended
- Open response options

"which of the following factors affect your choice of contraception method?"

(1) safety (2) independent from coitus (3) not required frequent clinic visit (4) minimal side effects (5) reasonable cost (6) other mentions _____

4. Develop questionnaire wording

- Not too lengthy questions
- Complete and precise (have you been hospitalized..previous year)
- No difficult or medical terms
- No jargon (a lot and little)
- No double barreled questions "To what extent are you satisfied with the personality and performance of your treating physician?"

4. Develop questionnaire wording

- No favorable responses "Do you prefer to be seen by a doctor of the same sex?" …"Do you prefer to be seen by (1) male doctor (2) female doctor (3) either male or female doctor"
- No negative questions "You never have nightmares?" is better phrased "do you have nightmares?"
- No threatening questions as "Do you beat the child when the child misbehave?" better to phrased "What you do when the child misbehave?"
- Use "filtered questions" including "skip" and "not applicable"

5. Put questions in meaningful order

- Opening question
- Logic flow (one question leads to another)

6. Put questions in appropriate format

- Creative use of space
- Simplify recording and coding of responses

7. Check the length of the question
   - Shorten too long questions

8. Pretest the questionnaire
   - Test the questions
   - Time required

9. Develop the final survey form

Knowledge

☐ What is the recommended interval between two successive births?

(1) 1 year
(2) 2 years
(3) 3 years
(4) 4 years
(5) 5 years or more

Attitudes

☐ Any person above the age of 30 years should screen annually for hypertension

(1) Strongly disagree (2) Disagree

(3) Somewhat agree (4) Agree

(5)Strongly agree

Visual display

|_____|_____|_____|_____|

Strongly agree strongly disagree

Perceptions

☐ How much knee pain do you experience will walking for 10 minutes?

|___|___|___|___|___|___|___|___|___|___|

No pain Severe pain

Behavior using filtered question

☐ Do you drink milk?

(1) No (skip the next question)

(2) Yes (go to next question)

☐ How frequent do you drink milk?

(1) Daily

(2) 5 – 6 times per week

(3) 3 – 4 times per week

(4) 1 – 2 times per week

(0) Not applicable

Classification questions

☐ Age (number of years completed) |__|__|

☐ Sex (1) men (2) women

☐ Education attainment (1) never been to school (2) less than primary (3) primary completed (4) preparatory completed (5) secondary completed (6) university or higher

☐ Type of occupation (describe)_____

(1) professional (2) semi-professional (3) skilled worker (4) semiskilled worker (5) unskilled worker (6) others mention _____

OBSERVATION CHECKLIST: USES AND DESIGNS

OBSERVATION

- Allows investigator to "see what is happening"; observe situations and events and record the findings
- It is a source of direct information (eliminate error of self report)
- Collect real time data
- Collect data about behavior and practice

OBSERVATION CHECKLIST

To design an observation checklist

- Have full knowledge and details of what will be observed and associated circumstances for interpretation at a later stage
- Specify the behavior to be observe
- Divide what will be observed into tasks or elements
- Usually it is recorded as done, done correctly, and not done

Example of constructing an observation checklist based on task analysis in real life situation

Observing the nurse weighing a 5 year old child

- Explain the procedure to the mother
- Adjust the scale
- Check on the child's clothes if they may affect the weight
- Keep the child in minimal clothing
- Ask the child to take off the shoes
- Place the child on the scale
- Wait for the reading
- Record the reading immediately to the nearest 0.5 Kg
- Provide feedback to the mother