Questionnaire based research
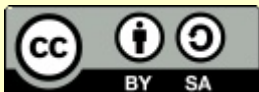
Dr Wan Nor Arifin

Unit of Biostatistics and Research Methodology,
Universiti Sains Malaysia.
wnarifin@usm.my

Outlines

1. Introduction

2. Types & Methods

3. Development

4. Design

5. Validation

6. Other issues

Outcomes

- General understanding of questionnaire definition, its types and methods of administration.

- General understanding of development, design and validation of a questionnaire.

- General understanding of use of questionnaire in research context.

Introduction

Introduction

- Questionnaire?

- Definition:

"a structured document that is used to collect information from respondents about themselves or others" (McDonald et. al., 2003)

Introduction

- Basically a measurement tool.

- Questionnaire based research – just like any research using measurement (blood pressure, lab investigations, imaging etc). One of tool to measure outcome.

- Questionnaire is everywhere! GCS, BDI, Personality.

- Must choose a suitable (measure your outcome) & good (valid & reliable) questionnaire.

Introduction

- Options:

  - Existing questionnaire in target language → use.

  - Existing questionnaire in foreign language → translate.

  - Non-existent → develop.

Introduction

- Why use questionnaire?
  - Information required?
  - Time?
  - Cost?
  - Simple to conduct?
  - Standardization in obtaining information?

Types & Methods

Types

1. Self-administered

2. Interviewer-administered

Self-administered

- Simple information, sensitive information.

- Economical, practical.

- No interviewer bias.

- But, respondent must be able to read...

Interviewer-administered

- Complex information, e.g. requires explanation.

- Can involve illiterate respondents.

- Requires standardization among interviewer, training – ensure standard way of asking & correct response.

- Costly.

- Time consuming.

Methods

1. In-person interview

2. Phone

3. Pen-and-paper – direct, mail.

4. Computerized – Google Form, Survey Monkey, pdf Form.

Development

Development

- Content development?

- Approaches:

  1. Expert.
  2. Focus group.
  3. Delphi technique.
  4. Qualitative study.
  5. Literature.

Questions

- Types:
    - Open
    - Closed

Open

- Allows many possible responses.

- Factual data – demography.

Name: _____

Date of birth: __ / __ / ____

Number of children: ___

Occupation (please specify): _____

For the past 1 week, on average how long did you spend for exercise per day? _____ minutes.

What is your opinion on GST? _____

_____

Closed

- Fixed, predetermined responses.

- Limit respondent to the choices.

- Easy for data entry, analysis, interpretation.

- Give clue to respondent as to how to answer.

- Must include ALL possible responses.

Closed

- Choices:
  - Dichotomous (Yes/No)
  - Multiple choice
  - Checklist
  - Ranking of response options
  - Rating
  - Likert Scale
  - Visual analog scale

Closed

Have you ever attended my lecture before? Yes/No

Gender: Male [   ]   Female [   ]   Unknown [   ]

Food categories for past 1 week:
Grains [   ]   Poultry [   ]   Vegetable [   ]   Fruits [   ]

Rank your favourite food from 1 (most prefered) to 5 (least prefered):
Nasi Ayam [   ]   Nasi Goreng [   ]   Nasi dagang [   ]   Nasi Kerabu [   ]   Nasi Kandar [   ]

Please rate your experience using HotelBooking.com.my:
[1] [2] [3] [4] [5]

I enjoy statistics lecture.
Strongly Disagree[   ] Disagree [   ] Neutral [   ] Agree [   ] Strongly Agree [   ]

Please rate your pain level right now:

|---|
No pain at all   Worst pain ever

Design

Design Objectives

- To ensure quality response, 5 general objectives (McDonald, 2003):

    1. Consistent meaning.

    2. Expected response.

    3. Ability to response.

    4. Willingness to response.

    5. Same type & mode of administration.

Consistent meaning

- Meaning as understood by respondent, other respondent and researcher itself should be similar.

- Simple, clear, straight-forward words.

- Language level suitable for respondent.

- No "OR" – multiple concepts.

- No ambiguous term "kadang-kadang" vs "jarang-jarang". Specify frequency.

- Overlap. "w/in 1 year" vs "w/in 2 years"?

Expected response

- Be specific.

- Open-ended question may suffer.

- "When?" could mean age, date, year, period of time etc.

Ability to response

- Ask something that respondent can easily recall and answer.

- "How many cigarette have you smoked for the past 10 years?"

Willingness to response

- Ask something that respondent can provide answer honestly.

- Respondent may withhold the information or answer dishonestly. Socially desirable answer.

- "Have you ever robbed anyone? Yes/No"

- "I never ever lie to anyone? Yes/No"

Same type & mode of administration

- The way interviewer ask question should be standard.

- The way respondents answer the questionnaire is similar – self-administered vs interviewer-administered; pen-paper vs mail vs online.

- The form of presentation of questionnaire similar for all – format, method.

Validation

Validation

- Validity
- Reliability

Validity

- Accuracy, extend to which questionnaire measure what it is supposed to measure (Fletcher, Fletcher and Wagner, 1996)

- Types (3Cs):
    - Content
    - Criterion
    - Construct

Content Validity

- How well questions reflect the intended content.

- 3 aspects to be assessed (Streiner and Norman, 2008):

  1. Relevance: How relevant and related the items to the concept.

  2. Coverage: Adequate number of items to cover the concept.

  3. Representativeness: Number of items covering the item is proportionate to the importance of the concept.

Criterion Validity

- Questionnaire score/category correlation with gold standard.

- 2 types (Streiner and Norman, 2008):

  1. Concurrent – same time (diagnostic test: sensitivity/specificity)

  2. Predictive – future time (e.g. graduate/not graduate)

Construct Validity

- Whenever there is no criterion to be compared against questionnaire.

- How well questionnaire measure theoretical concept e.g. depression, anxiety etc.

- 2 types:

  1. Convergent – correlation between related questions and concepts.

  2. Discriminant – no correlation between unrelated questions & concepts.

Reliability

- Consistency, precision, extend to which repeated measurements of same thing by different raters at different times give similar results (Fletcher, Fletcher and Wagner, 1996).

- Main types:
    - Internal consistency reliability
    - Test-retest reliability
    - Interrater reliability

Other issues

Existing questionnaire

- In target language?

- Same target population?

- Type? Method of administration?

- Measure outcome of interest?

- Validity?

- Reliability?

Translation

- 5 aspects of equivalence of translation (Streiner and Norman, 2008):

1. Conceptual – same concepts in different cultures? Canning abuse or teaching?

2. Item – relevant question? "I turn on heater during winter."

3. Semantic – similar meaning? "Butterflies in stomach"

4. Operational – same type & method.

5. Measurement equivalent – statistical aspects of validity & reliability.

Translation

- General steps:

1. Forward translation

2. Backward translation

3. Reconciliation

Pretest

- Field testing the questionnaire.

- Evaluate:
  - Face validity
  - Length & timing
  - Interviewer/Rater training & reliability
  - Coding & data entry problem.
  - Flow of questionnaire administration
  - Procedures
  - Logistic
  - Etc. All aspects related to administration of questionnaire

Face validity

- Surface value of the questions (Streiner and Norman, 2008).

- Assessment of grammar, syntax, organization, appropriateness and logical flow (De Von et al., 2007).

- From respondents point of view.

References

DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., Savoy, S. M. & Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing scholarship*, 39(2), 155-164.

Fletcher, R. H., Fletcher, S. W., & Wagner, E. H. (1996). Clinical epidemiology: the essentials (3rd ed.). Maryland: Williams & Wilkins.

McDonald, J. A., Burnett, N., Corodano, V. G., & Johnson, R. L. (2003). Questionnaire design. Georgia: Division of Reproductive Health.

Streiner, D. L. & Norman, G. R. (2008). Health measurement scales: a practical guide to their development and use. New York: Oxford University Press.

Recommended readings

Arifin, W. N. (2014). Validity and reliability of measurement tools. [Online] Available at: http://wnarifin.pancakeapps.com/lecture

McDonald, J. A., Burnett, N., Corodano, V. G., & Johnson, R. L. (2003). Questionnaire design. Georgia: Division of Reproductive Health.

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