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Questionnaire design and systematic literature reviews

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Abstract
Powerpoint presentation presented at the University of Canberra

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Questionnaire design and systematic literature reviews

A/Prof J Sansoni

Epidemiology and Principles of Research 6469

2011

Acknowledgements: Gabrielle O' Kane

Objectives

- At the end of this lecture students will be able to:
  - List the steps involved in questionnaire construction
  - Outline what is involved in each step
  - Discuss the need for ethical considerations when constructing a questionnaire
  - Compare the advantages and disadvantages of the two questionnaire formats available to researchers
  - Describe reasons for selection of each of these formats

Objectives

- At the end of this lecture students will be able to:
  - Provide examples of both open-ended and closed-response question formats
  - Outline the advantages and disadvantages of these types of question formats
  - Explain the difference between Likert and forced-choice response formats
  - Define ‘acquiescent response mode’ and ‘extreme response mode’
  - Define validity and reliability

Objectives

- At the end of this lecture the students will be able to:
  - Outline the pitfalls to be avoided when wording questions (item stems and response categories) for a questionnaire
  - Discuss reasons for avoiding using leading, loaded or double barrelled questions.
  - Explain the appropriate sequence of questions when constructing a questionnaire for best response rates.

Introduction

- Research investigations can be tackled in a variety of ways such as
  - Interviews
  - Questionnaires and self report surveys
  - Observation
  - Direct physical measurement
  - Use of standardised scales, tests or measures

  We will examine questionnaires commonly used to collect data in the Health Sciences and some standardised scales used in health research

Questionnaires

- Definition: A questionnaire is a document designed with the purpose of seeking specific information from the respondents
- Best used with literate people (assess readability level)
- Design is crucial to success
- Process of design and implementation is called questionnaire/survey construction

Advantages and disadvantages of using questionnaires

Advantages	Disadvantages
▪cheap to produce and administer	▪often criticized because of the 'crude' level of measurement
▪can reach large numbers in limited time	▪often never validated
▪yield data not available by other means	▪can be fraught with bias unless well designed
▪high external validity if validated properly e.g. generalisability	

Questionnaire construction

- What is involved
  - 1. The researcher defines the information that is being sought.
    - Consider research objectives
    - Discuss with others in the field
    - Literature searches and wide reading on the topic
    - Review earlier questionnaires/scales or instruments that may be available

Questionnaire construction

- 2. Drafting of the questionnaire
  - Researcher takes the list of information they wish to obtain from respondents and devises draft questions.
  - Phrasing and design of questions affect the validity of the information obtained

Questionnaire construction

- 2. Drafting the questionnaire
  - Important considerations
    - Sequencing the questions –background variables first, introduce each theme/topic area in separate sections
    - Methods for coding the data
    - Methods for analysis of the data
    - Layout and presentation - make it easy to complete and present professionally;
    - Consider your audience - type face, font size, instructions, use of language (elderly respondents need large font)
    - Cultural and gender appropriateness

Coding Issue

B.20 When does urine leak? *(Please tick all that apply to you)*

A. Never – urine does not leak 1

B. Leaks before you can get to the toilet 2

C. Leaks when you cough or sneeze 3

D. Leaks when you are asleep 4

E. Leaks when you are physically active/exercising 5

F. Leaks when you have finished urinating and are dressed 6

G. Leaks for no obvious reason 7

H. Leaks all the time 8

Originally coded in 8 separate columns 1-8 as more than 1 option can be ticked

Needed to recode each column 1 or 0 for symptom present or absent for data analysis (no entry = missing on SPSS)

Cultural Issues

- The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?

b) **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf

(Yes, limited a lot; Yes limited a little; No, not limited at all)

What are some cultural issues that might apply to this question?

Are their groups for whom this question might be inappropriate?

Questionnaire construction

- 2. Drafting the questionnaire
  - Group questions into themes or categories that measure, for example
    - knowledge
    - attitudes
    - beliefs
    - behaviour

Questionnaire construction

- 3. Questionnaire pilot
  - Trial the new questionnaire with a small group of intended respondents or colleagues to improve clarity, remove problems before the main survey
  - Analyse the responses to the pilot survey (are some response categories never used, analyse the missing data, are some Qs misunderstood?)
  - Ask the respondents or colleagues for feedback about design and questions

Some simple issues

- What is your height?.....cms
- What is your weight?.....kgs
- Miles and kilometre issues (e.g. SF-36)- cultural adaptation
- How satisfied are you with your sex life (even if you don't have one)?
- During the past 4 weeks did fear of bowel accidents limit your participation in each of the following activities? (from FIQL). Responses ='none of the time' through to 'all of the time'
  - These activities included vigorous physical activity, church attendance, sexual relations, and employment
  - The average age of the sample is 57 years – what might be some issues?

Range of response categories

- response options should be mutually exclusive unless it is a checklist item (e.g. tick all those items that apply below)
- Yes/No (does this provide a sufficient range of responses for this issue?)
- Likert style – strongly agree, agree, uncertain, disagree, strongly disagree - with statement
- Forced choice – no option for uncertain/ unsure/ don't know
- Quantity (how much), intensity (refer Likert), frequency (how often)
- Visual analogue scales- mark on a line from 0-10 or 0-100

Example Questions

B.4 How often do you experience urine leakage?

- Never
- Less than once a month
- A few times a month
- A few times a week
- Every day and/or night

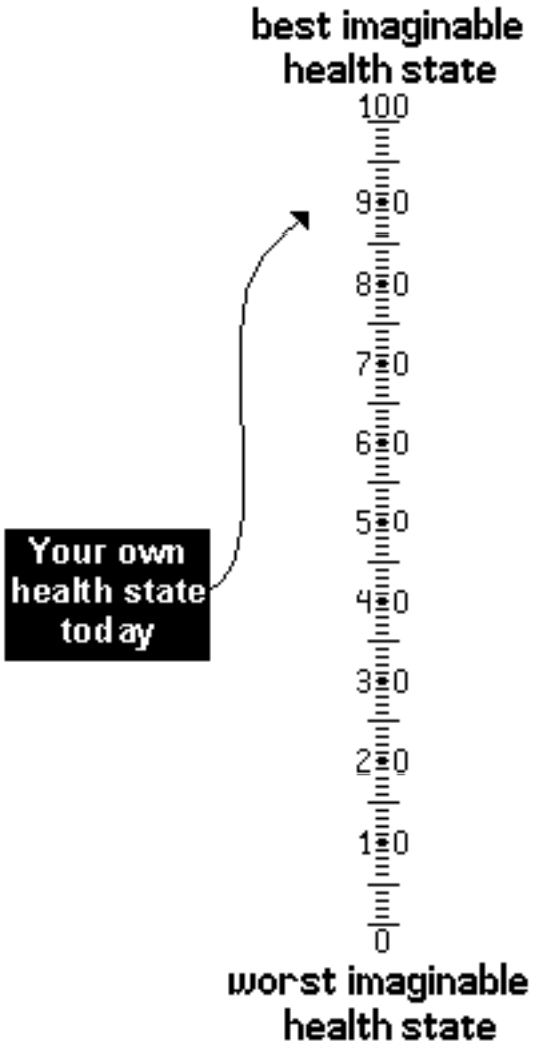
B.5 How much urine do you lose each time?

- None
- Drops
- Small splashes
- More

B.34 Due to accidental bowel leakage, the possibility of bowel accidents is always on my mind

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Visual Analogue



Questionnaire construction

- 4. Redrafting of the questionnaire
  - If problems were found then the questionnaire will need to be redrafted
  - If there are major changes required it is best to then do another pilot
  - If the problems are minor, the researcher may then proceed to administration of the questionnaire to the full sample

Questionnaire construction

- 5. Administration of the questionnaire
  - After development of the questionnaire, it is administered to the full sample of respondents
  - How would this be done? Postal, telephone, structured interview. Mode of administration differences
  - Bias issues in clinical follow up and patient satisfaction surveys can arise.
  - The responses are then analysed in terms of the researcher's aims and objectives

Ethical Considerations

- These apply to all types of research and generally an ethics application will be required with human subjects
- In designing questionnaire questions, respondents should not be misled concerning the aims of the study or how their data will be treated (confidentiality aspects)
- If the questionnaire is anonymous, those who do not choose to reply should not be pestered
- However, the Dillman method is commonly used with reminder postcards being sent out and then another follow up questionnaire if necessary
- Hence, the chief investigator will know who and who has not replied.
- De-identification and safe storage

Question and questionnaire formats

- Interviewer schedule method
  - Formal questionnaire not prepared to be filled in by the respondent
  - Rather, it guides the interviewer who asks the questions (e.g. some ABS surveys)
  - Can probe to clarify response vs. self report
  - There are cost considerations for using this method. Can you tell me why?

Interview Methods

- Needs expert interviewers
- Time consuming

- May introduce interviewer bias

Question and questionnaire formats

- Self administered questionnaire method
  - Cheap and quicker than interview schedule method
  - Less susceptible to interviewer bias
  - Can be done at respondent's convenience
  - Can be administered by mail
  - Higher rejection or refusal rates
  - Less control over how the response forms are filled in
  - Literacy levels a problem

Question and questionnaire formats

- Telephone questionnaires
  - May be more efficient to collect data via telephone than via postal means
  - Can get better response rate than by postal methods
  - Advantage of being ‘anonymous’ over face to face interview method
  - Can automate data entry
  - Not everyone has a phone
  - Difficult to administer long questionnaires

Question and questionnaire formats

- Open-ended and closed-response formats
- Q1. How do you feel about the standard of the treatment you received while you were a patient at this hospital? (also focus group approaches)
- Q2. How would you rate the standard of the treatment you received while you were a patient at this hospital (circle one number)
  - Excellent 1
  - Good 2
  - Moderately good 3
  - Fair 4
  - Poor 5

Question and questionnaire formats

- Closed response format
  - Need to be carefully designed
  - It is easy to bias responses by restricting the range of answers in this type of question
  - The researcher should not impose their own ides of under investigation to the extent that validity is compromised
  - May tick a box from a short list of possible answers
  - May use Likert or forced-response scale

Question and questionnaire formats

- Likert and forced-choice response formats
  - Used for attitudinal questions
  - Likert has five or seven options including 'undecided'
  - Forced-choice response does not allow for middle of the road or undecided answer.
  - Forced-choice guards against *acquiescent response mode*

Extreme response mode occurs when respondents never select intermediate points on the rating scale

  - However, reversed response categories following each other can lead to a 'donkey vote' phenomena

Response Category Issues

D.1 How satisfied are you with the effect of your treatment or care?

Very satisfied 1
Satisfied 2
Neither Satisfied nor dissatisfied 3
Dissatisfied 4
Very dissatisfied 5

D.2 How satisfied are you with the explanations the doctor or other health professional has given you about the results of your treatment or care?

Very dissatisfied 1
Dissatisfied 2
Neither satisfied nor dissatisfied 3
Satisfied 4
Very satisfied 5

Question and questionnaire formats - Closed response format

- **Advantages**
  - greater uniformity of answers
  - easily processed
  - can be directly coded
  - may be useful for sensitive information
  - easy/quick for respondent

- **Disadvantages**
  - They can suggest ideas that the respondent would not otherwise have (therefore lead respondent)
  - Force respondent to give simplistic responses
  - Respondents with no opinion or knowledge can answer anyway
  - loss of information
  - can get 'random' answering
  - Respondents can be frustrated because their desired answer in not a choice
  - Use other _____

Question and questionnaire formats – open ended questions

- *What do you think is the main problem with the average Australian diet?*
- *What is the major source of stress in your life at the moment*
- Respondents are free to answer according to their own ideas

- Form small groups and note the responses you obtained from group members. How would you classify and analyse this data? What are some issues with open ended questions?

Question and questionnaire formats – open ended questions

Advantages

- useful for gathering new information or a pilot study to refine Qs
- allows adequate answers to complex issues
- allows the subject to 'speak their mind'

Disadvantages

- time consuming for respondent
- difficult to code and analyse
- 'irrelevant' information may be provided
- requires greater literacy
- different level of detail in answer

The wording and design of questions

- The writing of good questions is an art and it is a time consuming one
- Common problems are double barrelled Qs, leading or loaded Qs, ambiguity, and the complexity of language used
- To obtain valid and reliable responses one needs well worded questions
- Consider " Do you smoke?" Yes/No. What are some problems associated with this question. Develop a better question concerning smoking behaviour.

The wording and design of questions

- There are a number of pitfalls to avoid when writing questions for questionnaires
- 1. Double barrelled questions.

  Eg. *Do you like cars that are big and powerful, or small and economical?*
- These questions should be separated out to be clear about what you need to know

The wording and design of questions

Avoid

- 2. Long questions – cause confusion and fatigue
- 3. Ambiguous questions. Avoid vacuous words that may mean different things to different people.
  - Eg. 'old people' may be 20 to a toddler or 80 for a 50 year old. Be specific about such matters
- 4. Inappropriate level of wording
  - No jargon or acronyms e.g. DIY
  - No double negatives
  - Keep it simple and concise
  - Appropriate readability/literacy level for sample
  - Culture, age and gender appropriateness

The wording and design of questions

Avoid

- 5. Bias and leading questions
  - The wording should not lead the respondent to answer in a particular way (e.g. social desirability)
    - Eg. 'How often do you eat chocolate?' This may prompt some people to be less than truthful in answering such a question.
  - The response format may be biased too if it does not accurately reflect the true behaviour
    - Eg. □ 1/month □ 1/week □ 1/day

      The person may be eating it 3 times per day

The wording and design of questions

- The possibility of an invalidly administered questionnaire
  - A survey on ‘attitudes to migration’ might be answered less than honestly by respondents if the interviewer is obviously of immigrant background
  - A patient satisfaction survey interview administered by the treating Dr may have similar problems

Guidelines

- Are the words simple, direct, and familiar to all respondents? (avoid technical jargon, consider regional or cultural differences in word usage etc)
- Is the Q as clear and specific as possible? Can it be shortened with no loss of meaning?
- Are any items double barrelled?
- Are the Qs leading or loaded?
- Avoid colloquial terms
- Avoid emotionally charged terms (e.g. reds, fascists, black leaders etc.)
- Is the Q applicable to all respondents (e.g. how old is your wife; what is your present occupation)

The Structure of questionnaires

- 1. Introductory statement
  - Purpose of the questionnaire – benefits that will flow from it
  - Information sought
  - How the information will be used
  - Introduces researcher
  - Confidentiality/anonymity
  - Contact for queries and complaints

The Structure of questionnaires

- 2. Demographic questions
  - Age, sex, education history etc – good to use examples from ABS
  - These are usually put first to warm-up respondents – these are easy to answer
- 3. Factual background questions
  - Eg. Height, weight, smoking behaviour etc
  - Also helps to warm up respondents

The Structure of questionnaires

- 4. Opinion questions
  - Questions requiring reflection should be positioned after the demographic and factual questions
  - Avoid conditional questions as much as possible

- 5. Closing statements and return instructions
  - This usually has statements regarding thanks for participation
  - Provide information on how to return the questionnaire
  - Possibility of taking up issues with the researchers

Developing standardised scales

- A similar process occurs but this usually requires a more substantial period of development and validation than routinely occurs with a simple one-shot research survey. There are a range of criteria for selecting standardised measures such as reliability, validity, and responsiveness and the availability of norms and reference data
- A variety of generic and condition or disease specific scales are used in health to initially assess patients and to evaluate the outcomes of an intervention
- Generic health status or health related quality of life measures can be used to assess population health and across a range of diseases or conditions to compare disease burden e.g. Short Form – 36 (SF-36)
- Disease/condition specific measures contain more detailed information about the particular condition/disease and thus comparisons are limited to those with this disease e.g. an asthma or arthritis scale

Developing and reviewing scales

- Item analysis and endorsement
- Missing data analysis
- Factor analysis
- Reliability – Cronbach's alpha (example)
- Validity analyses e.g. criterion, discriminant, construct……

Faecal incontinence items included in survey (Wexner Items)

- In the past 4 weeks: Do you leak, have accidents or lose control with a liquid stool?
- In the past 4 weeks: Do you leak, have accidents or lose control with a solid stool?
- In the past 4 weeks: Do you leak, have accidents or lose control with gas (flatus or wind)?
- In the past 4 weeks: Do you need to wear a pad to protect your underwear from stool?
- In the past 4 weeks: Do bowel or stool leakage cause you to alter your lifestyle?

0=never, 1=rarely, 2=sometimes, 3=often/usually, 4=always

Corrected item total correlations and Cronbach's alpha if item deleted (Wexner FCGS)

Item	Corrected – Item Total Correlation	Cronbach's Alpha if Item Deleted
Q1 (Leak Solid)	0.52	0.46
Q2 (Leak Liquid)	0.53	0.44
Q3 (Leak Gas)	0.25	**0.77**
Q4 (Wear Pad)	0.39	0.50
Q5 (Alter Lifestyle)	0.42	0.50

Cronbach's Alpha for Wexner FCGS = 0.57 (unacceptable range, Streiner and Norman 2003)

Rotated factor matrix for the faecal incontinence items X1 – X10

		Factor		
		1	2	3
X1	**Bowel Pattern**	0.27	**0.59**	-0.12
X2	**Bowel Movements**	0.08	-0.03	**0.95**
X3	**Urgency**	0.20	**0.70**	0.33
X4	**Leak Solid**	**0.71**	0.22	0.07
X5	**Leak Liquid**	**0.75**	0.31	0.10
X6	**Leak Gas**	0.08	**0.74**	-0.08
X7	**Leak Stool / Urgency**	**0.77**	0.25	0.06
X8	**Wear Pad**	**0.71**	-0.03	-0.06
X9	**Leak / Change Underwear**	**0.78**	0.18	0.06
X10	**Alter Lifestyle**	**0.70**	0.15	0.09

X4 + X5 + X6 + X8 + X10 = Wexner FCGS

Refresh - Validity

- Face validity
  - It is a judgment by the scientific community that the indicator really measures the construct
- Content validity
  - Is the full content of a definition represented in a measure?
  - Requires developing an indicator that taps all of the parts of the definition
- Criterion validity
  - Uses some standard or criterion that is known to indicate a construct accurately.
  - An indicator is verified by comparing it with another measure of the same construct in which a researcher has confidence.
- Construct validity (multiple indicators)
  - It addresses the question – if the measure is valid, does it relate to various other indicators in a consistent manner?
  - Requires a clear definition with clearly specified conceptual boundaries.
- Internal validity
  - There are no errors internal to the design of the research project.
- External validity
  - The ability to generalise findings from a specific setting and small group to a broad range of settings and groups.

Refresh - Reliability

- Reliability deals with an indicator's dependability.
- A reliable indicator will approximate the same result each time it is measured e.g. ruler.
- There are three main types of reliability
  - Stability reliability – Does the indicator deliver the same answer when applied in different time periods? (test-retest)
  - Representative reliability – Is the indicator/scale equally reliable when applied to different groups (sub population analysis)?
  - Equivalence reliability
    - Inter-rater reliability. A measure is reliable if different observers, raters or coders agree with each other.
    - Split half reliability
    - Internal consistency reliability –assesses the consistency of items within a measure or scale

Summary

- Questionnaires are useful tools if properly designed and administered
- Well constructed questionnaires can yield valuable and often novel information relatively inexpensively
- A questionnaire is a vehicle allowing communication between the researcher and the subject
- A good questionnaire is the product of testing and retesting
- Where ever possible, construct or use a valid and reliable tool, or test its validity and reliability

Systematic Literature Reviews

- A systematic review should be a response to a clearly formulated research question and involve the identification of all relevant research that addresses the Q
- Introduction –why Q of interest
- Method – searches undertaken and how studies identified, inclusion and exclusion criteria for studies found
- Results – patterns are highlighted and differences assessed and reported
- Discussion – interpretation of results, threats to validity considered and conclusions drawn

Identifying relevant literature

- Medline and other electronic databases (Cochrane Collaboration, PsychInfo, Cinahl, CancerLit, ERIC, Dissertation Indexes…..)
- Look at citations in leading relevant articles and citation indexes (e.g. Science, Social Science, Art and Humanities Indexes)
- Publication Bias –significant findings are reported more than null findings (researchers and journals)
- Identify relevant grey literature e.g. government reports, web resources, key international conferences etc.

Types of Study and Levels of Evidence

- Level I - evidence from 1 properly conducted RCT
- Level II-1 evidence from well controlled trials without randomization
- Level II-2 evidence fro well designed cohort or case-control studies – prefer more than 1 centre of research group
- Level II-3 evidence from comparisons over time or between places with or without the intervention
- Level III – descriptive and case reports, reports of experts

RCTs –while useful, may be unethical/not feasible to conduct in some settings, may be atypical of routine practice or may have limited generalisability.

Need to consider both research design and quality of evidence

Criteria for study selection

Might wish to only include those studies with

- A particular sample size e.g. >50 cases
- Type of participants (age range or gender)
- A specific outcome or the method used to assess outcome
- The way exposure was measured or classified
- The duration or follow –up (>12 months)

- You need to specify your criteria and justify it

Summarising results data: Forest Plot

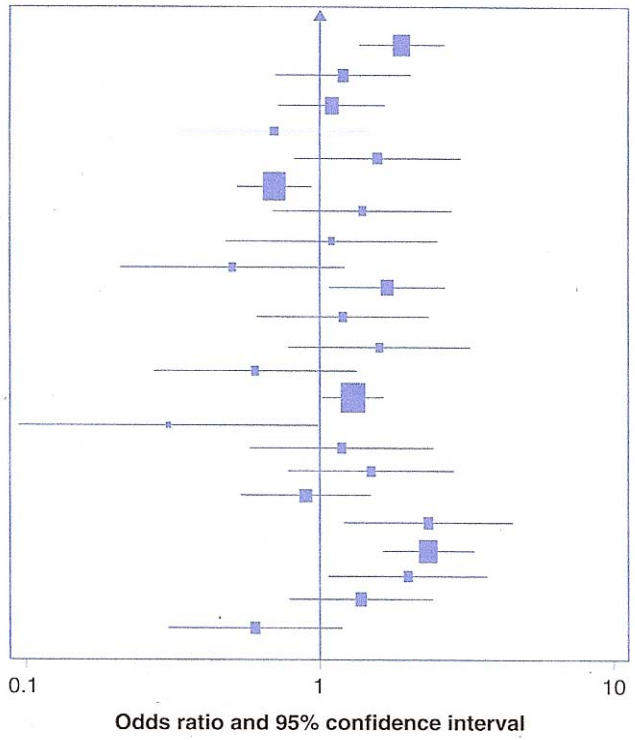


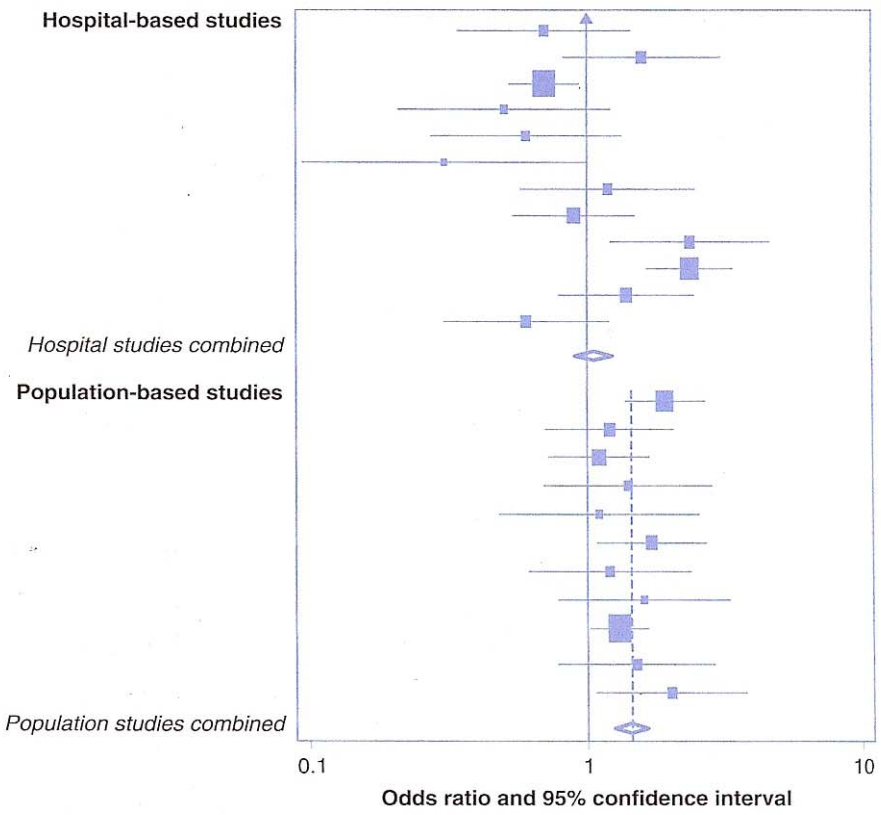
Fig. 11.1 Diagrammatic representation of the results of 23 case–control studies evaluating the relation between extremes of weight/BMI and risk of ovarian cancer (Purdie *et al.*, 2001).

From Webb et al. 2005 and Webb and Bain, 2011 – P260-261

Fox Plots and Meta-analysis

From Webb et al. 2005 and Webb and Bain 2011

Fig. 11.2 Diagrammatic representation of the results of 12 hospital-based and 11 population-based case-control studies evaluating the relation between extremes of weight/BMI and risk of ovarian cancer (Purdie *et al.*, 2001).



Meta-analysis

- Combines results from a number of studies – remember Mantel–Haenszel adjusted odds ratio and the streptokinase example (Webb and Bain, 2011, P162)?
- Each study is assigned a weight based on the amount of information it provides (e.g., inverse of the standard error of OR- larger studies have greater weight)
- Useful as in streptokinase example but some debate about its ability to provide unbiased summary estimates – garbage in- garbage out rule applies. Dependent on studies selected for inclusion
- Combining results of studies generates an estimate with narrow confidence limits – giving an illusion of precision and accuracy

Pooled Analysis

- Instead of combining the summary results (OR or RR) from the studies – get the original data from the studies and re-analyse it
- Very labour intensive
- Collaborative Group on Hormonal Factors in Breast Cancer - combining data from 50 studies clarified the relationship of BC with oral contraceptive use (Webb et al. 2005; Webb and Bain 2011, P263)

Issues: Statistical and Clinical Significance

- A finding can be statistically significant but not clinically meaningful – we need both
- Using the drug finasteride (Hirst and Ward, 2000) found a stat. sig. improvement in symptom score from 2.5 to 2.8 = 12% improvement. However, for the patient to experience a subjective change in their quality of life it required a change of 3 points (Webb and Bain 2011, P163).
- This is often referred to as the minimum practically important difference or the minimum clinically importance difference and there are various ways of calculating this
- This also relates to the responsiveness of scales (capacity to detect change arising from the effects of an intervention)
- Usually a large change score with a narrow confidence interval is more likely to be clinically meaningful as is a larger OR or RR >2

Issues: Examine consistency of findings

- Refer to the forest plot slide – the hospital based findings were separated from the population based findings

- This showed the hospital studies were more variable in their findings (heterogeneity) vs. the population studies which were less variable in their findings (homogeneity)

Conclusions

- Conclusions must be evidence based and follow directly from the review
- Give more weight to well controlled studies, with larger sample sizes, that are more generalizable across groups or populations
- Do not make sweeping statements about causation based on association data - that 2 factors are associated does not mean they are causally related (e.g. correlation data)
- Conclusions should be logical and insightful and require both synthesis and analysis
- Conclusions often identify areas where further research clarification or investigation may be warranted

Reviews of Standardised measures

- Another type of systematic literature review for finding the best instruments for assessment, monitoring or the evaluation patient outcomes for a particular health application. These reviews often guide the selection of measures for research studies – it is more effective to use a well validated measure than a DIY or a badly constructed measure
- As RCTs are not so relevant to this application (we evaluate outcomes using these measures in RCTs but we usually don't use RCTs to compare instruments directly) - similar but slightly different levels of evidence apply
- Examples are the Continence Outcomes Measurement Suite (Thomas et al. 2006) and the Dementia Outcomes Measurement Suite (Sansoni et al. 2008)
- Criteria for review (and selection) include psychometric properties (validity, reliability, responsiveness); availability of clinical and norm referenced data; practical utility; relevant applications; cultural, gender and age applicability, freedom from confounding factors etc

Weights for Assessment Criteria

Criteria	Weight 1-3
Theoretical/empirical basis	
Availability of comparison data / usage	
Length, ease and time to complete	
Complexity of administration	
Ease of scoring	
Cultural and gender appropriateness	
Translations available	
Sensitivity to change (Target Group)	
Reliability evidence available	
Validity evidence available	
Cost of instrument	
Cost – staff administration	

Assign your ratings for these criteria

Summary of Ratings for Social Isolation Instruments

Criteria	*Weight*	DJGLS	MSPSS	LSNS	MOS SSS	Friendship Scale[a]
Theoretical basis	*3*	3	3	3	3	3
Availability of relevant comparison data	*3*	3	2.5	2	2.5	1.5
Length	*2*	3	3	3	2	3
Complexity of admin	*2*	2.5	3	3	2	3
Cultural Appropriateness	*1*	2	2	2	2	2
Ease obtain score	*2*	3	3	3	3	3
Sensitivity (Target Group)	*3*	2.5	2	2.5	2.5	2
Reliability	*3*	2.5	3	3	3	2
Validity	*3*	2.5	2.5	2.5	2.5	2
Cost-instrument	*2*	3	3	3	3	3
Cost-staff	*2*	3	3	3	3	3
Weighted Total		**71.5**	**71**	**71**	**68.5**	**57.5**

a. This is a new instrument with very few publications (including independent publications) as yet – but the limited evidence available is promising.

- Sansoni J et al. (2010) *Final Report: Effective Assessment of Social Isolation.* Centre for Health Service Development, University of Wollongong

Summary of Ratings for Cognitive Assessment Instruments

Criteria	Weight	MMMSE (3MS)	SMMSE	RUDAS[a]	KICA-COG	KICA-CARER	IQCODE
Theoretical/empirical basis	*3*	3	3	3	3	3	3
Availability of comparison data	*3*	3	2	2	2	2	2
Length/feasibility of instrument for inclusion in battery	*2*	2	3	2	2	3	2
Complexity of administration/ cognitive burden	*2*	2	2	2	3	3	3
Cultural Appropriateness	*1*	2	2	3	3	3	2
Ease of obtaining score	*2*	2.5	2.5	3	3	3	3
Sensitivity	*3*	3	2.5	2	2	2	2.5
Reliability evidence	*3*	3	3	3	2.5[b]	2[b]	3
Validity evidence	*3*	3	3	2.5[b]	2.5[b]	2[b]	3
Cost of the instrument	*2*	3	2[c]	2	3	3	3
Cost of instrument administration	*2*	2	2	2	2	2	2
Weighted Total		70	65.5	62.5	65	64	68.5

a. Based on the DOMs review in 2008 – this review needs to be updated
b. Scored as 2 or 2.5 because of there being limited evidence/publications or independent publications but what there is indicates good sensitivity, validity and/or reliability.
c. Rated as 2 vs.1 as the costs are minimal and estimated at 12 cents per use
From Sansoni J et al.(2010) Selecting Tools for ACAT Assessment: A Report for the Aged Care Assessment Progam (ACAP) Expert Clinical Reference Group. CHSD, University of Wollongong. Report for the Aged Care Assessment Program, Australian Government Department of Health and Ageing, Canberra

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