

Critical Appraisal: Cross-sectional Surveys

Prevalence: Current disease rate in a given population

Incidence: Disease onset rate in a given population within a given time frame

Contact: Direct contact = Interviews
+ More info, Flexible, Variety
-- Observer bias, Expensive, Time-consuming

Indirect contact = Questionnaires + Records
+ No observer bias, Cheap, Quick
-- Lower response rate, Inflexible, Narrower scope

Structure: Structured = Closed questions, good for finite set of variables
+ Good for large samples, Easy analysis
-- Narrower scope

Semi-structured = Combination, advantages of both

Unstructured = Open questions
+ Flexibility, Depth, Scope
- Poor for large samples, Difficult analysis

Scales: Binary nominal = Yes / No

Multi-category nominal = Car / Train / Bus / Walk

Likert = Strongly agree / Agree / No opinion / Disagree...

Visual analogue scale = Suicidal -----x-- Perfect

Semantic differential = Uncaring 0 1 2 3 4 5 Caring

Thurstone = Tick all statements which apply to you...

Responder-related bias: Volunteer bias = Motivation to participate, sampling error

Social desirability = Express qualities deemed acceptable

Deviation = Unconsciously deviant answers

Faking good / bad = Conscious social desirability / deviation
\$ Questions measuring personality traits

Yes / No sayers = Unconscious tendency to answer Yes / No
\$ Contradictory question items

+ve / -ve skew = Yes / No sayer tendency for VAS + Likert

Central tendency = Avoidance of extreme categories
\$ Addition of extra dummy categories

Appraisal of XSS:

D - Is survey Design methodologically sound?

R - What do Results show?

E - How do the results Effect patient care?

D = Design:

1. Is there a clear statement of aims?
2. Is there a clear description of target population?
3. How were survey questions generated?
\$ Target population involvement, focus groups
4. Were survey questions validated?
\$ Process of validation, clarification of questions
5. Was the survey instrument piloted?
\$ Events during pilot
6. Are details of the survey instrument provided?
7. Is the sampling frame justified?
\$ Relevant to the target population, i.e. electoral register
8. Was the chosen sampling design justified?
\$ Type of random sampling employed
9. How was sample size determined?
\$ Involvement of statistician
10. What was the response rate?
\$ Aim 60-80%
11. Were efforts made to ensure better response?
\$ Reminders, Guarantee of anonymity, SAE

R = Results:

12. What do the results show?
\$ Descriptive / Analytical with statistical tests

E = Effect: 13. How to the results effect patient care?
\$ Relevance to target population
\$ Comparability of target population
\$ Implications of management
\$ Urgency
\$ Limitations of resources etc.

Mortality: Crude mortality rate (CMR) = $\frac{\text{Deaths in period} \times 1000}{\text{Midpoint pop'n} \times \text{Length of period}}$
 $= \frac{986 \times 1000}{86935 \times 1\text{yr}} = 11.34 \text{ per } 1000$

Age-specific MR (ASMR) = CMR calculated for each age bracket
\$ Remove effects of age structure seen with CMR

Standardization: Comparing population to another "benchmark" population

Direct: ASMR x Age group % in benchmark = Standardized ASMR
(Pop A) $19.1 \times 4\% = 0.76$
(Pop B) $2.6 \times 4\% = 0.10$

Indirect: Determine number of expected deaths (E) in population
 $E = (\text{ASMR} \times \text{Age group total}) / 1000$

Standardized Mortality Ratio (SMR): Comparison of observed with expected deaths
 $\text{SMR} = (O/E) \times 100$

i.e. Total population of A = 86935
% population aged 0-4 = 9.83%
Age group total = 8546
If ASMR in standard population = 1.86,

if $E = (1.86 \times 8546) / 1000 = 16$ expected deaths
and $O = 164$ observed deaths
then $\text{SMR} = (164 / 16) \times 100 = 1025$

P value of SMR: $\text{Chi}^2 = (O - E)^2 / E$
 $= (164 - 16)^2 / 16$
 $= 1369$
Compared on Chi^2 distribution, equates to $p < 0.001$
Strongly significant

Standard error of SMR: $\text{SEsmr} = (\text{Root SMR} / E) \times 100$
 $= (\text{Root } 1025 / 16) \times 100$
 $= 200$

