

Survey Based Research: purpose & methods



Structure of Session

- The purpose of survey research
- The types of clinical questions that lend themselves to using surveys as evidence sources
- The key features of survey research (quantitative /qualitative approaches)
- Strengths and limitations of survey based research

The purpose of survey research

- To obtain information on the behaviour, opinions, attitudes, beliefs and values etc. of a group of people

So what sorts of clinical questions lend themselves to using surveys as evidence sources?

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Research questions

- What are the views of patients and nurses on the quality of peri-operative care?
- Is patient education provided at the point of discharge enough to ensure female patients with acute myocardial infarction to seek early medical treatment for recurrent of the disease?
- What are the challenges faced by patients with schizophrenia in employment?

Attitudes/Views/Preferences/Opinions of healthcare professionals or patients

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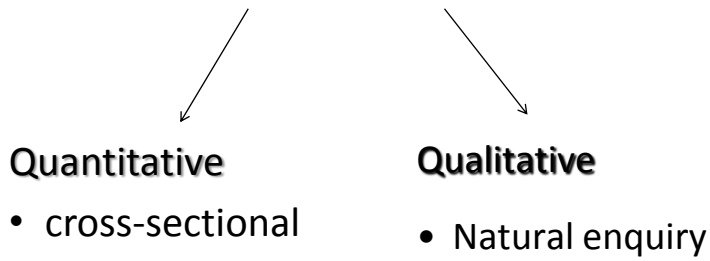
So what is a survey?

- A **method** of collecting information from a sample of the population of interest



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Descriptive



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Quantitative Approach

"Quantitative" is primarily concerned with the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population

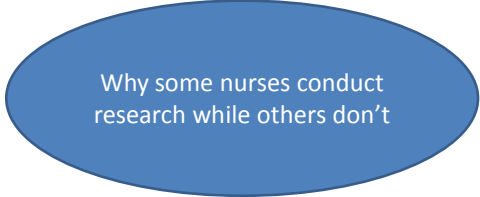


IV: Demographics, educational level, research experience, etc
DV: Nurses' experience in conducting research

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Qualitative Approach

- concerned with understanding the processes, which underlie various behavioural patterns
- "Qualitative" is primarily concerned with "Why"



Why some nurses conduct research while others don't

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Surveys

Prospective

- To establish patients' view about their active participation as partners in health care
- To study the distribution of diseases in populations and to establish factors that influence the occurrence of disease – epidemiological studies

Retrospective

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Survey method might be incorporated into a randomised controlled trial...



Pain and distress-reducing interventions for vene-puncture in children

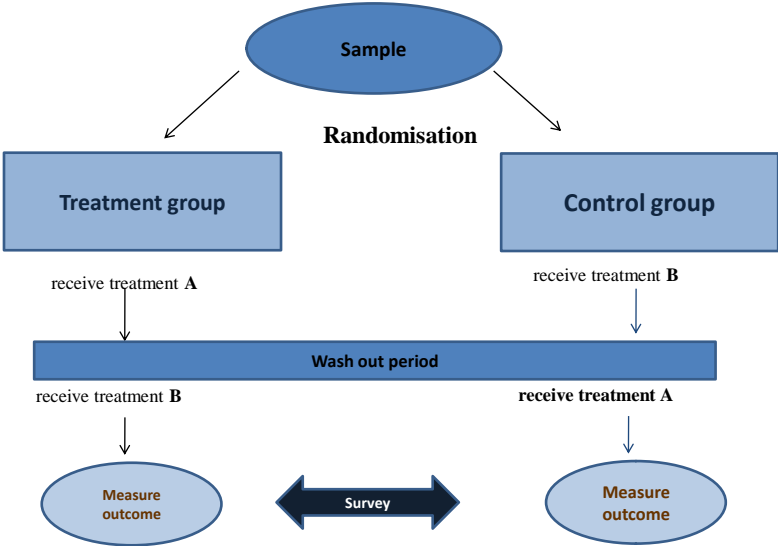
- EMLA cream
- Procedural information and distraction

Distress observed throughout procedure

Self reported pain

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RCT: Successive treatment design – Cross over design



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Survey method

Towards a quantitative paradigm?

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Survey-based research - participants

- Quantitative approach: Large population an accurate estimate of the relationship between variables
- Qualitative approach: enough samples to provide rich data

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Sample sizes (Quantitative approach)

Power analysis

- Calculate the minimum sample size
- Calculate the minimum effect size

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Probability Sampling

- **Simple random sampling:** sample is drawn randomly from a population.
- **Systematic selection procedure sampling:** a variant of a simple random sample in which a random number is chosen to select the first individual and so on from there.
- **Stratified sampling:** dividing up the population into smaller groups, and randomly sampling from each group.
- **Cluster sampling:** dividing up a population into smaller groups, and then only sampling from one of the groups.
- **Multistage sampling:** first, sampling a set of geographic areas. Then, sampling a subset of areas within those areas, and so on.

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Non-Probability Sampling

- **Purposive sampling:** to purposely select individuals to survey.
- **Convenience sampling**
 - **Haphazard sampling:** to survey individuals who can be easily reached.
 - **Volunteer subjects:** to ask for volunteers to survey
- **Quota sampling:** to select individuals based on a set quota. For example, if a census indicates that more than half of the population is of a unique feature(i.e. female, age lesser or more than a certain age, migrants) then the sample will be adjusted accordingly.

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Surveys - data collection

- Questionnaires
- Interviews (semi-structured/in-depth)
- Observation

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Survey

- Questionnaire
 - pen and pencil instruments complete by the respondents
 - Closed/open ended questions/statements
- Interviews (semi structured/In-depth)
 - complete by interviewers based on respondents' answer to the questions
 - Closed/Open ended questions



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Methods of data collection

Questionnaires

- Distribute/Collect personally (individually/in group)
- Drop off Mail
- Telephone surveys that use random dialing methods.
- computerized kiosks in public places that allows people to input data.

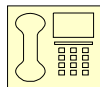


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Methods of data collection

Interviews

- personal in private
- focus group methodology evolved from a whole new variation of group interview.
- via telephones
- emailing/(a)synchronous chat room



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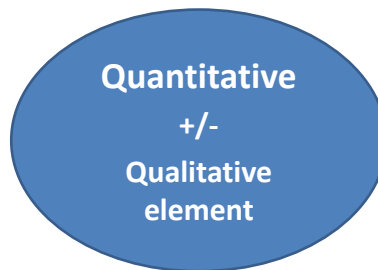
Points being considered when choosing methods to collect data

- Are Visual Presentations Possible?
- Are Long Response Categories Possible?
- Is Privacy An important Feature?
- Is the Method Flexible/convenient?
- Are Open-ended Questions Feasible?
- Is Reading & Writing Needed?
- Can You Judge Quality of Response?
- Are High Response Rates Likely?
- Can You Explain Study in Person?
- Is It Low Cost?
- Are Staff & Facilities Needs Low?
- Does It Give Access to Dispersed Samples?
- Does Respondent Have Time to Formulate Answers?
- Is There Personal Contact?
- Is A Long Survey Feasible?
- Is There Quick Turnaround?

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Surveys

- Questionnaires
- Structured interviews
- In-depth interviews
- Observation



However, De Vaus' ideas are not held by everyone and many people would argue that there is no such thing as a qualitative survey

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A Survey Research

*"a **research design** which aims to obtain descriptive and correlational data usually from large populations, usually by questionnaire, interviews and to a lesser extent, by observations"*

(Parahoo 2006)

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Survey research - quantitative studies

Questionnaires:

Research tools/instruments

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Survey research – quantitative studies

Questionnaires

– research instruments/research tool

Part one - non standardised questionnaire
demographic data (independent variables)

Part two - standardised questionnaire
focus is the issue being investigated (dependent variables)

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Non-standardised Questionnaires – research instruments/research tool

My Gender: Male Female

My Age: _____
(Please specify)

My educational qualifications: _____
(Please specify the type of degree)

My years of experience as a preschool teacher: _____yrs _____mths

My current post is my _____nursing job.
 first
 second
 others: _____
(Please specify)

The nature of my current employment is:
 full time
 part time: _____
(Please specify the number of hours/week)

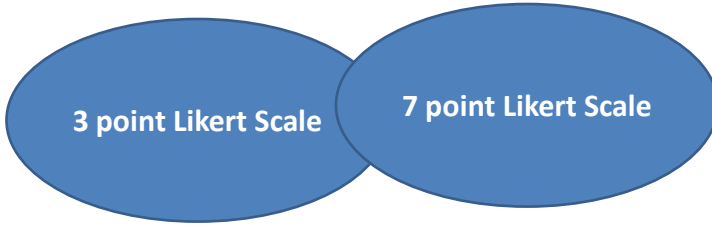
My current job title is: _____
(Please specify)

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Standardised questionnaires

Job satisfaction scale – 5 point likert scale
 [Part of a scale developed by Lester (1987)]

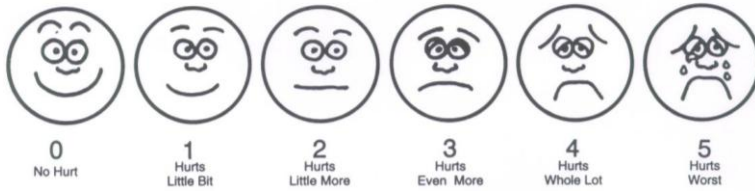
Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My job provides me with an opportunity to advance professionally					
My income is adequate for normal expenses					
My job provides an opportunity to use a variety of skills					
When instructions are inadequate, I do what I think is best					



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Standardised questionnaires

Wong-Baker FACES
 Pain Rating Scale



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Standardised questionnaires

Rotter scale – developed by Rotter (1966) to assess locus of control

- 1a. Students get into trouble because parents punish them too much.
- 1b. The trouble with most children nowadays is that their parents are too easy with them

- 2a. Many of the unhappy things in people's lives are partly due to bad luck.
- 2b. People's misfortunes result from the mistakes they make

- 3a. One of the major reasons why we have wars is because people don't take enough interest in politics
- 3b. There will always be wars, no matter how hard people try to prevent them

- 4a. In the long run, people get the respect they deserve in this world.
- 4b. Unfortunately, an individual's worth often passes unrecognised no matter how hard he tries

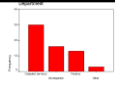

- 5a. The idea that teachers are unfair to students is nonsense
- 5b. Most students don't realise the extent to which their grades are influenced by accidental happenings

Questionnaires – research instruments/research tool

- **Reliability**
 1. When was it developed?
 2. How was it developed?
 3. Was **Cronbach's α (alpha)** test performed?

- **Validity**
 1. Has the instrument been administered to many other populations in research studies?
 2. Any pilot study?
 3. If any specific adjustment needed?

Data - Levels of measurement

Nominal	 Pain – no pain	Categories
Ordinal	[1] [2] [3] [4] [5] 	A short (e.g. likhert) scale, sub continuous
Interval	12345.....98,99,100	A continuous scale (1-100)
Ratio	Blood pressure, temperature etc.	A continuous scale with a known zero

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Levels of measurement and statistics – ‘rich’ data

- Each level (nominal, ordinal, interval and ratio) have their own ‘families’ of statistical procedures
- Nominal has fewer statistical procedures and its data is least ‘rich’
- Interval and ratio have the most sophisticated and advanced procedures and their data is the most ‘rich’
- Be aware of the level of measurement and if possible, construct your questions so that they yield the most ‘rich’ data

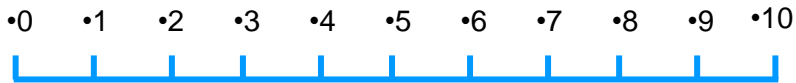
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Wong-Baker FACES Pain Rating Scale



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Numeric Scale



No Pain

Worst Pain

Don't ask 'have you any pain or not', when you could ask 'on a scale of 1-10 how much pain do you have?'

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Qualitative questions

Open vs. closed questions

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Ethical Consideration

Descriptive - establish association
- natural inquiry

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Ethical Consideration

Ethical Approval

- Voluntary Participation
- No harm to participant
- Anonymity/Confidentiality

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Data Analysis - quantitative

- All variables are analysed (independent, dependent, covariables)
 - Quantify the relationship such as correlations, relative frequencies, or differences between means
- Inferential Statistics are used
 - To determine if an association between the variables is present.

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Descriptive' vs. 'inferential'

Analysis of survey data involves looking for how variables are distributed within the cases

- Descriptive statistics are used to describe and summarise data
- Inferential statistics are used to draw inferences from data. Essentially this means:
 - Identifying the significance of differences between two or more variables (sets of data)
 - Identifying the effect of one or more variables on one or more other variables
 - Identifying the strength of relationship between two or more variables

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Data analysis - quantitative

Statistical Package for the Social Sciences

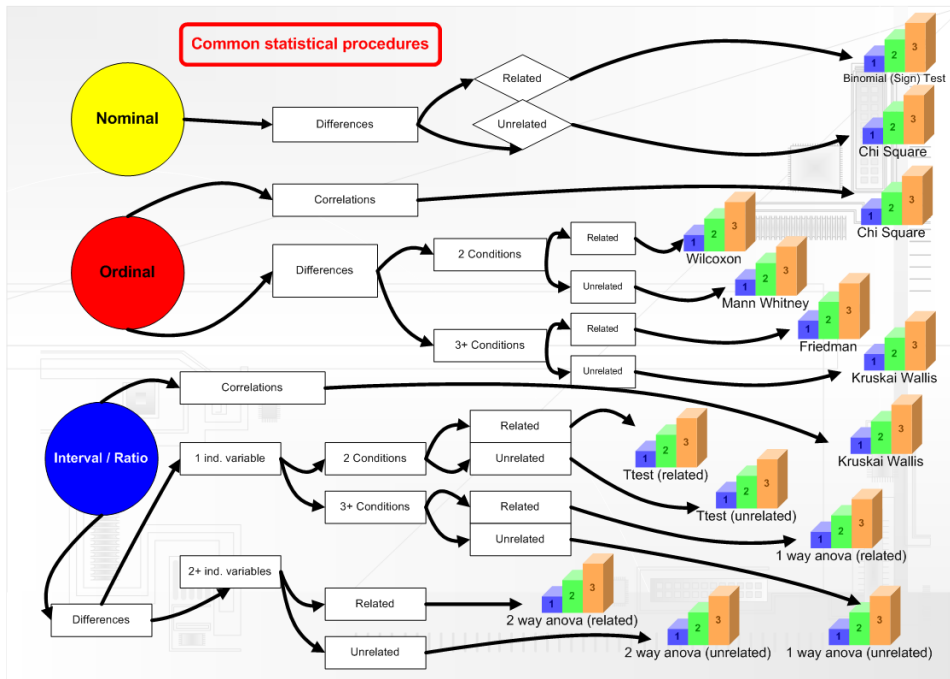
SPSS – versions 14/16/18

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Data Analysis - quantitative

- All variables are analysed (independent, dependent, co-variables)
 - Quantify the relationship such as correlations, relative frequencies, or differences between means
- Inferential Statistics are used
 - To determine if an association between the variables is present.
- The choice of analytical methods are concurrently planned with designing the study protocol and data collection

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Common statistical test

- t - test
- Anova
- Chi-squared (χ^2) test
- Pearson's r Correlation

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Probability (p value)

- Significance is not black and white, not 0 or 1
- Probability is the measured degree of significance
- Probability is usually expressed as a part of a hundred e.g. 0.05
- $P = 0.05$ (means 5:100)
- $P = 0.01$ (means 1:100)
- $P = 0.001$ (means 1:1000)

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Quantitative Research

- "Quantitative" is primarily concerned with the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population
- Emphasis is non-bias

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Characteristic features of survey

- Large number of participants (except cross over experiments)
- Reliability and Validity of instruments
- Detachment of researchers
- Use of inferential statistics
- Qualitative component - even if present is minimal

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Some criticisms of surveys....

- Cannot establish causal relationships
- Surveys (Majority of which used quantitative approaches), they are often viewed as being incapable of obtaining meaningful aspects of social behaviour

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Survey Research

- A survey is designed to obtain information from populations regarding the prevalence, distribution and interrelationship of the variables within these populations (Polit and Hungler 1995, cited Parahoo 2006)

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Strengths of a predominantly quantitative paradigm

1. Researcher knows clearly in advance what he/she is looking for - all aspects of the study can be carefully designed before data is collected.
2. Objective seeks precise measurement & analysis of target concepts, e.g., uses surveys, questionnaires etc.
3. Quantifiable - the ability to effectively translate data into easily quantifiable charts and graphs
4. Generalisable to a larger population to predict behaviour, attitude, etc
5. using standards means that the research can be replicated, and then analysed and compared with similar studies
6. Quantitative data is efficient, able to test hypotheses

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Limitations of a predominantly quantitative paradigm

1. Logistical difficulties inherent in the large number
2. the research is often carried out in an unnatural, artificial environment so that a level of control can be applied to the exercise.
3. Contextual detail might be missed.
4. rigid structure, is not the most flexible method and, when handled improperly, is especially vulnerable to statistical error.
5. The misuse of sampling and weighting can completely undermine the accuracy, validity, and projectability of a quantitative research study.

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