What do you want to know? Qualitative and quantitative research approaches

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Aims

1. To understand what the terms qualitative research and quantitative research mean, and key differences between these modes of research

2. To understand when and why you might use these different modes of research in the context of health services research

3. To understand how to build research questions for these different modes of research

4. To think about some different approaches to combining qualitative and quantitative approaches

5. To provide advice on proposing qualitative research in grant applications
What is qualitative research?

“[…] disciplined inquiry that examines people’s lives, experiences and behaviours, and the stories and meanings individuals ascribe to them. It can also investigate organisational functioning, relationships between individuals and groups, and social environments.” (National Health and Medical Research Council, 2015)

“[…] research that investigates aspects of social life which are not amenable to quantitative measurement. […] qualitative research uses a range of methods to focus on the meanings and interpretation of social phenomena and social processes in the particular contexts in which they occur.” (Jupp, 2006, underlining is mine)
What is quantitative research?

“[…] research involving the collection of data in numerical form for quantitative analysis. The numerical data can be durations, scores, counts of incidents, ratings, or scales. Quantitative data can be collected in either controlled or naturalistic environments, in laboratories or field studies, from special populations or from samples of the general population. **The defining factor is that numbers result from the process**, whether the initial data collection produced numerical values, or whether non-numerical values were subsequently converted to numbers as part of the analysis process […]” (Jupp, 2006, underlining is mine)
When and why do we do qualitative research?

We undertake qualitative research when we think that:

1. At least some elements of human life cannot be understood by reducing them to numeric data
   e.g., experience, meaning, narrative, context or place
2. Our research participants have expertise to impart
   e.g., experts in relation to their lived experience, or to a specific organisation or process, barriers/facilitators research
3. There are limitations to our own expertise that open-ended empirical research can address
   e.g., new and emergent fields, hypothesis generation, contextualisation of quantitative findings
4. Consumer engagement and input is a fundamental good (democratic or pragmatic)
   e.g., agenda setting or co-design (‘nothing about me without me’), satisfaction, acceptability, usability (pragmatism)
5. When we have a small target population
   e.g., service users at a specific service, minority group in a regional area, people with specific health profile
What are our data in qualitative research?

• When we undertake qualitative research, we examine:

  – Language, speech and text (e.g., through interviews or documentary analysis)
  – Images
  – Social practices (e.g., through observation)
  – Characteristics of the physical environment (e.g., through mapping)
  – Technologies and material artefacts (e.g., through drawings, images or acquisitions)
How do we do qualitative research?

- Qualitative research is often emergent and inductive:
  - We frame the object of our research through an iterative process of ordering and narrowing (Neale, 2016)
  - Data collection, analysis and write-up often occur in tandem (Charmaz, 2006)
  - Analysis depends on the acuity (and sometimes creativity) of the investigator(s)
Cooper and Endacott (2007) identify the following opportunities for qualitative research in Emergency Medicine:

- Patient experiences
- Impact of life threatening events on patients and families
- Lived experience of working in the ED (i.e. staff experiences)
- Culture of the ED community

Cooper, Endacott and Chapman (2009) allude to several domains of emergency medicine that may benefit from qualitative research, such as:

- Education and training needs
- Staff wellbeing
- Leadership and teamwork
- Policies and procedures (e.g., patient safety)
- Staff-patient communication
When and why do we do quantitative research?

We undertake quantitative research when:

1. We think that at least some elements of human life can be understood by reducing them to numeric data
   e.g., knowledge, attitudes, biorhythms, physiology

2. We want to know the size or extent of a particular phenomenon and/or how it changes over time
   e.g., prevalence of a disease or issue

3. We think that our research participants might not know the answer to our question
   i.e., questions not reliably known by sensory experience or introspection (e.g., biochemistry, diagnosis, cause and effect)

4. We want to know whether or not, and how, different variables are associated with each other
   e.g., is there an association between socioeconomic status and severity of presenting problem in an ED?

5. We want to know whether an intervention (e.g., treatment or programme) has had the desired effect (and not caused harm)
When and why do we do quantitative research? ctd.

6. We want to standardise and generalise our findings
   e.g., we want to use similar techniques (and measures) as others so as to compare the findings from one study in one setting with similar studies from other settings to enable the production of more robust findings that have universal validity

7. When we want our findings to be reproducible and replicable (scientific virtues)
   i.e., others can reproduce our findings or replicate our study to see if our findings hold

8. When the existing literature supports it
   e.g., there is a strong body of literature that exists and on which basis we can develop and test hypotheses (predicted relationships between variables), validated instruments have been developed that we can use to investigate the phenomena we are interested in

9. When we have a large enough population (and response rate) to get meaningful results
What are our data in quantitative research?

• In quantitative research our data are the numeric data that we will analyse, though this may come from:
  – Questionnaires (including standardised validated psychometric instruments)
  – Literature (systematics reviews/meta analysis)
  – Existing datasets (e.g., service use and other administrative data)
  – Interviews
  – Observation
  – Biological specimens (potentially less important in HSR)

• The numeric data we collect have different properties that will influence that statistical techniques we can use in analysis (levels of measurement i.e., discrete, continuous) (Neuman, 2013)

• Our dataset will consist of variables (e.g., Age, Educational Level, Psychological Distress, Alcohol use) (Salkind, 2010)
  
  e.g., Independent variables and dependent variables, primary and secondary outcome measures
How do we do quantitative research?

• Quantitative research is (mostly) linear and progresses through distinct stages
  − Specify our research questions, hypotheses, variables and outcomes in advance (based on clear conceptual and operational definitions)
  − Analysis is computational and foregrounded by research design and variable selection
  − Descriptions should aid reproducibility and replicability

Literature review
Research questions *(hypotheses)*
Variables *(including primary and secondary outcomes, if applicable)*
Sample size *(power calculations)*
Research protocol
Ethics *(may be more involved than for qualitative research*, particularly if the study is interventional)*

Preparation for data collection
Data collection
Data analysis
Write-up and publication

Output
Partridge and Affleck (2017) examined verbal abuse and physical assault in the emergency department

- Survey used to quantify rates of violence
- Perceptions of safety
- Attitudes towards security

Found that:

- Nurses are more likely to be physically assaulted than other ED staff
- Nurses less likely to feel safe
- Occupational violence is under reported
Data collection

Output

qualitative

quantitative
What approach should I take?

• Strengths of one approach are limitations of the other approach
  − This is why we have two traditions

• Ideally, in a lot of cases, we want to use both

• In practice we need to make a decision, based on:
  − The nature of our question (what do I want to know?)
  − What is already known
  − Practicalities (including resources, competencies, access to populations/data, ethics etc.,)
What do I want to know?

Do I want to:

- Understand consumer (or staff) experiences or narratives
  e.g., consumer journeys, satisfaction, barriers, facilitators
- Create user-centred (and usable) services and systems
  e.g., acceptability, feasibility, user-centred design, co-design, participatory action research
- Interpret what my (quantitative) results mean?
- Answer a specific question relating to my service or consumer group that I need to answer?

Do I have a small target population?

If you have answered ‘yes’ to any of these questions, consider whether qualitative research is the most appropriate approach to use
What do I want to know?

Do I want to:

• Understand uptake or retention rates
• Know whether my service (or intervention) effective
• Understand who is using my service (or intervention)
• Understand the association between different variables of interest that are useful for improving my service
• Produce findings that are generalisable to other settings or populations?

Do validated instruments (e.g., K10, AUDIT) exist to measure the constructs that interest me?

Do I have well formulated hypotheses that I would like to test?

Do I have access to a large enough target population to make my results meaningful?

If you have answered ‘yes’ to any of these questions, consider whether quantitative research is the most appropriate approach to use.
Building qualitative research questions

There are some differences in how we craft good research questions, depending on whether we are doing qualitative or quantitative research

• Qualitative research questions can be ‘closer’ in form to the questions that are asked of participants

• Qualitative research questions tend to be more open ended and flexible

• ‘Parts’ of a qualitative research question are:
  − Features of human life to be examined (experience, narrative etc.,)
  − Context, issue or event to be examined (setting, service, event or place etc.,)
  − Population of interest (who is the research about?)

how do mental health consumers experience the transition from ED to in-patient wards?

Might ask consumers the question: what is it like leaving an ED and transitioning to an in-patient ward?
Building quantitative research questions

Quantitative research questions are more specific than qualitative research questions

• Questions should not change following data collection or analysis (*cf. p*-hacking)

• Through experimental design, we can ascertain information without asking directly

• Parts of a quantitative research questions are:
  − Population of interest
  − Variables of interest
  − Intervention of interest (if applicable)

• Clinical/experimental research may use the PICO guidelines:
  − **P**atient, problem or population of interest
  − **I**ntervention (or service)
  − **C**omparison, control or comparator (if applicable)
  − **O**utcome

Does providing research training to clinicians improve the confidence of in undertaking qualitative research?
Mixing methods (extra for experts)

• Mixing methods are a good way to capitalise on complementarity of methods to get a more nuanced understanding

• Concept of triangulation
  − Using multiple methods to produce a better understanding of phenomena
  − Think dimensionally and holistically not reductively
Mixing methods (extra for experts)

- There are different ways to mix methods
  - Can sequence and prioritise qualitative and quantitative research in a variety of ways (Morgan, 1998)

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Qualitative research in grant applications

• Alignment and consistency between aims, research questions and methods
  − How will qualitative research answer the question/problem that you have?

• Clarity and communication
  − Don’t assume people will know anything about your approach – have a short description about what the method you are using is, and what it’s good for

• Focus
  − Open ended ≠ anything goes need to be focused about what you want to know
  − Can be tricky to sell open-ended, exploratory research, *cf.* structured research that builds on an existing corpus of research.
  − ‘Grounded theory’ is a common approach, but I try and avoid the term
    o Can be a catch all term taken to mean open ended, inductive research
    o Grounded theory approaches used in health research a great deal more structured than they are in sociology. I prefer the term ‘pragmatic grounded theory’ (Parker et al., 2016) when speaking about applied research
    o Structured qualitative research is still more unstructured than quantitative research

• Be pragmatic but reflexive
  − Qualitative research can be viewed with scepticism, consider who reviewers might be, and whether your application will get a fair shot
  − Think about these imbalances when you yourself review
Final remarks

• Both approaches (qualitative and quantitative) have their strengths and limitations
  – Think about what you want to know
  – If you have the skill and resources, consider mixed methods approaches
  – Be pragmatic (research is the art of the possible)

• Good research is completed research - you can’t do everything at once!
  – Get help at the beginning of your research project
  – consider partnering with universities and/or commissioning peer review of research protocol

• Even if you think you’re a methods expert – look for field specific discussions
  – This will help you understand subtle differences in conventions that exist across fields and disciplines

• Limitations (of this presentation)
  – This is a quick tour, not exhaustive
  – In some cases, I’ve had to gloss over concepts (e.g., levels of measurement, variables and power calculations)
Useful resources available online

- Sage Research Methods (methods.sagepub.com)
  - Excellent online resources, including dictionaries, encyclopedia and YouTube clips
- Online course providers (many are free)
  - edX (UQx) https://www.edx.org/
  - Khan Academy https://www.khanacademy.org/
  - Coursera https://www.coursera.org/
  - Stanford Lagunita https://lagunita.stanford.edu/
- Consumers Health Forum of Australia
    - Narrative research interview template and visualisation tool
- BetterEvaluation (www.betterevaluation.org)
  - Australian-based resource
  - Advice on planning and executing evaluations
  - Provides information on a wide range of methodologies and methods
- Thebmj research methods and reporting (www.bmj.com)
  - “How to” articles on different methods
References cited and other useful references


Morgan, D. Practical Strategies for Combining Qualitative and Quantitative Methods: Applications to Health Research. *Qualitative Health Research* 1998 8(3), 362-376


References cited and other useful references


If you know of a particularly good methods reference for qualitative, quantitative and/or mixed methods research – please send it to me Carla.Meurk@health.qld.gov.au!