

## QUALITATIVE RESEARCH

# Grounded theory, mixed methods, and action research

Lorelei Lingard,<sup>1</sup> Mathieu Albert,<sup>2</sup> Wendy Levinson<sup>3</sup>

These commonly used methods are appropriate for particular research questions and contexts

Qualitative research includes a variety of methodological approaches with different disciplinary origins and tools. This article discusses three commonly used approaches: grounded theory, mixed methods, and action research. It provides background for those who will encounter these methodologies in their reading rather than instructions for carrying out such research. We describe the appropriate uses, key characteristics, and features of rigour of each approach.

### Grounded theory: what is it and when is it used?

Grounded theory was developed by Glaser and Strauss.<sup>1</sup> Its main thrust is to generate theories regarding social phenomena: that is, to develop higher level understanding that is “grounded” in, or derived from, a systematic analysis of data. Grounded theory is appropriate when the study of social interactions or experiences aims to explain a process, not to test or verify an existing theory. Researchers approach the question with disciplinary interests, background assumptions (sometimes called “sensitising concepts”<sup>2</sup>) and an acquaintance with the literature in the domain, but they neither develop nor test hypotheses. Rather, the theory emerges through a close and careful analysis of the data.

### What are the key features of grounded theory?

Key features of grounded theory are its iterative study design, theoretical (purposive) sampling, and system of analysis.<sup>3</sup> An iterative study design entails cycles of simultaneous data collection and analysis, where analysis informs the next cycle of data collection. In a study of the experience of caring for a dying family member, for instance, preliminary analysis of interviews with family care providers may suggest a theme of “care burdens,” and this theme could be refined by interviewing participants who are at various points in the care trajectory, who might offer different perspectives. Analysis of the subsequent phase of data collection will lead to further adaptations of the data collection process to refine and complicate the

emerging theory of care burdens. In keeping with this iterative design, the sampling process proceeds on theoretical grounds: the sample is not set at the outset but is selected purposefully as the analysis progresses; participants are chosen for their ability to confirm or challenge an emerging theory.

The central principle of data analysis in grounded theory research is constant comparison. As issues of interest are noted in the data, they are compared with other examples for similarities and differences. Through the process of constant comparison, for which a number of formal approaches are available,<sup>4</sup> emerging theoretical constructs are continually being refined through comparisons with “fresh” examples from ongoing data

### Box 1 Grounded theory study

A study of clinical supervision using interviews and observations took place in the emergency departments and inpatient teaching wards (general internal medicine) in two teaching hospitals.<sup>5</sup> Its aim was to understand how clinical teachers in these settings balanced the goals of supervising trainees to ensure patient safety and allowing trainees sufficient independence to develop their competence. In an era of increasing concern for patient safety, the authors aimed to develop a conceptual model of clinical supervision to inform and guide policy and research.

The principal author (a licensed physician) and a trained research assistant conducted non-participant observations of 12 internal medicine and emergency medicine teaching teams during regular clinical activities. Observations focused on the interactions among trainees and teachers. During and after the observation phase they interviewed 65 team members (teachers, trainees, and nurses) about supervision.

The researchers used an iterative approach to analyse field notes and interview transcripts on an ongoing basis throughout the study. This allowed them to pursue emergent themes in subsequent data collection. Saturation sampling was used, in which observations and interviews stopped when no new, dominant issues were emerging in the dataset. Triangulation among multiple datasets (observations in four distinct settings, interviews with teachers and trainees) provided the basis for a comprehensive model of the range and pattern of supervision strategies (clinical oversight) used by clinical teachers on these teams.

<sup>1</sup>SickKids Learning Institute and Department of Paediatrics and Wilson Centre for Research in Education, University of Toronto, 200 Elizabeth Street, Eaton South 1-565, Toronto, ON, Canada M5G 2C4

<sup>2</sup>Department of Psychiatry and Wilson Centre for Research in Education, University of Toronto

<sup>3</sup>Department of Medicine, University of Toronto

Correspondence to: L Lingard [lorelei.lingard@utoronto.ca](mailto:lorelei.lingard@utoronto.ca)

Cite this as: *BMJ* 2008;337:a567 doi:10.1136/bmj.39602.690162.47

This is the second in a series of six articles that aim to help readers to critically appraise the increasing number of qualitative research articles in clinical journals. The series editors are Ayelet Kuper and Scott Reeves.

For a definition of terms, see the first article in this series.

**Box 2 Mixed methods study**

A study of caregiver burden sought to extend understanding of the social experience of mothering children with disabilities.<sup>8</sup> It aimed to explore in depth the nature of the burdens perceived and the possibility of benefits of the maternal care giving role through a concurrent, mixed method approach. It surveyed 81 mothers of children with disabilities and followed up with in-depth interviews with a purposeful sample of seven of these mothers 1-3 years after the survey.

Interviewees were selected on the basis of the degree to which they represented the diversity of background characteristics among survey participants. In interviews, mothers were asked to share the stories of their children's births and diagnoses and their own and their children's interactions with family members, neighbours, friends, service providers, and members of the wider community. They were not specifically queried about stigma, burden, or perceived benefits (designated survey items) but were asked to talk about how their parenting experiences had affected them.

Data from the survey and the interviews were triangulated in the analysis in order to produce greater insight than would be gained by a single method. For instance, while the survey results emphasised the sociostructural constraints that produce a burden of care, the interview results illustrate that, despite these sociostructural constraints, most mothers perceive valuable benefits in having a child with a disability. These perceived benefits can be negatively affected by perceived stigma.

collection, which produces the richness that is typical of grounded theory analysis.

Iterative study design, theoretical sampling, and system of analysis are intimately related. An iterative study design requires theoretical sampling for iterations to be meaningful, and constant comparative analysis allows the integration of new and existing data in this iterative cycle, towards a well grounded theory. Therefore, a study must use all three of these features to allow the emergence of new conceptual models—such as “clinical oversight” (box 1)—that extend beyond conventional thinking.

**Mixed methods: what is it and when is it used?**

Mixed methods research combines elements from both qualitative and quantitative paradigms to produce converging findings in the context of complex research questions. There are tensions between these methods in terms of their values and processes, but these very

**Box 3 Action research study**

A study of the impact of interprofessional care coordinators took place in the general and emergency medicine service of an inner London hospital trust.<sup>11</sup> The study sought to explore the characteristics and impact of the development of the new role of interprofessional care coordinator (IPCC) on the working of the interprofessional team in an acute medical inpatient setting. In the context of changing models of service delivery in UK health and social care, the authors aimed to understand the impact of a new support worker role on the work of existing practitioners.

Data were collected using a variety of methods, including 37 individual semistructured interviews and 16 focus groups with IPCCs, managers, and interprofessional team colleagues; 24 half day observations of IPCCs; field notes from two years of participant observation; and systematic analysis of relevant documents from the hospital trust.

The study unfolded within three main action research cycles. In each cycle, the lead investigator worked collaboratively with participants to consider findings to date, decide what (if any) changes were needed in response to the findings, and take forward any developments that had been agreed. These main cycles were “communicating about the IPCC role,” “exploring issues of accountability,” and “improving interprofessional working.” Further data were collected to illuminate the process and outcomes of change within each of the cycles.

**Box 4 Key elements to look for in research papers**

**Grounded theory**

- Does the research question indicate that a theory is needed?
- Is the study designed to support iterative data collection and analysis in a context of theoretical sampling?
- Does the discussion explain how the theory responds to the original research question?

**Mixed methods**

- Is the research question appropriate for mixed methods or would a single method suffice?
- Is the relation among the methods clear in terms of their sequence, priority, and integration?
- Does the discussion relate the findings to a complex understanding of a multifaceted phenomenon?

**Action research**

- Does the research question arise from a situated problem that is best understood through a collaborative research partnership?
- Are the research agenda and activities shared by researchers and partners?
- Do the results meet the partners' needs in a collaborative and equitable manner? Is the identified problem acted on in a substantive way?

tensions can generate new insights. In medicine, mixed methods have arisen in the wake of attention to the psychosocial determinants of health and the human aspects of medical care. For instance, a study of quality of care in people with diabetes might measure the frequency of foot and eye examinations, or glycated haemoglobin (H<sub>gA</sub><sub>1c</sub>) concentrations, and interviews with patients might address barriers to achieving these goals.

**What are the key features of mixed methods?**

The mixing of methods may happen within one study or across several studies in a research programme. The strategy for mixing methods must be explicit and justified in terms of the sequence of methods (concurrent, qualitative first, or quantitative first), the priority among methods (equal, or either method prioritised), and the nature and timing of integration (full or partial, during data collection, analysis, or interpretation).<sup>6</sup> A study of nurses' perceptions of medical error might first distribute an attitude survey, followed by focus groups, so that the focus groups can be organised to include participants with a range of attitudes for the purposes of exploring the implications of varying attitudes towards error. In this study, the methods are integrated during data collection and analysis, with the quantitative method first in the sequence and the qualitative method prioritised in terms of the dominant aim of the research.

Central to the effectiveness of a mixed methods study is a clear and strategic relationship among the methods in order to ensure that the data converge or triangulate to produce greater insight than a single method could.

## SUMMARY POINTS

Understanding the appropriate uses and key features of qualitative methodologies can help readers in critically appraising the literature

Grounded theory, mixed methods, and action research are commonly used in health research

Each methodology is appropriate for particular research questions and contexts, yielding insights of relevance to clinical and health delivery issues

Because qualitative and quantitative methods derive from different traditions, mixed methods research must take care to negotiate back and forth between these different approaches rather than dichotomising their values and methods. Qualitative research emphasises an inductive-subjective-contextual approach and quantitative research emphasises a deductive-objective-generalising approach, but these broad tendencies are neither absolute nor mutually exclusive.<sup>7</sup> Good mixed methods research negotiates these tendencies by articulating how and why criteria from both paradigms are integrated.

**Action research: what is it and when is it used?**

In action research studies (also referred to as community based research, participatory action research, or collaborative inquiry),<sup>9</sup> research is not done on or with participants; research is designed, carried out, and integrated by the participants in partnership with the researchers. Based in emancipatory social theory and designed to democratise the research process, action research is an iterative process in which researchers and practitioners act together in the context of an identified problem to discover and effect positive change within a mutually acceptable ethical framework. For example, researchers and community leaders might explore approaches to obesity prevention through surveys or interviews conducted in local churches, community

centres, or schools. Because it embraces a tension between local solutions and transferable knowledge, action research can help make results of such research more generally applicable.<sup>10</sup>

**What are the key features of action research?**

The key features of action research include its collaborative nature, its egalitarian approach to power and education in the research process, and its emphasis on taking action on an issue. The extensive collaboration between researchers and partners in action research must extend across each stage of research, from identifying the problem to disseminating the results. This collaboration entails shared control of the agenda and also involves reciprocal education to improve researchers' and research partners' understanding of one another's positions and contributions. Finally, the study must blend scientific inquiry with social action by creating knowledge that is relevant to the research partners' needs and interests. For instance, in an action research project for preventing falls in a long term care facility, researchers and staff would collaboratively define the problem and the research design; the staff might conduct interviews with colleagues and patients, and the solutions that are decided and implemented will be based on the needs and priorities of the staff.

**Conclusion**

These methods can be useful in answering clinical and health delivery research questions in ways that challenge conventional thinking, offer multidimensional insights, and provide local solutions. Box 4 lists key elements to look for in research papers written using each of these approaches.

**Contributors:** LL, MA, and WL researched, wrote, and revised the article. LL is guarantor.

**Funding:** None.

**Competing interests:** None declared.

**Provenance and peer review:** Commissioned; externally peer reviewed.

## FURTHER READING

**Books**

Creswell J. *Research design: qualitative, quantitative and mixed methods approaches*. 2nd ed. Thousand Oaks, CA: Sage, 2003.

Green LW, George MA, Daniel M, et al. Guidelines for participatory research in health promotion. In: Minkler M, Wallerstein N, eds. *Community based participatory research for health*. San Francisco, CA: Jossey-Bass, 2003:419-28.

Meyer J. Action research. In: Pope C, Mays N, eds. *Qualitative research in health care*. 3rd ed. Malden, MA: Blackwell, 2006:121-42.

Strauss A, Corbin J. *Grounded theory in practice*. Thousand Oaks, CA: Sage, 1997.

Winter R, Munn-Giddings C. *A handbook for action research in health and social care*. London: Routledge, 2001.

**Articles**

Hall W, Callery P. Enhancing the rigor of grounded theory: incorporating reflexivity and relationality. *Qualitative Health Research* 2001;11:257-72.

Kennedy T, Lingard L. Making sense of grounded theory. *Medical Education* 2006;40:101-8.

McGhee G, Marland GR, Atkinson J. Grounded theory research: literature reviewing and reflexivity. *Journal of Advanced Nursing* 2007;60:334-42.

Morgan D. Practical strategies for combining qualitative and quantitative methods: applications to health research. *Qualitative Health Research* 1998;8:362-76.

- 1 Glaser B, Strauss A. *The discovery of grounded theory: strategies for qualitative research*. Chicago: Aldine, 1967.
- 2 Blumer H. *Symbolic interactionism: perspective and method*. Englewood Cliffs, NJ: Prentice Hall, 1968.
- 3 Kennedy T, Lingard L. Making sense of grounded theory. *Med Educ* 2006;40:101-8.
- 4 Strauss A, Corbin J. *Basics of qualitative research: techniques and procedures for developing grounded theory*. 2nd ed. Thousand Oaks, CA: Sage, 1998.
- 5 Kennedy TJ, Lingard L, Baker GR, Kitchen L, Regehr G. Clinical oversight: conceptualizing the relationship between supervision and safety. *J Gen Intern Med* 2007;2:1080-5.
- 6 Creswell J. *Research design: qualitative, quantitative and mixed methods approaches*. 2nd ed. Thousand Oaks, CA: Sage, 2003.
- 7 Morgan DL. Paradigms lost and paradigms regained: methodological implications of combining qualitative and quantitative methods. *J Mixed Methods Res* 2007;1:48-76.
- 8 Green SE. "We're tired, not sad": benefits and burdens of mothering a child with a disability. *Soc Sci Med* 2007;64:150-63.
- 9 Gibson N, Gibson G, Macaulay A. Community-based research: negotiating research agendas and evaluating outcomes. In: Morse J, Swanson J, Kuzel A, eds. *The nature of qualitative evidence*. Thousand Oaks, CA: Sage, 2001:161-84.
- 10 Meyer J. Action research. In: Pope C, Mays N, eds. *Qualitative research in health care*. 3rd ed. Malden, MA: Blackwell Publishing, 2006:121-42.
- 11 Bridges J, Meyer J, Glynn M, Bentley J, Reeves S. Interprofessional care co-ordinators: the benefits and tensions associated with a new role in UK acute health care. *Int J Nurs Stud* 2003;40:599-607.