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Qualitative research in healthcare: an introduction to grounded theory using thematic analysis

[1]AL Chapman, [2]M Hadfield, [3]CJ Chapman
[1]*Consultant in Infectious Diseases and General Medicine, Department of Infectious Diseases, Monklands Hospital, Airdrie, UK;* [2]*Professor of Education, School of Social Sciences, Cardiff University, Cardiff, UK;* [3]*Professor of Educational Policy and Practice, School of Education, University of Glasgow, Glasgow, UK*

ABSTRACT In today's NHS, qualitative research is increasingly important as a method of assessing and improving quality of care. Grounded theory has developed as an analytical approach to qualitative data over the last 40 years. It is primarily an inductive process whereby theoretical insights are generated from data, in contrast to deductive research where theoretical hypotheses are tested via data collection. Grounded theory has been one of the main contributors to the acceptance of qualitative methods in a wide range of applied social sciences. The influence of grounded theory as an approach is, in part, based on its provision of an explicit framework for analysis and theory generation. Furthermore the stress upon grounding research in the reality of participants has also given it credence in healthcare research.

As with all analytical approaches, grounded theory has drawbacks and limitations. It is important to have an understanding of these in order to assess the applicability of this approach to healthcare research. In this review we outline the principles of grounded theory, and focus on thematic analysis as the analytical approach used most frequently in grounded theory studies, with the aim of providing clinicians with the skills to critically review studies using this methodology.

KEYWORDS grounded theory, healthcare, inductive analysis, qualitative research, quality improvement, thematic analysis

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Correspondence to ***A Chapman***
Department of Infectious Diseases
Monklands Hospital
Airdrie ML6 0JS
UK

e-mail ***ann.chapman2@nhs.net***

INTRODUCTION

Improving patient experience is a key target in the 'new' NHS, as a means of enhancing the quality of care.[1,2] In addition, the benefits of engaging and listening to staff in reviewing and developing clinical services are key to successful change management.[3] How can research best help us to understand the 'lived experience' of specific groups of patients, or comprehend the issues and problems faced by providers as they try to bring about improvements? In these instances, approaches are required that capture a breadth of experiences to ensure certain 'voices' are not excluded, to provide a depth of insight, to help clarify why individuals' experiences vary and to ascertain the extent to which the origins of these variations can be affected by providers. Much of the time the information required will be qualitative, obtained through interview and observation, and will focus upon the opinions, views and experiences of individuals. How best to explore and represent the 'lived experience' of others is a central question in qualitative research. It has been approached from a range of epistemological perspectives that can be set in both the historical development of qualitative research[4] and in contemporary concerns over its use in informing practice and policy.[5] This paper focuses on the key analytical challenge of how to extract from qualitative data the practical, most significant messages and issues from the point of view of respondents[6-8] and it does so from one specific perspective: that of grounded theory.

The validity of the conclusions drawn from a qualitative research study depends on a clear understanding of the purpose of the research, and hence the form of outcome it is intended to create. This in turn informs the appropriateness of the design, in particular the robustness of the data analysis process.[9,10] Qualitative research can be broadly categorised into five main groups (Box 1). One of these, the grounded theory approach, has a relatively lengthy history of use in healthcare research. Its increasing popularity is perhaps because of its pragmatic focus on the problems participants face and how they resolve such problems, and also because it provides a structured and systematic process of analysis that allows themes to emerge from the data.

Grounded theory is so-called because the theory is 'grounded' in the perceptions and concerns of

BOX 1 Approaches to qualitative research

- Grounded theory: an inductive method of developing theory grounded in data
- Phenomenology: study of the perceptions, feelings and lived experiences of the participants
- Ethnography: description and interpretation of a cultural/social group or system based on an extended period of observation
- Narrative analysis: derivation of meaning through analysis of communications
- Case study: analysis of observations, interviews and documents relating to an event, activity or group through purposive sampling

participants, that is, hypotheses are developed from the data, rather than data collection being a process of testing a pre-existing hypothesis.[11] Grounded theory starts with an inductive approach to generating hypotheses from the data; pre-existing knowledge about the topic is deliberately withheld until initial data collection and analysis are complete, in order to prevent it from influencing the research findings.[12] The researcher then goes through a series of systematic cycles of inductive elaboration, deduction and verification[13] in order to build on the initial analysis to develop an integrated 'theory' of action within a specific context. Data analysis in grounded theory is an iterative process where data collection and analysis occur concurrently: insights emerging from early data shape further data collection, which in turn adds to existing understanding, and so on until 'saturation' occurs; that is, no new insights emerge from further data collection.[14] The process is therefore not purely inductive as it contains elements of what Peirce called 'abduction'.[15] This is a form of hypothetical inference where new or surprising events within the data prompt the researcher to create new potential hypotheses: 'The surprising fact, C, is observed. But if A were true, C would be a matter of course. Hence there is a reason to suspect that A is true'.[15] Hypotheses generated in this way might lead to further data collection with additional subjects or also re-interviews with earlier subjects to explore newly emerging themes from subsequent data.

At the heart of most grounded theory approaches is the identification and progressive refinement of important themes from the data.[16] This process is based on the constant comparative method in which data are continuously categorised and compared across interviews, allowing the emergence of more abstract or theoretical categories that describe the latent patterns within the perspectives of participants. As this process develops, a degree of 'theoretical sensitivity' is required,[17] in that the developing categories increasingly draw on the experiences of the researcher and the existing literature in the area. The process of thematic analysis in relation to interview data is described below.

BOX 2 Examples of generation of codes from raw data from semi-structured interviews[20]

Statement	Code(s)
'If there's a fire, you don't want to get in a group hug and have a fluffy discussion about who's going to leave the building first. But equally, if you're trying to solve a wicked problem, you need everybody in the team to be able to contribute to solving it.'	Importance of nature of task Importance of timescale
'I think that the older the clinical leaders are, the wiser they are to the fact that you can't work in an autocratic style, it just doesn't work in most settings unless there's an emergency.'	Change in style with experience
'It would be interesting to see how much this changes in this climate as well, because I think you know when things are good and when there's lots of money slushing around the system you can afford to be a little bit more gentle with people, affiliative, whatever, but when you've got to make really hard decisions, I think it does require you to, I mean, sometimes you do have to make hard decisions which aren't going to be popular.'	Effect of external environment
'Different trusts have different styles of doing things, they're culturally completely different about what's acceptable and what's the desired model for being CD or not.'	Impact of senior management on predominant styles in organisation

THEMATIC ANALYSIS – THE PROCESS

The process of conducting unstructured, semi-structured or structured interviews requires skill, and is described in detail elsewhere.[8,18] Interviews usually need to be part or fully transcribed to allow thematic analysis: this is time-consuming and can introduce errors.

Guest et al.[19] describe four basic steps in undertaking thematic analysis:

1. Familiarisation with, and organisation of, transcripts.
2. Identification of possible themes
3. Review and analysis of themes to identify structures
4. Construction of theoretical model, constantly checking against new data

BOX 3 Example of generation of a theme from several related codes[20]

Code	Theme
Importance of nature of task	Context of leadership scenario
Importance of timescale	
Characteristics of team	

In the first stage the researcher becomes 'immersed' in the raw data through reading and re-reading interview transcripts, cross-referencing, and making notes of ideas; they are therefore working inductively and attempting to avoid overlaying their own professional judgments and viewpoints on to those of the participants. Data are organised into a series of 'codes': codes are short statements that capture the meaning of the phrase, and can be used to index the data and group together phrases with similar ideas or meaning.[16] Thus, as an example, in a study exploring contextual issues in leadership style use by medical leaders, respondents' statements can be coded as shown in Box 2.[20] The stage of coding is critically important to the whole analysis, since codes will form the building blocks of the further analysis. The process has a high degree of subjectivity and it is important to demonstrate validity at this stage, in particular by minimising researcher bias through careful notes justifying selection or rejection of particular phrases, and through inter-rater comparisons and discussion.

The codes are combined and contrasted to develop themes or categories that group similar codes together, thereby generating a network of associations[16,20] (Box 3). The themes are then reviewed and compared to assess whether they are complete; that is, whether they encompass all the codes developed from the data to date, and whether they can be combined or subdivided into further themes. Themes emerging from the analysis are sense-checked against new raw data and influence ongoing data collection. Sample size and selection are ideally not pre-determined, with interviewees being selected in part to ensure coverage of emergent themes, and sufficient interviews being conducted and analysed to reach the saturation point for key themes. This point will vary depending on the topic and diversity of interviewees. Francis and colleagues[14] reviewed studies where data saturation was part of the research methodology and concluded that a minimum of ten interviews should be conducted, followed by three consecutive interviews where no new themes emerge. However, studies are often limited by the available time or funding, and where smaller numbers of interviews are analysed there is a danger that the results may be incomplete and that the effect of bias may be greater. Respondent validation, or member checking, with participants that emergent themes accurately reflect their perceptions (that is to say that themes are not omitted or given inflated importance) can help ensure the researcher moves towards a more accurate representation of the true picture by ensuring themes are represented appropriately.[10]

In the final stage of analysis, themes emerging from the coded data are used to build a theoretical model, which itself is checked against existing and new data. At this point the researcher is involved in cycles of inductive elaboration of themes from the data followed by their deductive application to the existing data, in order to assess their significance and validity. In some approaches to grounded theory the deductive parts of the cycle also see aspects of the researcher's own professional theories and constructs from existing research being brought into play.[13] Through these iterative stages of analysis the researcher is engaged in a number of cognitive and creative processes, from clustering and comparing to hypothesising and conceptual cohering. There is a range of generic tools and tactics that can support this process of analysis and theory generation,[21] the applicability of which will depend to an extent on the cognitive style of the researcher. The use of triangulation in the analysis ensures that the theoretical model eventually derived through this process represents a comprehensive and accurate picture of the data. This can be through the use of a mixed methods design: in the context of healthcare research, this could involve in-depth semi-structured interviews, combined with questionnaires, focus groups or observations.[20,22] In addition to looking for agreement between methods, it is important to note areas where there is disagreement – not only is this important to assess the validity of results, but it may also provide new insight and learning.[10] Other methods of triangulation involve the use of disparate data sources, or different researchers analysing data in parallel.

LIMITATIONS

Grounded theory as an overall methodology shares many analytical tools and methods with other qualitative research approaches. In the confines of this paper we have concentrated on one – thematic analysis – but there are a range of other analytical approaches derived from different variations of grounded theory, for example Corbin and Strauss's Conditional Matrix or Schatzman's Dimensional Analysis.[23,24] These approaches share a common emphasis on how initially to develop analyses inductively, but vary in the extent to which they promote and manage the entry of existing theories and concepts into the analytical process. Many of the approaches to analysis in grounded theory can present new researchers with challenges due to their relative openness; they provide little of the apparent security of more deductive approaches such as the framework approach. The

iterative movement between data and the development of themes can appear confusing, and issues can arise about how best to move between inductive and deductive stages in the analytical process. Overall, though, these weaknesses have to be balanced by the ability of grounded approaches to capture and articulate the insights of those involved in the social context being studied. They avoid many of the issues associated with simplistic analytical inferences which jump from 'raw' data to pre-existing concepts and theories. They also ameliorate the possibility of data being 'tailored' to fit better with existing frameworks, and demand a degree of sensitivity from the researcher in handling both theory and data.

Grounded theory approaches share many of the same limitations as other approaches to qualitative research. By their nature they are more subjective than quantitative studies, and this can lead to opportunities for error and bias. The increased influence of investigators on the process, due to their personal characteristics, biases, prejudices and beliefs, occurs at all stages of the research, including the interview itself, the development of codes and themes and the final coalescence of themes into a 'story'. In addition, the analytical approaches of grounded theory have been specifically criticised on a number of accounts from the technical to the theoretical, particularly the aspiration to create theory and the extent to which the output really is 'grounded' in the lived reality of others.[25-27]

A key criticism is that truly inductive analysis is not possible and is always limited by the unconscious application of prior knowledge to the thematic analysis process[12] – either from the researcher's own experience or from their reading of the literature. Pre-existing theories and knowledge can therefore over-influence interview outlines resulting in topics that 'generate' themes rather than letting them emerge, or can affect the choice of themes being formulated from codes. Grounded theory approaches to analysis occur in stages in order to try and ensure, and cross check, that the unconscious application of researchers' existing frameworks does not swamp the participants' perspectives and silence them. It is necessary that the researcher develops a critical subjective awareness that will illuminate the inherent reflexivity of the analysis process.

The notion of theoretical sensitivity is used to recognise explicitly the application of pre-existing knowledge. There are a range of different strategies employed to alleviate the issue of premature theorising based on unreflective 'everyday' inductive reasoning. Strauss and Corbin[13,23] argue for the use of axial coding, in which an overarching analytical framework is used, based on a linear model of causes, conditions and consequences, while Glaser[17] argues for the use of a number of 'coding families' based on a range of sociological and philosophical approaches. The common feature of both is to select sets of constructs that are relatively broad and empirically 'light', in that they do not overly determine the codes and categories that are included, allowing the researcher to work 'upwards' from the data rather than 'downwards' from pre-existing theory.

Finally it is important to consider the nature of the theories generated by grounded theory work. Glaser and Strauss in their original formulation of grounded theory set out very strong claims for its potential to provide 'relevant predictions, explanations, interpretations and applications',[28] claims which were part of a historical movement to establish the validity of qualitative social science research.[29] As the field of qualitative research has matured it has focused greater attention on the extent to which studies generate useful knowledge and touch on common or universal aspects of the current human condition,[30] rather than the extent to which the theories produced are generalisable or predictive. It is therefore important to recognise the bounded nature of the theory produced with regard to the characteristics of the respondent group, and the geographical, organisational and political context.

CONCLUSIONS

Thematic analysis in the context of grounded theory offers a systematic approach to the analysis of qualitative interview data in the healthcare setting. However it is time-consuming and associated with many potential pitfalls. In reviewing or designing a study it is essential to have an understanding of the limitations of this form of analysis. When reporting findings it is important to be clear about the bounded nature of the claims being made in order to enable the reader to make an informed assessment of the validity of the study within their own practice.

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