Study Protocol

SAGE Open Medicine

SAGE Open Medicine
Volume 7: 1–8

DOI: 10.1177/2050312118822927
journals.sagepub.com/home/smo
SAGE

Grounded theory research: A design framework for novice researchers

Ylona Chun Tie[1], Melanie Birks[1] and Karen Francis[2]

Abstract

Background: Grounded theory is a well-known methodology employed in many research studies. Qualitative and quantitative data generation techniques can be used in a grounded theory study. Grounded theory sets out to discover or construct theory from data, systematically obtained and analysed using comparative analysis. While grounded theory is inherently flexible, it is a complex methodology. Thus, novice researchers strive to understand the discourse and the practical application of grounded theory concepts and processes.

Objective: The aim of this article is to provide a contemporary research framework suitable to inform a grounded theory study.

Result: This article provides an overview of grounded theory illustrated through a graphic representation of the processes and methods employed in conducting research using this methodology. The framework is presented as a diagrammatic representation of a research design and acts as a visual guide for the novice grounded theory researcher.

Discussion: As grounded theory is not a linear process, the framework illustrates the interplay between the essential grounded theory methods and iterative and comparative actions involved. Each of the essential methods and processes that underpin grounded theory are defined in this article.

Conclusion: Rather than an engagement in philosophical discussion or a debate of the different genres that can be used in grounded theory, this article illustrates how a framework for a research study design can be used to guide and inform the novice nurse researcher undertaking a study using grounded theory. Research findings and recommendations can contribute to policy or knowledge development, service provision and can reform thinking to initiate change in the substantive area of inquiry.

Keywords

Framework, grounded theory, grounded theory methods, novice researcher, study design

Date received: 30 July 2018; accepted: 10 December 2018

Introduction

The aim of all research is to advance, refine and expand a body of knowledge, establish facts and/or reach new conclusions using systematic inquiry and disciplined methods.[1] The research design is the plan or strategy researchers use to answer the research question, which is underpinned by philosophy, methodology and methods.[2] Birks[3] defines philosophy as 'a view of the world encompassing the questions and mechanisms for finding answers that inform that view' (p. 18). Researchers reflect their philosophical beliefs and interpretations of the world prior to commencing research. Methodology is the research design that shapes the selection of, and use of, particular data generation and analysis methods to answer the research question.[4] While a distinction between positivist research and interpretivist research occurs at the paradigm level, each methodology has explicit criteria for the collection, analysis and interpretation of data.[2] Grounded theory (GT) is a structured, yet flexible methodology. This methodology is appropriate when little is known

[1]Nursing and Midwifery, College of Healthcare Sciences, James Cook University, Townsville, QLD, Australia
[2]College of Health and Medicine, University of Tasmania, Australia, Hobart, TAS, Australia

Corresponding author:
Ylona Chun Tie, Nursing and Midwifery, College of Healthcare Sciences, James Cook University, 1 James Cook Drive, Douglas, Townsville, QLD 4811, Australia.
Email: ylona.chuntie@jcu.edu.au

about a phenomenon; the aim being to produce or construct an explanatory theory that uncovers a process inherent to the substantive area of inquiry.[5–7] One of the defining characteristics of GT is that it aims to generate theory that is grounded in the data. The following section provides an overview of GT – the history, main genres and essential methods and processes employed in the conduct of a GT study. This summary provides a foundation for a framework to demonstrate the interplay between the methods and processes inherent in a GT study as presented in the sections that follow.

Background

History

Glaser and Strauss are recognised as the founders of grounded theory. Strauss was conversant in symbolic interactionism and Glaser in descriptive statistics.[8–10] Glaser and Strauss originally worked together in a study examining the experience of terminally ill patients who had differing knowledge of their health status. Some of these suspected they were dying and tried to confirm or disconfirm their suspicions. Others tried to understand by interpreting treatment by care providers and family members. Glaser and Strauss examined how the patients dealt with the knowledge they were dying and the reactions of healthcare staff caring for these patients. Throughout this collaboration, Glaser and Strauss questioned the appropriateness of using a scientific method of verification for this study. During this investigation, they developed the constant comparative method, a key element of grounded theory, while generating a theory of dying first described in *Awareness of Dying* (1965). The constant comparative method is deemed an original way of organising and analysing qualitative data.

Glaser and Strauss subsequently went on to write *The Discovery of Grounded Theory: Strategies for Qualitative Research* (1967). This seminal work explained how theory could be generated from data inductively. This process challenged the traditional method of testing or refining theory through deductive testing. Grounded theory provided an outlook that questioned the view of the time that quantitative methodology is the only valid, unbiased way to determine truths about the world.[11] Glaser and Strauss[5] challenged the belief that qualitative research lacked rigour and detailed the method of comparative analysis that enables the generation of theory. After publishing *The Discovery of Grounded Theory*, Strauss and Glaser went on to write independently, expressing divergent viewpoints in the application of grounded theory methods.

Glaser produced his book *Theoretical Sensitivity* (1978) and Strauss went on to publish *Qualitative Analysis for Social Scientists* (1987). Strauss and Corbin's[12] publication *Basics of Qualitative Research: Grounded Theory Procedures and Techniques* resulted in a rebuttal by Glaser[13] over their application of grounded theory methods. However, philosophical perspectives have changed since Glaser's positivist version and Strauss and Corbin's post-positivism stance.[14] Grounded theory has since seen the emergence of additional philosophical perspectives that have influenced a change in methodological development over time.[15]

Subsequent generations of grounded theorists have positioned themselves along a philosophical continuum, from Strauss and Corbin's[12] theoretical perspective of symbolic interactionism, through to Charmaz's[16] constructivist perspective. However, understanding how to position oneself philosophically can challenge novice researchers. Birks and Mills[6] provide a contemporary understanding of GT in their book *Grounded theory: A Practical Guide.* These Australian researchers have written in a way that appeals to the novice researcher. It is the contemporary writing, the way Birks and Mills present a non-partisan approach to GT that support the novice researcher to understand the philosophical and methodological concepts integral in conducting research. The development of GT is important to understand prior to selecting an approach that aligns with the researcher's philosophical position and the purpose of the research study. As the research progresses, seminal texts are referred back to time and again as understanding of concepts increases, much like the iterative processes inherent in the conduct of a GT study.

Genres: traditional, evolved and constructivist grounded theory

Grounded theory has several distinct methodological genres: *traditional GT* associated with Glaser; evolved GT associated with Strauss, Corbin and Clarke; and *constructivist GT* associated with Charmaz.[6,17] Each variant is an extension and development of the original GT by Glaser and Strauss. The first of these genres is known as traditional or classic GT. Glaser[18] acknowledged that the goal of traditional GT is to generate a conceptual theory that accounts for a pattern of behaviour that is relevant and problematic for those involved. The second genre, evolved GT, is founded on symbolic interactionism and stems from work associated with Strauss, Corbin and Clarke. Symbolic interactionism is a sociological perspective that relies on the symbolic meaning people ascribe to the processes of social interaction. Symbolic interactionism addresses the subjective meaning people place on objects, behaviours or events based on what they believe is true.[19,20] Constructivist GT, the third genre developed and explicated by Charmaz, a symbolic interactionist, has its roots in constructivism.[8,16] Constructivist GT's methodological underpinnings focus on how participants' construct meaning in relation to the area of inquiry.[16] A constructivist co-constructs experience and meanings with participants.[21] While there are commonalities across all genres of GT, there are factors that distinguish differences between the approaches including the philosophical position of the researcher; the use of literature; and the approach to coding,

analysis and theory development. Following on from Glaser and Strauss, several versions of GT have ensued.

Grounded theory represents both a method of inquiry and a resultant product of that inquiry.[7,22] Glaser and Holton[23] define GT as 'a set of integrated conceptual hypotheses systematically generated to produce an inductive theory about a substantive area' (p. 43). Strauss and Corbin[24] define GT as 'theory that was derived from data, systematically gathered and analysed through the research process' (p. 12). The researcher 'begins with an area of study and allows the theory to emerge from the data' (p. 12). Charmaz[16] defines GT as 'a method of conducting qualitative research that focuses on creating conceptual frameworks or theories through building inductive analysis from the data' (p. 187). However, Birks and Mills[6] refer to GT as a process by which theory is generated from the analysis of data. Theory is not discovered; rather, theory is constructed by the researcher who views the world through their own particular lens.

Research process

Before commencing any research study, the researcher must have a solid understanding of the research process. A well-developed outline of the study and an understanding of the important considerations in designing and undertaking a GT study are essential if the goals of the research are to be achieved. While it is important to have an understanding of how a methodology has developed, in order to move forward with research, a novice can align with a grounded theorist and follow an approach to GT. Using a framework to inform a research design can be a useful modus operandi.

Results

The following section provides insight into the process of undertaking a GT research study. Figure 1 is a framework that summarises the interplay and movement between methods and processes that underpin the generation of a GT. As can be seen from this framework, and as detailed in the discussion that follows, the process of doing a GT research study is not linear, rather it is iterative and recursive.

Grounded theory research involves the meticulous application of specific methods and processes. Methods are 'systematic modes, procedures or tools used for collection and analysis of data'.[25] While GT studies can commence with a variety of sampling techniques, many commence with purposive sampling, followed by concurrent data generation and/or collection and data analysis, through various stages of coding, undertaken in conjunction with constant comparative analysis, theoretical sampling and memoing. Theoretical sampling is employed until theoretical saturation is reached. These methods and processes create an unfolding, iterative system of actions and interactions inherent in GT.[6,16] The methods interconnect and inform the recurrent elements in

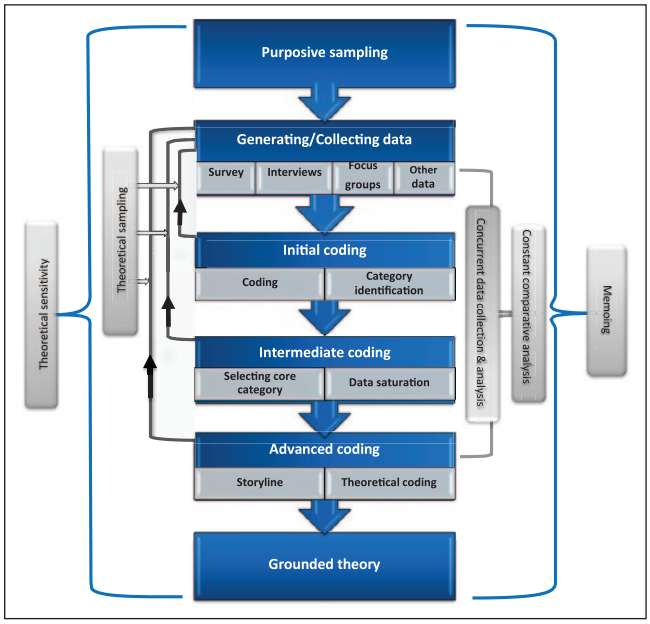

Figure 1. Research design framework: summary of the interplay between the essential grounded theory methods and processes.

the research process as shown by the directional flow of the arrows and the encompassing brackets in Figure 1. The framework denotes the process is both iterative and dynamic and is not one directional. Grounded theory methods are discussed in the following section.

Discussion

Purposive sampling

As presented in Figure 1, initial purposive sampling directs the collection and/or generation of data. Researchers purposively select participants and/or data sources that can answer the research question.[5,7,16,21] Concurrent data generation and/or data collection and analysis is fundamental to GT research design.[6] The researcher collects, codes and analyses this initial data before further data collection/generation is undertaken. Purposeful sampling provides the initial data that the researcher analyses. As will be discussed, theoretical sampling then commences from the codes and categories developed from the first data set. Theoretical sampling is used to identify and follow clues from the analysis, fill gaps, clarify uncertainties, check hunches and test interpretations as the study progresses.

Constant comparative analysis

Constant comparative analysis is an analytical process used in GT for coding and category development. This process commences with the first data generated or collected and pervades the research process as presented in Figure 1. Incidents are identified in the data and coded.[6] The initial stage of analysis

compares incident to incident in each code. Initial codes are then compared to other codes. Codes are then collapsed into categories. This process means the researcher will compare incidents in a category with previous incidents, in both the same and different categories.[5] Future codes are compared and categories are compared with other categories. New data is then compared with data obtained earlier during the analysis phases. This iterative process involves inductive and deductive thinking.[16] Inductive, deductive and abductive reasoning can also be used in data analysis.[26]

Constant comparative analysis generates increasingly more abstract concepts and theories through inductive processes.[16] In addition, abduction, defined as 'a form of reasoning that begins with an examination of the data and the formation of a number of hypotheses that are then proved or disproved during the process of analysis … aids inductive conceptualization'.[6] Theoretical sampling coupled with constant comparative analysis raises the conceptual levels of data analysis and directs ongoing data collection or generation.[6]

The constant comparative technique is used to find consistencies and differences, with the aim of continually refining concepts and theoretically relevant categories. This continual comparative iterative process that encompasses GT research sets it apart from a purely descriptive analysis.[8]

Memoing

Memo writing is an analytic process considered essential 'in ensuring quality in grounded theory'.[6] Stern[27] offers the analogy that if data are the building blocks of the developing theory, then memos are the 'mortar' (p. 119). Memos are the storehouse of ideas generated and documented through interacting with data.[28] Thus, memos are reflective interpretive pieces that build a historic audit trail to document ideas, events and the thought processes inherent in the research process and developing thinking of the analyst.[6] Memos provide detailed records of the researchers' thoughts, feelings and intuitive contemplations.[6]

Lempert[29] considers memo writing crucial as memos prompt researchers to analyse and code data and develop codes into categories early in the coding process. Memos detail why and how decisions made related to sampling, coding, collapsing of codes, making of new codes, separating codes, producing a category and identifying relationships abstracted to a higher level of analysis.[6] Thus, memos are informal analytic notes about the data and the theoretical connections between categories.[23] Memoing is an ongoing activity that builds intellectual assets, fosters analytic momentum and informs the GT findings.[6,10]

Generating/collecting data

A hallmark of GT is concurrent data generation/collection and analysis. In GT, researchers may utilise both qualitative and quantitative data as espoused by Glaser's dictum; 'all is data'.[30] While interviews are a common method of generating data, data sources can include focus groups, questionnaires, surveys, transcripts, letters, government reports, documents, grey literature, music, artefacts, videos, blogs and memos.[9] Elicited data are produced by participants in response to, or directed by, the researcher whereas extant data includes data that is already available such as documents and published literature.[6,31] While this is one interpretation of how elicited data are generated, other approaches to grounded theory recognise the agency of participants in the co-construction of data with the researcher. The relationship the researcher has with the data, how it is generated and collected, will determine the value it contributes to the development of the final GT.[6] The significance of this relationship extends into data analysis conducted by the researcher through the various stages of coding.

Coding

Coding is an analytical process used to identify concepts, similarities and conceptual reoccurrences in data. Coding is the pivotal link between collecting or generating data and developing a theory that explains the data. Charmaz[10] posits,

> codes rely on interaction between researchers and their data. Codes consist of short labels that we construct as we interact with the data. Something kinaesthetic occurs when we are coding; we are mentally and physically active in the process. (p. 5)

In GT, coding can be categorised into iterative phases. Traditional, evolved and constructivist GT genres use different terminology to explain each coding phase (Table 1).

Coding terminology in evolved GT refers to open (a procedure for developing categories of information), axial (an advanced procedure for interconnecting the categories) and selective coding (procedure for building a storyline from core codes that connects the categories), producing a discursive set of theoretical propositions.[6,12,32] Constructivist grounded theorists refer to initial, focused and theoretical coding.[9] Birks and Mills[6] use the terms initial, intermediate and advanced coding that link to low, medium and high-level conceptual analysis and development. The coding terms devised by Birks and Mills[6] were used for Figure 1; however, these can be altered to reflect the coding terminology used in the respective GT genres selected by the researcher.

Initial coding

Initial coding of data is the preliminary step in GT data analysis.[6,9] The purpose of initial coding is to start the process of fracturing the data to compare incident to incident and to look for similarities and differences in beginning patterns in the data. In initial coding, the researcher inductively generates as many codes as possible from early

Table 1. Comparison of coding terminology in traditional, evolved and constructivist grounded theory.

Grounded theory genre	Coding terminology		
	Initial	Intermediate	Advanced
Traditional	Open coding	Selective coding	Theoretical coding
Evolved	Open coding	Axial coding	Selective coding
Constructivist	Initial coding	Focused coding	Theoretical coding

Adapted from Birks and Mills.[6]

data.[16] Important words or groups of words are identified and labelled. In GT, codes identify social and psychological processes and actions as opposed to themes. Charmaz[16] emphasises keeping codes as similar to the data as possible and advocates embedding actions in the codes in an iterative coding process. Saldaña[33] agrees that codes that denote action, which he calls process codes, can be used interchangeably with gerunds (verbs ending in *ing*). In vivo codes are often verbatim quotes from the participants' words and are often used as the labels to capture the participant's words as representative of a broader concept or process in the data.[6] Table 1 reflects variation in the terminology of codes used by grounded theorists.

Initial coding categorises and assigns meaning to the data, comparing incident-to-incident, labelling beginning patterns and beginning to look for comparisons between the codes. During initial coding, it is important to ask 'what is this data a study of'.[18] What does the data assume, 'suggest' or 'pronounce' and 'from whose point of view' does this data come, whom does it represent or whose thoughts are they?.[16] What collectively might it represent? The process of documenting reactions, emotions and related actions enables researchers to explore, challenge and intensify their sensitivity to the data.[34] Early coding assists the researcher to identify the direction for further data gathering. After initial analysis, theoretical sampling is employed to direct collection of additional data that will inform the 'developing theory'.[9] Initial coding advances into intermediate coding once categories begin to develop.

Theoretical sampling

The purpose of theoretical sampling is to allow the researcher to follow leads in the data by sampling new participants or material that provides relevant information. As depicted in Figure 1, theoretical sampling is central to GT design, aids the evolving theory[5,7,16] and ensures the final developed theory is grounded in the data.[9] Theoretical sampling in GT is for the development of a theoretical category, as opposed to sampling for population representation.[10] Novice researchers need to acknowledge this difference if they are to achieve congruence within the methodology. Birks and Mills[6] define theoretical sampling as 'the process of identifying and pursuing clues that arise during analysis in a grounded theory study' (p. 68). During this process, additional information is sought to saturate categories under development. The analysis identifies relationships, highlights gaps in the existing data set and may reveal insight into what is not yet known. The exemplars in Box 1 highlight how theoretical sampling led to the inclusion of further data.

Box 1. Examples of theoretical sampling.

In Chamberlain-Salaun[35] GT study, 'the initial purposive round of concurrent data generation and analysis generated codes around concepts of physical disability and how a person's health condition influences the way experts interact with consumers. Based on initial codes and concepts the researcher decided to theoretically sample people with disabilities and or carers/parents of children with disabilities to pursue the concepts further' (p. 77).

In Edwards[36] grounded theory study, theoretical sampling led to the inclusion of the partners of women who had presented to the emergency department. 'In one interview a woman spoke of being aware that the ED staff had not acknowledged her partner. This statement led me to ask other women during their interviews if they had similar experiences, and ultimately to interview the partners to gain their perspectives. The study originally intended to only focus on the women and the nursing staff who provided the care' (p. 50).

Thus, theoretical sampling is used to focus and generate data to feed the iterative process of continual comparative analysis of the data.[6]

Intermediate coding

Intermediate coding, identifying a core category, theoretical data saturation, constant comparative analysis, theoretical sensitivity and memoing occur in the next phase of the GT process.[6] Intermediate coding builds on the initial coding phase. Where initial coding fractures the data, intermediate coding begins to transform basic data into more abstract concepts allowing the theory to emerge from the data. During this analytic stage, a process of reviewing categories and identifying which ones, if any, can be subsumed beneath other categories occurs and the properties or dimension of the developed categories are refined. Properties refer to the characteristics that are common to all the concepts in the category and dimensions are the variations of a property.[37]

At this stage, a core category starts to become evident as developed categories form around a core concept; relationships are identified between categories and the analysis is refined. Birks and Mills[6] affirm that diagramming can aid analysis in the intermediate coding phase. Grounded theorists interact closely with the data during this phase, continually reassessing meaning to ascertain 'what is really going on' in the data.[30] Theoretical saturation ensues when new data analysis does not provide additional material to existing theoretical categories, and the categories are sufficiently explained.[6]

Advanced coding

Birks and Mills[6] described advanced coding as the 'techniques used to facilitate integration of the final grounded theory' (p. 177). These authors promote storyline technique (described in the following section) and theoretical coding as strategies for advancing analysis and theoretical integration. Advanced coding is essential to produce a theory that is grounded in the data and has explanatory power.[6] During the advanced coding phase, concepts that reach the stage of categories will be abstract, representing stories of many, reduced into highly conceptual terms. The findings are presented as a set of interrelated concepts as opposed to presenting themes.[28] Explanatory statements detail the relationships between categories and the central core category.[28]

Storyline is a tool that can be used for theoretical integration. Birks and Mills[6] define storyline as 'a strategy for facilitating integration, construction, formulation, and presentation of research findings through the production of a coherent grounded theory' (p. 180). Storyline technique is first proposed with limited attention in *Basics of Qualitative Research* by Strauss and Corbin[12] and further developed by Birks et al.[38] as a tool for theoretical integration. The storyline is the conceptualisation of the core category.[6] This procedure builds a story that connects the categories and produces a discursive set of theoretical propositions.[24] Birks and Mills[6] contend that storyline can be 'used to produce a comprehensive rendering of your grounded theory' (p. 118). Birks et al.[38] had earlier concluded, 'storyline enhances the development, presentation and comprehension of the outcomes of grounded theory research' (p. 405). Once the storyline is developed, the GT is finalised using theoretical codes that 'provide a framework for enhancing the explanatory power of the storyline and its potential as theory'.[6] Thus, storyline is the explication of the theory.

Theoretical coding occurs as the final culminating stage towards achieving a GT.[39,40] The purpose of theoretical coding is to integrate the substantive theory.[41] Saldaña[40] states, 'theoretical coding integrates and synthesises the categories derived from coding and analysis to now create a theory' (p. 224). Initial coding fractures the data while theoretical codes 'weave the fractured story back together again into an organized whole theory'.[18] Advanced coding that integrates extant theory adds further explanatory power to the findings.[6] The examples in Box 2 describe the use of storyline as a technique.

Box 2. Writing the storyline.

Baldwin[42] describes in her GT study how 'the process of writing the storyline allowed in-depth descriptions of the categories, and discussion of how the categories of (i) *creating a context for learning*, (ii) *creating a context for authentic rehearsal* and (iii) *mirroring identity* fit together to form the final theory: *reconciling professional identity*' (pp. 125–126). 'The use of storyline as part of the finalisation of the theory from the data ensured that the final theory was grounded in the data' (p. 201). In Chamberlain-Salaun[35] GT study, writing the storyline enabled the identification of 'gaps in the developing theory and to clarify categories and concepts. To address the gaps the researcher iteratively returned to the data and to the field and refine the storyline. Once the storyline was developed raw data was incorporated to support the story in much the same way as dialogue is included in a storybook or novel'.[35]

Theoretical sensitivity

As presented in Figure 1, theoretical sensitivity encompasses the entire research process. Glaser and Strauss[5] initially described the term theoretical sensitivity in *The Discovery of Grounded Theory.* Theoretical sensitivity is the ability to know when you identify a data segment that is important to your theory. While Strauss and Corbin[12] describe theoretical sensitivity as the insight into what is meaningful and of significance in the data for theory development, Birks and Mills[6] define theoretical sensitivity as 'the ability to recognise and extract from the data elements that have relevance for the emerging theory' (p. 181). Conducting GT research requires a balance between keeping an open mind and the ability to identify elements of theoretical significance during data generation and/or collection and data analysis.[6]

Several analytic tools and techniques can be used to enhance theoretical sensitivity and increase the grounded theorist's sensitivity to theoretical constructs in the data.[28] Birks and Mills[6] state, 'as a grounded theorist becomes immersed in the data, their level of theoretical sensitivity to analytic possibilities will increase' (p. 12). Developing sensitivity as a grounded theorist and the application of theoretical sensitivity throughout the research process allows the analytical focus to be directed towards theory development

Box 3. Theoretical sensitivity.

Hoare et al.[43] described how the lead author '*danced with data* in pursuit of heightened theoretical sensitivity in a grounded theory study of information use by nurses working in general practice in New Zealand'. The article described the analytic tools the researcher used 'to increase theoretical sensitivity' which included 'reading the literature, open coding, category building, reflecting in memos followed by doubling back on data collection once further lines of inquiry are opened up'. The article offers 'an example of how analytical tools are employed to theoretically sample emerging concepts' (pp. 240–241).

and ultimately result in an integrated and abstract GT.[6] The example in Box 3 highlights how analytic tools are employed to increase theoretical sensitivity.

The grounded theory

The meticulous application of essential GT methods refines the analysis resulting in the generation of an integrated, comprehensive GT that explains a process relating to a particular phenomenon.[6] The results of a GT study are communicated as a set of concepts, related to each other in an interrelated whole, and expressed in the production of a substantive theory.[5,7,16] A substantive theory is a theoretical interpretation or explanation of a studied phenomenon[6,17] Thus, the hallmark of grounded theory is the generation of theory 'abstracted from, or grounded in, data generated and collected by the researcher'.[6] However, to ensure quality in research requires the application of rigour throughout the research process.

Quality and rigour

The quality of a grounded theory can be related to three distinct areas underpinned by (1) the researcher's expertise, knowledge and research skills; (2) methodological congruence with the research question; and (3) procedural precision in the use of methods.[6] Methodological congruence is substantiated when the philosophical position of the researcher is congruent with the research question and the methodological approach selected.[6] Data collection or generation and analytical conceptualisation need to be rigorous throughout the research process to secure excellence in the final grounded theory.[44]

Procedural precision requires careful attention to maintaining a detailed audit trail, data management strategies and demonstrable procedural logic recorded using memos.[6] Organisation and management of research data, memos and literature can be assisted using software programs such as NVivo. An audit trail of decision-making, changes in the direction of the research and the rationale for decisions made are essential to ensure rigour in the final grounded theory.[6]

Conclusion

This article offers a framework to assist novice researchers visualise the iterative processes that underpin a GT study. The fundamental process and methods used to generate an integrated grounded theory have been described. Novice researchers can adapt the framework presented to inform and guide the design of a GT study. This framework provides a useful guide to visualise the interplay between the methods and processes inherent in conducting GT. Research conducted ethically and with meticulous attention to process will ensure quality research outcomes that have relevance at the practice level.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Ylona Chun Tie https://orcid.org/0000-0001-6069-8074

References

1. Polit DF and Beck CT. *Nursing research: generating and assessing evidence for nursing practice*. 9th ed. Philadelphia, PA: Lippincott Williams & Wilkins, 2012.
2. Creswell JW. *Research design: qualitative, quantitative, and mixed methods approaches*. 4th ed. Thousand Oaks, CA: SAGE, 2013.
3. Birks M. Practical philosophy. In: Mills J and Birks M (eds) *Qualitative methodology: a practical guide*. Los Angeles, CA: SAGE, 2014, pp. 17–29.
4. Crotty M. *The foundation of social research: meaning and perspective in the research process*. Thousand Oaks, CA: SAGE, 1998.
5. Glaser BG and Strauss AL. *The discovery of grounded theory: strategies for qualitative research*. New York: Aldine de Gruyter, 1967.
6. Birks M and Mills J. *Grounded theory: a practical guide*. 2nd ed. London: SAGE, 2015.
7. Bryant A and Charmaz K. Grounded theory research: methods and practices. In: Bryant A and Charmaz K (eds) *The Sage handbook of grounded theory*. Thousand Oaks, CA: SAGE, 2007, pp. 1–28.
8. Chamberlain-Salaun J, Mills J and Usher K. Linking symbolic interactionism and grounded theory methods in a research design: from Corbin and Strauss' assumptions to action. *SAGE Open*. Epub ahead of print 29 September 2013. DOI: 10.1177/2158244013505757
9. Mills J, Birks M and Hoare KJ. Grounded theory. In: Mills J and Birks M (eds) *Qualitative methodology: a practical guide*. London: SAGE, 2014, pp. 107–121.
10. Charmaz K. The power and potential of grounded theory. *Med Sociol* 2012; 6: 2–15.
11. Bryant A and Charmaz K. Grounded theory in historical perspective: an epistemological account. In: Bryant A and Charmaz K (eds) *The Sage handbook of grounded theory*. Thousand Oaks, CA: SAGE, 2007, pp. 31–57.
12. Strauss AL and Corbin JM. *The basics of qualitative research: grounded theory procedures and techniques*. Newbury Park, CA: SAGE, 1990.
13. Glaser BG. *Basics of grounded theory analysis*. Mill Valley, CA: Sociology Press, 1992.
14. Charmaz K. A constructivist grounded theory analysis of losing and regaining a valued self. In: Wertz FJ, Charmaz K, Mcmullen LJ, et al. (eds) *Five ways of doing qualitative analysis: phenomenological psychology, grounded theory, discourse analysis, narrative research, and intuitive inquiry*. 1st ed. New York: Guilford, 2011, pp. 165–204.

15. Ralph N, Birks M and Chapman Y. The methodological dynamism of grounded theory. *Int J Qual Methods* 2015; 14: 1–6.
16. Charmaz K. *Constructing grounded theory: a practical guide through qualitative analysis*. Thousand Oaks, CA: SAGE, 2006.
17. Bryant A and Charmaz K. *The Sage handbook of grounded theory*. Thousand Oaks, CA: SAGE, 2007.
18. Glaser BG. *Theoretical sensitivity: advances in the methodology of grounded theory*. Mill Valley, CA: Sociology Press, 1978.
19. Griffin E. *A first look at communication theory*. New York: McGraw-Hill, 1997.
20. Clarke A. *Situational analysis: grounded theory after the postmodern turn*. Thousand Oaks, CA: SAGE, 2005.
21. Charmaz K and Bryant A. Grounded theory and credibility. In: Silverman D (ed.) *Qualitative research*. 3rd ed. London: SAGE, 2011, pp. 291–309.
22. Charmaz K. Grounded theory in the 21st century: application for advancing social justice studies. In: Denzin NK and Lincoln YS (eds) *The Sage handbook of qualitative research*. Thousand Oaks, CA: SAGE, 2005, pp. 207–236.
23. Glaser BG and Holton J. Remodeling grounded theory. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* 2004; 5: 1–22.
24. Strauss AL and Corbin JM. *Basics of qualitative research: techniques and procedures for developing grounded theory*. 2nd ed. Thousand Oaks, CA: SAGE, 1998.
25. Mackenzie N and Knipe S. Research dilemmas: paradigms, methods and methodology. *Issues Educ Res* 2006; 16: 193–205.
26. Ward K, Gott M and Hoare K. Analysis in grounded theory: how is it done? Examples from a study that explored living with treatment for sleep apnea. *SAGE Res Methods Cases Part 2.* 2016. DOI: 10.4135/9781473989245
27. Stern PN. On solid ground: essential properties for growing grounded theory. In: Bryant A and Charmaz K (eds) *The Sage handbook of grounded theory*. Los Angeles, CA: SAGE, 2007, pp. 114–126.
28. Corbin JM and Strauss AL. *Basics of qualitative research: techniques and procedures for developing grounded theory*. 3rd ed. Thousand Oaks, CA: SAGE, 2008.
29. Lempert LB. Asking questions of the data: memo writing in the grounded theory tradition. In: Bryant A and Charmaz K (eds) *The Sage handbook of grounded theory*. Los Angeles, CA: SAGE, 2007, pp. 245–264.
30. Glaser BG. *Doing grounded theory: issues and discussions*. Mills Valley, CA: Sociology Press, 1998.
31. Ralph N, Birks M and Chapman Y. Contextual positioning: using documents as extant data in grounded theory research. *SAGE Open* 2014; 4: 1–7.
32. Kelle U. The development of categories: different approaches in grounded theory. In: Bryant A and Charmaz K (eds) *The Sage handbook of grounded theory*. Thousand Oaks, CA: SAGE, 2007, pp. 191–213.
33. Saldaña J. Coding and analysis strategies. In: Leavy P and Saldaña J (eds) *The Oxford handbook of qualitative research*. Oxford: Oxford University Press, 2014, pp. 581–685.
34. Birks M, Chapman Y and Francis K. Memoing in qualitative research: probing data and processes. *J Res Nurs* 2008; 13: 68–75.
35. Chamberlain-Salaun J. *Consumers and the social world of health care: outsiders in the expert's world: a grounded theory study*. PhD Thesis, College of Health Care Sciences, James Cook University, Townsville, QLD, Australia, 2015, p. 198.
36. Edwards LS. Bringing together the 'threads of care' in possible miscarriage for women, their partners and nurses in non-metropolitan emergency departments. College of Healthcare Sciences, James Cook University, Townsville, QLD, Australia, 2016, p. 225.
37. Moghaddam A. Coding issues in grounded theory. *Issues Educ Res* 2006; 16: 53–61.
38. Birks M, Mills J, Francis K, et al. A thousand words paint a picture: the use of storyline in grounded theory research. *J Res Nurs* 2009; 14: 405–417.
39. Evans LE. A novice researcher's first walk through the maze of grounded theory: rationalization for classical grounded theory. *Ground Theory Rev* 2013; 14: 37–55.
40. Saldaña J. *The coding manual for qualitative researchers*. 2nd ed. Los Angeles, CA: SAGE, 2013.
41. Glaser BG. *The grounded theory perspective III: theoretical coding*. Mill Valley, CA: Sociology Press, 2005.
42. Baldwin A. *Reconciling professional identity: a grounded theory study of nurse academics' role modelling*. PhD Thesis, College of Healthcare Sciences, James Cook University, Townsville, QLD, Australia, 2016, p. 246.
43. Hoare K, Mills J and Francis K. Dancing with data: an example of acquiring theoretical sensitivity in a grounded theory study. *Int J Nurs Pract* 2012; 18(3): 240–245.
44. Morse JM. Sampling in grounded theory. In: Bryant A and Charmaz K (eds) *The Sage handbook of grounded theory*. Thousand Oaks, CA: SAGE, 2007, pp. 229–244.