

Understanding grounded theory principles and evaluation

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In this paper, the authors outline the steps which comprise the process of grounded theory and recommend criteria against which all grounded theory analysis could be measured.

Grounded theory was developed initially by Glaser and Strauss as a means to enable the 'systematic discovery of theory from the data of social research' and was first presented in *The Discovery of Grounded Theory* (1). The methodology was developed in response to the overwhelming belief held by positivist thinkers that qualitative research was unscientific because it rejected controlled experiments and appeared to embrace interpretation.

Glaser and Strauss, although both sociologists, came from different backgrounds. Glaser was trained in quantitative research methods whereas Strauss was strongly influenced by what has come to be known as the Chicago school of thought - the University of Chicago has a long history of pioneering and innovating qualitative research approaches. While collaborating on a piece of qualitative research exploring patients' perceptions of dying, both men - but especially Glaser - felt that there was a need for a specific, systematic process of generating theory that was grounded in the reality of the social world rather than in interpretation. The methodology of grounded theory was, therefore, conceived in an attempt to develop scientific respectability for qualitative research.

The method was originally firmly rooted in the social sciences, more particularly in symbolic interaction, and, as a result, the traditions of sociology and social psychology have been especially influenced by the development of grounded theory. Glaser's and Strauss's work has also had a significant influence on nursing research. Many authors have advocated the method (2-5), and others, such as Burnard (16), have based their own analysis techniques on the foundations of grounded theory. Stern (5) found grounded theory to be particularly useful in nursing because: 'Nurse scientists who use grounded theory find it ideal for teaching nursing problems ... because the [grounded theory] scientist generates constructs (or theory) from the data rather than applying a theory constructed by someone else from another data

source, the generated theory remains connected to or grounded in the data.'

What is grounded theory?

Qualitative research, including grounded theory, is of most use when little research in the subject area has been completed. Whilst quantitative approaches to research may be appropriate to test theories, theory testing cannot be attempted when there is no theory to test, when 'variables relevant to the concepts have not yet been identified' (4), or when existing theory fails to resolve persistent problems.

Essentially, grounded theory methodology incorporates a system of analytic steps that endeavour to generate sociological theory (7). Simple descriptions of events or situations are replaced by theoretical conceptualisation (3). Concentrating on the interactional processes at work within the social world from the perspective of the participants themselves, grounded theory begins with the identification of a potential research question and involves simultaneous data collection and several phases of analysis. At each of these phases, theoretical concepts are developed according to the laborious and diligent coding of data. The ultimate aim of a grounded theory research study is the identification of core categories achieved by the grouping and integration of coded concepts under a single cover term. These core categories are used to explain the properties of the social processes under study (8).

Grounded theory is a repetitive process; the analyst must return constantly to data sources, to check aspects of the emerging interpretations and to gather new data as and where appropriate (9). This is referred to as the process of constant comparative analysis. The main features of the area of interest are mapped through repeated comparison of the data. In this way it is possible to generate theory through progressive focusing (10).

With most forms of qualitative analysis, there are very few actual concrete descriptions of 'how to do it'. The concepts seem elusive but the process appears deceptively simple (11), and Jones (12) maintained that qualitative data analysis involves processes of interpretation and creativity that are difficult to make explicit and yet, a great deal of qualitative data analysis is rather less mysterious than hard, sometimes tedious, slog'. Grounded theory appears to have the same problem, but it does have one advantage, it is one of the few analysis models that has generated prescriptive accounts of how it should be done (1, 4, 5, 13-16).

Important features of a grounded theory

The research question The research question in a grounded theory study is very different to the hypothesis or null hypothesis generated at the beginning of an experimental design quantitative study. The question must be flexible and open-ended to allow the theory to develop. It should be sufficiently broad to enable a thorough investigation to be carried out of all of the facets of a phenomenon, but should provide a focus to prevent the researcher from

floundering during the study. Hamill's study (17) provides a good example of a research question in grounded theory. He began with the broad intention of looking at the phenomenon of stress as experienced by student nurses. This focus was sufficiently wide to allow Hamill to explore the many variables that manifest themselves as 'stress', without being so wide that it lacked direction.

Literature review The first stage in a quantitative research study would be to perform a detailed and comprehensive literature review. This is not the case for the grounded theorist. General reading of the literature may be carried out to obtain a feel for the issues, at work in the subject area, and identify any gaps to be filled using grounded theory. The researcher is able, therefore, to approach the subject with some background knowledge, but it is important that the reading is not too extensive as the theories should evolve from the data itself, producing a grounded theory.

This technique allows researchers to enter the research setting without any particular prior theoretical assumptions, ready to develop their own theories and models which are grounded in their substantive areas of interest. Key concepts uncovered during, and upon completion of, the research should be checked against the literature. The literature review takes place, therefore, during and after data collection, rather than prior to it. In this way it is possible for the researcher to ascertain whether the theory already exists and, if so, what other researchers have said about it (13).

Sampling Unlike the quantitative researcher, the grounded theorist does not decide on the size of the sample population before the study begins. Informants are not chosen on the basis of their representativeness, but rather because of their expert knowledge of the phenomenon under scrutiny. This method of sampling is called theoretical sampling. Sample size is deemed to be satisfactory only when the key concepts that have been identified from the collected data have reached saturation point, in other words, when no new data emerges. Determinants influencing theoretical sampling may delineate certain variables as the data is collected (9). For example, if the researcher begins to realise that age is an important factor in the responses obtained, then a sampling strategy may be employed to accommodate this finding (14). **Data collection** Data collection usually follows the normal procedures for field research. Like an ethnographer, the grounded theorist will immerse him- or herself in the environment being studied and gather data by such means as participant observation and unstructured interviews. These research tools are especially relevant because they provide researchers with access to the everyday life of the informants, enabling phenomena to be observed in their natural setting. As Hogston (18) found, in a study examining the everyday processes of nurses' evaluation of quality care, interviews are especially useful for uncovering the subjective domain, the world of feelings, perceptions, values, morals and experiences. Initially, the data generated from a grounded theory study usually takes the form of field notes and/or interview

transcripts.

Preliminary analysis.. coding

Once sufficient data - sometimes as little as one interview is sufficient - has been collected and transcribed, the researcher is ready to progress to the next stage of building an indexing system for the data. This system will allow the researcher to manipulate and analyse the collected data and begin to develop provisional models to explain the field of interest. The data collection and the initial analysis should run simultaneously, wherever possible, with the writing of field notes or transcribing of tape recordings immediately after the event.

Initial indexing, or coding, begins with a tentative exploration of all the different facets that the analyst perceives as important or interesting in the text. All these phenomena are labelled according to the potential relevance that they have to the subject area. For example, a study conducted by Kelly (19) exploring the professional values of nursing students, found that 'respect for patients' and 'caring about the little things', were central concepts. However, these concepts do not appear magically through rigid adherence to the grounded theory process. The researcher is required to exercise a certain element of judgement. The aim of building an index is to produce a relevant list of concepts that the participant, or expert, has deemed necessary to reveal. This will, in turn, become the first step in the construction of an understanding of the expert's - that is, the informant's - world, from the expert's standpoint.

Indexes are constructed through line-by-line or even word-by-word analysis (14). Each transcript or page of fieldnotes is examined with a series of questions in mind: 'What is going on here?'; 'What are the important issues or areas of interest?'; 'What are all the processes at work in this world?' These questions may produce categories, concepts or codes to account for the observed phenomena. When a code is arrived at, it is recorded subsequently on an index card along with a short description of the noted occurrence and its position in the text. The card is then filed away. The process continues by checking the rest of the text for all possible instances of new codes. It is essential that the code fits exactly the phenomenon described in the data, so that it is an instantly recognisable label for the item, actor, event or activity under scrutiny. This is not always a simple process. The analyst may have to change continually the codes, fine-tuning them until the fit is accurate.

As coding continues, the number of index cards rapidly expands, but more importantly, the coded phenomena will begin to recur in the same or subsequent transcripts. It is important to realise that the aim is not to make a note of all the instances of a phenomenon; grounded theory is not a counting exercise to ascertain how often an event or theme occurs. The aim of grounded theory is to collect on each index card a set of indicators which exist in a

potentially significant concept. In this way categories are teased from the data. Some index cards, however, may eventually be excluded from the final analysis when it becomes clear that a particular concept recurs infrequently. This does not signify that the concept is unimportant, but that the nature of research involves the process of selection; it is impossible to report everything that occurs in a subject area.

Developing core categories

As the coding progresses, more data will be collected but, as the number of cards increases, so the analysis shifts to other stages. Using the constant comparison analysis method, the coded concepts must now be refined, extended and cross-referenced with the data as a whole and related to each other. This involves the following processes; refining the indexing system, memo writing and category integration. **Refining the indexing system** As already suggested, this procedure will have been underway from the beginning of the analysis, as the researcher constantly fine-tunes the code sets. As this process continues it will become clear that many of the initial codes chosen to label concepts do not adequately cover the whole list of instances noted on the index card. If so, the concept can be redefined either to a more general or a more specific code, or, where more than one category is suggested by the codes, splitting the card and assigning each set its own code. Evolving rapidly, the data collection and subsequent indexing system produce categories and these will become saturated (1). The point should be reached when the collection of additional data no longer contributes new concepts. At this stage, the analyst will attempt to write a definition of each concept, summarising the reasons why each of the incidents have been included under a particular code, using verbatim quotes from the collected data in order to illustrate the categories. Often this process will allow a deeper and more complex understanding to be formed of the nature of the phenomenon under examination.

Memo writing While producing these definitions, the experienced analyst will have begun writing theoretical memos. Both Glaser (15) and Strauss (16) signalled this as the core stage of grounded theory, discussing the process in detail. Memos are simply notes written by the researcher to him- or herself. The notes record the thoughts of the analyst, thoughts generated as a result of close and constant contact maintained with the data during the coding process. Any thoughts that the analyst has - about the nature of a phenomena, new codes and categories, relationships between categories or with existing theoretical models, or just general ideas - should be written up immediately and filed away. The large number of memos produced eventually can be used to trace back through the analyst's thought and decision-making processes throughout the study.

Memo writing is an excellent way to focus on the emerging concepts and their interrelationships (14). Forced to make their thought processes explicit,

analysts are allowed to consolidate their ideas and consider all the alternatives. To this end, the grounded theorist may carry a dictaphone or notebook around with him or her to record these memos.

Integrating emerging categories The researcher's main objective is to synthesise emerging categories by creating theoretical links between them. In addition to exploring the possible links suggested in the course of memo writing, it is often advantageous to sort and group sets of connected concepts, perhaps using diagrams (16), to illustrate and clarify the connection between the interlocking concepts. Searching for relationships between categories is an essential stage in developing insight and expertise in the phenomena being studied. The end product of a grounded theory analysis usually takes the form of a set of completely saturated fundamental core categories, in addition to a list of definitions, large quantities of theoretical memos, possible linkage suggestions and a model (or number of models) that describe and explain the data.

Evaluating a grounded theory study

As with all forms of qualitative research, a grounded theory study can only be evaluated for usefulness if all the processes are made explicit (13). It is not sufficient for the researcher to report in a methodology section that a grounded theory approach was utilised. As more and more grounded theory research appears in the nursing literature (9, 17~23), it is important that nurses are aware of the criteria against which such studies may be measured.

Traditionally, research has been evaluated in a positivist manner, that is, according to what Strauss and Corbin (13) called 'scientific canons'. These include criteria such as objectivity, validity, reliability and generalisability. However, qualitative researchers argue that such criteria are inappropriate (9, 13, 24); objectivity is impossible and even undesirable (25), and reliability and generalisability are unlikely when the emphasis is placed on the perceptions of the participant in relation to certain social processes, situations and phenomena. Validity is still considered appropriate, but in a modified form. Qualitative researchers maintain that validity is achieved through the use of multiple data sources, both methodologically and in terms of a range of participants.

Many nurses are familiar with the quantitative/statistical rationales to measure research findings against, such as randomly selected samples and an inflexible approach to the research strategy and the data collection. These have little relevance to grounded theory and may lead to the reader failing to detect the theory-generating ability of the method and dismissing the study as merely descriptive or a pre-study exploration (24). The following guidelines should ensure that grounded theory studies can be evaluated according to their own aims.

Nature of the research question This is an important aspect of the evaluation process. Ideally the research question which originated the study

should be included in the final report, so that the reader may judge whether the net was cast sufficiently widely to allow for a narrowing of focus as the data was collected and analysed. If the question was too focused, then the theory is unable to develop. If the researcher has not made the initial thoughts driving the study explicit, it is impossible for the reader to evaluate how successful or valid the grounded theory method has been.

Appropriateness of the method Does the grounded theory method of investigation lend itself to the phenomena of interest? This method is based on the philosophy of symbolic interactionism and is, therefore, only appropriate when the phenomena can be studied according to social interaction and when the objective is to obtain the participants' perceptions of their own social world. A rule of thumb for evaluating in relation to this criteria, is that, if the research calls for interviews and/or observation to provide the data required, then grounded theory methodology may successfully be employed.

Use of the literature review Research that aims to test a hypothesis employs an extensive literature review in order to generate the hypothesis itself. Therefore, the theories and suppositions that provide the momentum and direction of the research are derived from existing ideas and research already done. In a grounded theory strategy, the literature review serves two purposes. First, it allows the reader to identify the issues that the researcher found interesting initially (24). Thus, the reader is able to trace the process, progress and evolution of the research question. Second, a literature review provides a backdrop against which the new findings can be evaluated.

The literature review should be brief and ideally should be conducted only after conclusions have been drawn on completion of the study. This course of action ensures that researcher bias is kept to a minimum; that all the theories come from the data itself and are not a result of literature-informed, 'a priori conceptions' (26). Neutrality is the key for grounded theorists, who aim to be neither objective nor biased.

Validity through triangulation Although the term 'validity' is generally avoided in qualitative research, it is acknowledged, particularly by grounded theorists, that theories should be tested for their accuracy, or 'truth value' (26). Qualitative researchers usually employ the process of triangulation to achieve this and it may occur on a number of levels.

The definition of triangulation can, in this instance, be reduced very simply to 'more than one'. For example, the grounded theorist may choose to assess the validity of a study by using a triangulation of theories, that is, utilising constant comparison in order to check and recheck the consistency of the key constructs emerging throughout the data (9). If a particular concept appears continually the analyst can be satisfied of its existence. Or the researcher may use a variety of data collection methods in order to gain different types of data in the same setting. If each method produces the same concepts, the researcher can again be satisfied with the accuracy of the theo-

ry (27, 28),

Using a wide range of participants in a theoretical sample may also act as a validity check. The more people who assert the importance of an issue, the more the theory can be trusted (4, 15). Indeed, members of the sample may be allowed access to the analysis process and, if they agree with the assertions made, they can validate the theories themselves (13, 14).

Evaluating the theories The theories constructed during the course of a grounded theory study may be assessed on a variety of levels. A good theory is supported by the evidence presented in data form, and results from a number of concepts and propositions. In addition, it is of paramount importance that the theories should provide a new insight into the phenomena under study (24). It is crucial, therefore, that the initial descriptions, on which any theories are built, should be faithful to the collected data. If this 'fit' (1) is an accurate one, the resulting analysis will be a reliable account of the phenomena under investigation. Finally, the very nature of grounded theory ensures that the finished report's usefulness will be tested according to the number of questions it raises rather than answers it provides (8). One would expect to see many suggestions for further study and, especially in nursing research, implications for practice (16).

'Muddling methods'

In an excellent paper outlining the problems surrounding the use of grounded theory in nursing research, Stem (29) argued that although both Glaser and Strauss believed that they meant the same thing by grounded theory, they did in fact have very different ideas of its actual constitution. This did not become apparent to them until they published separately. Stem believed that the method began with two schools of thought - the Glaserian which asks, 'What does the data say?', and the Straussian which asks, 'What if ?' - and as a result, the theory has been further eroded as time has passed. Students of these two sociologists have taught their own students in their particular way and so it is difficult to be precise about what grounded theory really is (29). In many cases, researchers have reported that they have used a 'modified' methodology in order to guard against accusations of inaccuracy (17-20, 30-31).

There are also examples of projects that bear very little resemblance to grounded theory studies, although this is what they claim to be. For example, Attree (32) used the literature to generate data 1 ' or the purpose of an analysis of the concept of quality nursing care. This might be perceived, as has already been suggested, as being against one of the main principles of grounded theory. Even semi-structured interviews and questionnaires have been utilised in a grounded theory study (17), which again may be questioned.

The difficulty is that in practice, researchers often do not follow each step of the process exactly, something that Glaser and Strauss believed to be

essential to the development of a grounded theory. Therefore, it is worth noting that any researcher who has allowed the collected data to determine the collection of further data will probably claim to have used a grounded theory approach. Sometimes, as with the questionnaire study, this error will be easy to spot, but on the whole it will not be easy at all. The length of research papers allow only for a short methodology section which, in turn, limits the amount of information that may be conveyed about how the research was actually done.

Conclusion

Developed by Glaser and Strauss (1) in response to positivist claims that qualitative research was based on unscientific methodology, grounded theory aims to generate theory that is completely grounded in the reality of the social world. This research strategy has recently become very popular in nursing, probably because it makes the transition from quantitative to qualitative methodology relatively easily. Like many qualitative methodologies, grounded theory is particularly useful when little is known about the phenomenon under study. In order to produce a true grounded theory study, a set of rigidly systematic steps must be followed, and in this way theory is allowed to evolve from the data by way of line-by-line coding and the constant comparative analysis method. As the grounded theorist must follow each of these steps, the finished reports of those studies claiming to be a grounded theory study can be evaluated according to certain criteria:

The scope of the research question

How appropriate the method is in any particular instance

How the literature review was conducted, and why

What attempts were made to ensure accuracy or 'truth value'

The value of the generated theories.

Despite the seemingly prescriptive method of grounded theory, it is worth noting that some confusion exists in the research world as to what it actually entails. It would appear that even Glaser and Strauss had different ideas on the subject, and over time the methodology of grounded theory has become diluted and confused. In order to follow the systematic steps you must decide which set to follow, and before evaluating a study, thought must be

given to the criteria used.

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