PRACTICAL ADVICE

Study Design in Qualitative Research—2: Sampling and Data Collection Strategies

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ABSTRACT   *In two prior papers in our series on qualitative research [Frankel & Devers (2000a, 2000b) Qualitative research: a consumer's guide,* Education for Health, *13, 113–123; Frankel & Devers (2000) Study design in qualitative research—1: developing research questions and assessing research needs,* Education for Health, *13, 251–261], we examine two critical issues in qualitative research design: sampling, including identifying and negotiating access to research sites and subjects, and data collection and management. We describe these two key steps in the qualitative research design process, discuss challenges that often emerge when pursuing these steps, and provide guidelines for addressing them.*

   Qualitative research most often uses "purposive," rather than random, sampling strategies. A good understanding of these sampling strategies and why they are used is central to designing a credible qualitative study. In addition, given the real-world context in which most qualitative research is carried out, identifying and negotiating access to research sites and subjects are critical parts of the process. We also provide suggestions for developing and maintaining productive and mutually satisfying research relationships with sites and subjects. Finally, data collection and management are often neglected subjects in qualitative research. We offer practical advice on how to collect and manage qualitative data, including factors to consider when deciding how structured the data collection process should be, the pros and cons of audio- and/or videotaping compared with note-taking, and tips for writing up field notes and document management. A forthcoming, final paper in the series will focus on qualitative data analysis and the publication of qualitative research results.

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Introduction

Qualitative research design has often been a "block box" to researchers familiar with quantitative research design. Over the past several decades, however, the craft of qualitative research has advanced significantly as researchers and methodologists have articulated the techniques and procedures used to move from the research question to the results. In this paper, in conjunction with our companion article on qualitative case study design (Frankel & Devers, 2000b), we provide a brief "how-to" guide. Our other paper provides an overview of the similarities and differences between qualitative and quantitative research design, and focuses on two critical qualitative research design issues: developing a research question and resource needs assessment. Here, we examine two additional issues in qualitative research design: sampling, including identifying and negotiating access to sites and subjects, and data collection and management. We illustrate these issues with examples from a recent study of adult primary care teams in a group model HMO, introduced in the other paper. In a related research area, qualitative methods have been used for studying the education of health professionals being prepared to work in teams (e.g. Lynche, 1981; Jenkins-Clark *et al*., 1998).

Qualitative Research Study Design

Sampling

Qualitative research design can be thought of as a rough sketch to be filled in by the researcher as the study proceeds (Frankel & Devers, 2000b). After a preliminary question has been formulated and resources identified and secured, the design can be likened to an abstract drawing. It has taken shape without *particular* individuals, groups, organizations, or sites (i.e. the social and physical settings where "subjects" or "cases" are located) in mind. Further specification of the research design requires the researcher to understand and consider the unique characteristics of specific research subjects and the settings in which they are located. In essence, the researcher must make the design more concrete by developing a sampling frame (i.e. criteria for selecting sites and/or subjects) capable of answering the research question(s), identifying specific sites and/or subjects, and securing their participation in the study.

Given the goals and logic of qualitative research, "purposive" sampling is often employed. Purposive sampling strategies are designed to enhance understandings of selected individuals or groups' experience(s) or for developing theories and concepts. Researchers seek to accomplish this goal by selecting "information rich" cases, that is individuals, groups, organizations, or behaviors that provide the greatest insight into the research question. Miles & Huberman (1994, p. 34) and others note that three types of cases have the greatest payoff in purposive samples:

- typical cases (i.e. those who are "normal" or "average" for those being studied);
- "deviant" or extreme cases (i.e. those who represent unusual manifestations of the phenomenon of interest); and
- "negative" or disconfirming cases (i.e. those who are "exceptions to the rule").

Many other purposive sampling strategies can be used in qualitative research, and the strategies can be revised throughout the research process as more knowledge of the setting and subjects are obtained. Also, additional cases can be added to test emerging hypotheses or rival explanations.

Purposive sampling strategies differ from probability (or random) sampling strategies. Researchers must be able to explain the use of purposive sampling in any particular study and discuss the implications for the research results. Poor description often leads to criticisms of qualitative research based on inadequate sampling designs.[1]

Finally, in some types of qualitative studies, cases are "nested," which affects the number that can be included in the study. A single case may include multiple levels that are hierarchically related to the primary research subject (e.g. studying different types of health care professionals who are members of adult primary care teams, in different facilities, in a large medical group, in an HMO). A key research interest is whether, and how, these levels affect the main research subject, such as the implementation of adult primary care teams (Yin, 1999). Given the complexity of some research subjects, the work required to adequately study a single case increases exponentially. The researcher should consider the complexity of the cases when developing a sampling frame and considering how many sites or subjects can be included in a qualitative study. Ragin (1994), for example, observes that many complex, comparative case studies include no more than 12–15 cases.

Identifying and Negotiating Access to Sites and Individuals

How can a researcher increase the likelihood of identifying good sites and "subjects" (e.g. organizations, groups, individuals) and secure their participation in the research once an initial sampling frame is developed? In our first paper on qualitative research (Frankel & Devers, 2000a), we noted that the researcher is the research instrument and almost all qualitative research approaches require the development, maintenance, and eventual closure of relationships with research subjects and sites. Developing and maintaining good relationships are important for effective sampling and for the credibility of the research. In the following discussion we provide suggestions for successfully identifying and negotiating access to sites and individuals. If the researcher is unable to secure the subjects' participation, the research cannot take place.[2]

It is useful to keep in mind the following guidelines for identifying and negotiating access to sites and subjects.[3] First, the process takes time and

patience. For some types of research, the sites may be "obvious" (e.g. demon-stration sites for adult primary care teams) or existing data (quantitative as well as qualitative) as are the source of information that may facilitate the identification of sites (e.g. professional associations, newsletter, trade magazines). For other types of research, simply learning where and how to conduct the research takes a significant amount of time (for example, where are adult primary care teams in existence generally? At what stage of implemen-tation are specific facilities and teams in the HMO?). Second, accessing existing social networks (e.g. colleagues, friends, other personal contacts) can be useful for obtaining basic information and facilitating entrée. Because a high level of trust is required to conduct some types of qualitative research, using a personal contact who can "vouch" for the researcher or write a letter of support can be critical (see discussion about getting permission from "gatekeepers" below). Third, to understand the field better and develop contacts, researchers can involve themselves in settings where subjects are likely to be located (e.g. professional associations, training programs) in some other capacity (e.g. partici-pant, volunteer, mentor, consultant). Finally, researchers may consider advertis-ing or issuing a general request for information via publications and other media (list-serves, Internet sites) that subjects are likely to read or access.

Once sites and potential subjects are identified, and the implications for the sampling frame and results considered, how should the researcher proceed? Often researchers have to negotiate access by securing permission from "gatekeepers" (e.g. organizational officials in charge of research or specific departments the researcher wishes to study, or individuals who have control over subjects of interest, such as children and their parents, students and their teachers or educational administrators). Understanding gatekeepers' views is critical for negotiating and maintaining access, and maintaining the integrity and credibility of the research.

Gatekeepers often share the following common interests: showing that they are "good" or "right"; learning how others think and act in similar organizations or at other levels of their own organization (particularly of lower rank); understanding how they can improve; and contributing to research. Gatekeepers also share common concerns, including: the time, resources, and disruption involved in their organization's participation in the study; fear that they will be shown to be "bad" or "wrong"; exposure of proprietary or competitive infor-mation; and privacy and confidentiality for their organization, its employees, or people it serves.

Gaining entry to an organization may also require the researcher to write a brief proposal that may vary substantially from the type of proposal written for an external, peer-reviewed funding agency. Ideally, these brief proposals are written *after* the researcher has had a number of informal discussions with gatekeepers and other key individuals in the organization so that, to the extent possible, their interests can be incorporated and their concerns addressed. Elements of such a proposal might include: an honest reflection of the primary

research purpose (e.g. researchers should not disguise their own interests or promise products they don't truly intend to deliver); a description of the *general* research design, including any resources requested; a response to any anticipated concerns or objections, including options for the gatekeeper to consider; and, a clear description of the researcher's roles, responsibilities, and obligations (e.g. what the researcher will provide the organization and when, and what control, if any, the organization will have over research results). Conversely, proposals should not include informal information obtained from others that would violate confidentiality and privacy.[4] In addition to this brief proposal, researchers should also go through the institutional review board at their university or research site to ensure that risks to human subjects are identified and adequately addressed.

Finally, once approval to proceed with the research has been secured from gatekeepers, the researcher must begin the process of negotiating and maintaining relationships with individuals or groups of primary interest. Ironically, negotiating access to these individuals may require the researcher to distance him or herself from gatekeepers. The individuals or groups we often wish to study are at lower ranks of the organization and may be concerned that the researcher works for organizational leaders, shares their views, or will not keep their views and comments confidential (for example, will team members' views be shared with regional leaders?). Therefore, researchers must be also get to know the interests and concerns of individuals throughout the organization and be sensitive to them, without over identifying with any one group or consciously deciding to alter ones' role (e.g. researcher versus advocate). In the initial stages of research, particularly when time constraints permit, collecting data should be secondary to getting to know people and establishing rapport. There is no simple formula for establishing rapport.. However, activities or behaviors that might facilitate the process include: helping out to the extent possible; accommodating routines; being humble but knowing when to share knowledge; establishing what you have in common but being prepared to deal with hostility or "challenges"; and showing interest in conversation even when it is seemingly irrelevant to your research subject.

Data Collection and Management

Each of the four domains of qualitative research has unique advantages and disadvantages (see Frankel & Devers, 2000a, Table 1). Given the primary research question and resources available, researchers will select one of the domains, or in some cases, combine several (e.g. study of documents and interviews). Moreover, each of these domains, and the specific methods included in them, take time to learn, as discussed (Frankel & Devers, 2000b, resources section). Here, we focus on two general data collection issues and how to proceed once the data are collected: the degree of structure or type of "instrumentation" used when collecting qualitative data; the pros and cons of audio- and/or videotaping; and data management in qualitative research.

In most qualitative research, the degree to which interviews and observations are structured varies. For example, when conducting interviews, the researcher could use a very detailed interview protocol, a general topic guide with eight to 12 broad questions and probes, or utilize neither (e.g. conduct a very open-ended interview).

Several factors influence the degree of structure or type of instrumentation used in a qualitative research study. The first factor is the purpose of the study. When the study is more exploratory or attempting to discover and/or refine theories and concepts, a very open-ended protocol is appropriate to consider. The second is the extent of existing knowledge about a subject. How much is known about primary care teams and how relevant or applicable (transferable) is the knowledge to the case under study? For example, are concepts and measures developed from the study of teams in Britain, or from other industries useful for studying adult primary care teams in a large US-based HMO? Third, the resources available, particularly subjects' time, and the number and complexity of cases, can affect the degree of structure or instrumentation. In the case of adult primary care teams, structured focus groups and interview protocols maximize the limited time that team members could give and strengthen comparability across facilities, teams, and researchers. Finally, agreements with gatekeepers and funders can influence whether, and to what degree, instrumentation is used. Depending upon the type of feedback or mode of sharing research results agreed upon and the time frame for doing so, greater instrumentation may be required. Structured instruments facilitate quicker data analysis and reporting of results. The danger in highly structured studies, however, is finding what is expected and/or settling upon an explanation too early. Researchers must work hard to avoid these problems (see Miles & Huberman, 1994 on "pre-structured" cases).

Using fairly structured instruments may be useful but developing them can be time-consuming. There are a number of excellent discussions on how to develop interview protocols (individual and group or focus groups), including Seidman (1991), Kvale (1996), Krueger (1998) and Miller & Crabtree (1999). Miles & Huberman (1994) also have an excellent chapter on developing codes and coding sheets that might be useful for those considering studying documents or audio/videotapes.

Regardless of the degree of structure or type of instrumentation used, the data must be captured and put in a format amenable to analysis. In qualitative research, the raw data and data set primarily consist of words and images in the form of field notes, audio- and videotapes, and transcripts. Documents and "artifacts" (i.e. things subjects make or use) can be included, as well as quantitative data.

The second general data collection decision is whether to use audio- and/or videotape to capture data. Table 1 compares audio- and videotaping with note-taking. There are many important methodological issues that affect whether to use audio- and/or videotape, including the added expense and the workload

involved (see Frankel & Devers, 2000b, on resources; Elderkin-Thompson & Waitzkin, 1999, on the use of videotapes). The research question and the type of analysis required will constrain the researcher's choice and help determine what strategy will be most desirable for a particular study. In the study of adult primary care teams, audiotapes and transcripts are being used because it would be very difficult for the researchers to capture the information through field notes, particularly given the number of focus groups and interviews planned. Given the research question and other practical considerations (e.g. location where focus groups were taking place, resources available), videotaping was not used.

Novice qualitative researchers often assume that once the decision has been made to use audio- and/or videotape, few decisions remain. However, there are number of methodological issues involved in transcribing audio- and videotapes (see e.g. Kvale, 1996; Elderkin-Thompson & Waitzkin, 1999). Researchers considering using audio- and videotaping should also consider these issues and how they will affect not only the resources required but the transcription process and quality.

Conversely, if audio- and/or videotapes are not used, field notes become the primary record of conversations and observations. Bodgan & Taylor (1998) provide very useful suggestions for writing up field notes. They also address two key issues that have significant implications for the credibility of the results: first, the thoroughness of notes, and second, the need to develop conventions for differentiating what was actually said or observed from the researcher's interpretations of what was said or observed.

Finally, what does the researcher do with all the information collected and recorded? A critical next step is organizing and managing the vast amount of information collected. Good qualitative data analysis relies on the ability to locate information and to keep that information in context. Unfortunately, unlike their quantitative colleagues, qualitative researchers are not often taught data management skills. Miles & Huberman (1994) lay out a number of data management principles useful for qualitative research (pp. 44–45). In addition, computer programs may help organize and manage the vast amount of information collected during a qualitative study.

Conclusions

Historically, many qualitative researchers were hesitant to describe and discuss research design because their experience of the research process differed from that of their quantitative colleagues in important ways (Frankel & Devers, 2000b). Significant progress has been made over the last several decades in articulating the similarities and differences between qualitative and quantitative research and key steps and issues in the qualitative research design process. This paper and its companions (Frankel & Devers, 2000ab) delineate qualitative

approaches and provide practical suggestions for clinicians and researchers who wish to use them to examine problems and issues in education for health. Sampling, negotiating access to sites and subjects, and data collection and management are critical features of successful and credible qualitative studies. We hope this series of articles enhances your interest in qualitative research methods and provides you with the resources and confidence to get started.

Notes

1. For further discussions about purposive sampling strategies and reasons for their use, see Patton (1990), Becker (1998), Ragin (1999) and Kuzel (1999). For a brief discussion of the implications of how sampling strategies can affect the credibility of qualitative research results, see Patton (1999), Yin (1999) and Devers (1999).
2. In rare cases, researchers have proceeded with qualitative studies covertly because they felt that the topic was of great importance and there was no other way to conduct the study. For example, Diamond (1992) worked as an orderly in nursing homes to document and understand how the elderly were cared for on a day-to-day basis. He notes in the introduction to the book that while he intended to disclose his dual role as an orderly and researcher, as the research proceeded it became increasingly "undercover" because of what he was learning. There are serious ethical and practical issues involved with covert research that must be considered carefully before pursuing such a strategy.
3. The discussion in the remainder of this section draws heavily on Bodgan & Taylor (1998, Chapters 3 and 4).
4. Miles & Huberman (1994, pp. 47–48) also include a brief discussion of agreements with study participants, particularly how they affect the type and quality of the analysis.

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