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# Taking Your Qualitative Research to the Next Level: A Guide for the Medical Educator

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## ABSTRACT

Qualitative research is a focused and deliberate approach to understanding the human condition and can identify areas that warrant further investigation through hypothesis-testing (quantitative) research. In this overview article, we discuss reasons to undertake a qualitative study; introduce three research paradigms whose frameworks are commonly used by medical education researchers (grounded theory, ethnography, phenomenology); describe the four most commonly used data gathering techniques (interviews, focus groups, observation, document tracing); and discuss the nature of the sampling/data gathering process. Examples of research questions that employ each paradigm and data gathering technique as well as a list of published sample articles to guide researchers are provided.

Education research aims to explore medical education questions, problems, and theories by focusing a scientific lens on an inherently social intersection of humans and the learning environment. Although scientific inquiry has generated an immense body of knowledge over the past several centuries, there are significant social phenomena that are impossible or impractical to reduce to concise variables to be understood or explained. While quantitative studies are common in medical research, qualitative methods, applied from the social sciences, are well suited to understanding social phenomena and are increasingly common in education research. Societal investigations generate knowledge on the influences and perceptions of human action and are able to offer a thorough understanding of outlier situations.<sup>1</sup> This article will introduce qualitative research methods well suited to medical education research and include a variety of published studies as examples of different types of qualitative investigation. All of the examples were chosen because they offer an illustration of excellent

research design utilizing the various paradigms and methodologies that will be introduced. These examples illustrate the types of questions that can best be answered with each different methodology as well as to give researchers an idea of how others have designed rigorous studies and reported their findings (see Table 1). As each study is uniquely designed and there is no standard set of guidelines, these examples are intended to inspire novice qualitative researchers to successfully incorporate the techniques of experienced qualitative researchers into their own studies.

This paper begins with a discussion of why one might choose to undertake a qualitative study, followed by an introduction to three research paradigms whose frameworks are commonly used by medical education researchers (grounded theory, ethnography, and phenomenology) and a description of the four most commonly used data gathering techniques (interviews, focus groups, observation, and document tracing). Finally, the nature of the sampling/data gathering process is discussed. This article is intended as an

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**Table 1**  
Exemplar Papers for Qualitative Paradigms and Data Collections Methods

Paradigms	Actual Study Questions/Aims	Exemplar Papers
Grounded theory	To better understand why feedback is challenging, we explored the unique perspectives of doctors who had also trained extensively in sport or music, aiming to: 1) distinguish the elements of the response to feedback that are determined by the individual learner from those determined by the learning culture and 2) understand how these elements interact to make recommendations for improving feedback in medical education. This study explores how beginning teachers in the field of undergraduate medical education integrate the teacher role into their identity.	Watling 2014 van Lankveld 2017
Ethnography	This study explored how supervisors made entrustment decisions based on residents' performance in a long-term family medicine training program.	Sagasser 2017
Phenomenology	This study explores the challenges and strengths of dual- and single-physician relationships. To describe the essential elements of social support and their meaning for medical educators.	Perlman 2015 Berg 2017
Data collection method		
Interviews	This study explored Canadian Emergency Medicine residents' beliefs about their intent to contribute summaries of landmark articles to a collaborative slideshow while studying for a certification examination. This study conducted semistructured interviews of educational leaders who direct well-established faculty development programs to inform the development of postgraduate medical education fellowships.	Archambault 2015 Coates 2016
Focus groups	This study explored multispecialty residents' experiences with giving and receiving feedback to identify feedback barriers and facilitators. The purposes of this paper were to further explore the processes used by learners and physicians to interpret, accept and use (or not) data to inform their perceptions of their clinical performance, and to further understand the factors (internal and external) that appear to influence their interpretation of feedback.	Reddy 2015 Eva 2012
Observations	This study conducted observations to explore the range of practices used by junior trainees performing follow-up and documentation in clinical settings.	Cadieux 2017
Document analysis	This study used document analysis, among other data collection strategies, to explore the work involved in the delivery of a distributed medical education (DME) program. This study analyzed student portfolio documents to gain an understanding of the role of peer meetings in students' learning experiences regarding reflection.	MacLeod 2017 Schaub-de Jong 2009
<b>Table 1 Bibliography</b>		
Paradigms		
Grounded theory		
Watling C, Driessen E, van der Vleuten CP, Lingard L. Learning culture and feedback: an international study of medical athletes and musicians. <i>Med Educ</i> 2014;48:713–23.		
Van Lankveld T, Schoonenboom J, Kusrkar RA, Volman M, Beishuizen J, Croiset G. Integrating the teaching role into one's identity: a qualitative study of beginning undergraduate medical teachers. <i>Adv Health Sci Educ</i> 2017;22:601–22.		
Ethnography		
Sagasser MH, Fluit CR, van Weel C, van der Vleuten CP, Kramer AW. How entrustment is informed by holistic judgments across time in a family medicine residency program: an ethnographic participant observational study. <i>Acad Med</i> 2017;92:792–9.		
Phenomenology		
Perlman RL, Ross PT, Lypson ML. Understanding the medical marriage: physicians and their partners share strategies for success. <i>Acad Med</i> 2015;90:63–8.		
Berg JW, Verberg CP, Scherpbier AJ, Jaarsma AD, Lombarts KM. Is being a medical educator a lonely business? The essence of social support. <i>Med Educ</i> 2017;51:302–15.		

(Continued)

Table 1 (continued)

Table 1 Bibliography	
Data collection methods	
Interviews	Archambault PM, Tharh J, Blouin D, et al. Emergency medicine residents' beliefs about contributing to an online collaborative slideshow. <i>CJEM</i> 2015;17:374-86.
	Coates WC, Runde D, Yarris LM, et al. Creating a cadre of fellowship-trained medical educators: a qualitative study of faculty development program leaders' perspectives and advice. <i>Acad Med</i> 2016;91:1696-704.
Focus groups	Reddy ST, Zegarek MH, Fromme HB, Ryan MS, Schumann SA, Harris IB. Barriers and facilitators to effective feedback: a qualitative analysis of data from multispecialty resident focus groups. <i>J Grad Med Educ</i> 2015;7:214-9.
	Eva K, Armon H, Holmboe E, et al. Factors influencing responsiveness to feedback: on the interplay between fear, confidence, and reasoning process. <i>Adv Health Sci Educ</i> 2012;17:15-26.
Observations	Cadieux DC, Goldszmidt M. It's not just what you know: junior trainees' approach to follow-up and documentation. <i>Med Educ</i> 2017;51:812-25.
Document tracing/document analysis	MacLeod A, Kits O, Mann K, Tummons J, Wilson KW. The invisible work of distributed medical education: exploring the contributions of audiovisual professionals, administrative professionals and faculty teachers. <i>Adv Health Sci Educ</i> 2017;22:623-38.
	Schaub-de Jong MA, Cohen-Schotanus J, Dekker H, Verkerk M. The role of peer meetings for professional development in health science education: a qualitative analysis of reflective essays. <i>Adv Health Sci Educ</i> 2009;14:503-13.

overview and we encourage readers to explore each of these topics in depth as they pertain to their own studies. Additional resources are listed in Table 2.

## REASONS TO CHOOSE A QUALITATIVE STUDY

Qualitative research helps us answer complex questions about the nature of the human condition,<sup>2,3</sup> where the answers to potential questions require an explanation rather than a straightforward yes or no.<sup>4</sup> It is focused and deliberate, answering questions that generally have a narrow scope or are applicable only within certain contexts, such as culture, sex, or socioeconomic status. In fact, one of the key characteristics of qualitative studies is that the outcomes are *not* generalizable either to the greater population or to any future events. Qualitative studies are not intended to be predictive, nor do they attempt to search for causal relationships; rather, they help researchers understand and explain how and why particular events unfolded in the way they did.

While this represents one of the most apparent criticisms of qualitative study—that results can never be exactly duplicated because the project and its results are bounded by time and place—it is one of its key components and greatest strengths. Subsequent studies can expand on the knowledge generated by the original study. Results can be consistent with similar studies, but they will never be identical. Even if the exact same people are asked the exact same questions, their thoughts and feelings toward a given subject can change over time and produce different answers. All qualitative research is, therefore, unique and it is the task of the researcher to understand and describe the context within which the study takes place and why these bounded results are relevant and significant. When sharing the results of a qualitative study, it is important to inform readers of the details of the conceptualization, execution, and analysis.<sup>5-7</sup>

## PARADIGMS, METHODS, AND THE QUESTIONS THEY ANSWER

There are three epistemologies (the nature of knowledge and its acquisition) that characterize health science research. Positivists believe that there is one objective reality that can be understood through scientific investigation. This was the leading view that, for centuries, led to ever more rigorous and detailed use

**Table 2**  
How-to Resources for Conducting Qualitative Research in Medical Education

General qualitative methods
1. Kuper A, Reeves, S, Levinson W. An introduction to reading and appraising qualitative research. <i>BMJ</i> 2008;337:404–7.
2. Lingard L, Albert M, Levinson W. Grounded theory, mixed methods, and action research. <i>BMJ</i> 2008;337:459–61.
3. Sullivan GM, Sargeant J. Qualities of Qualitative Research: Part I. <i>J Grad Med Educ</i> 2011;3:449–452.
4. Sargeant J. Qualitative research part II: participants, analysis, and quality assurance. <i>J Grad Med Educ</i> 2012;1:1–3.
5. Turgeon J. Appraising qualitative research articles in medicine and medical education. <i>Med Teach</i> 2005;27:71–5.
6. O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. <i>Acad Med</i> 2014;89:1245–51.
7. Shenton A. Strategies for ensuring trustworthiness in qualitative research projects. <i>Educ Inform</i> 2004:63–75.
8. Kahlke R. The qualitative quality conversation. <i>Med Educ</i> 2017;51:5–7.
9. Choo EK, Garro AC, Ranney ML, Meisel ZF, Morrow Guthrie K. Qualitative research in emergency care part I: research principles and common applications. <i>Acad Emerg Med</i> 2015;22:1096–102.
10. Ranney ML, Meisel ZF, Choo EK, Garro AC, Sasson C, Morrow Guthrie K. Interview-based qualitative research in emergency care part ii: data collection, analysis and results reporting. <i>Acad Emerg Med</i> 2015;22:1103–12.
11. Chan TM, Ting DK, Hall AK, et al. A writer's guide to education scholarship: qualitative education scholarship (part 2). <i>Can J Emerg Med</i> 2017:1–9.
12. Journal of Graduate Medical Education Qualitative RipOut Series: <a href="http://www.jgme.org/page/ripouts">http://www.jgme.org/page/ripouts</a> .
Qualitative research textbooks
1. Creswell JW, Poth CN. <i>Qualitative inquiry and research design: choosing among five approaches</i> . Thousand Oaks, CA: Sage Publications, 2017.
2. Creswell JW. <i>Research design: qualitative, quantitative, and mixed methods approaches</i> . 4th ed. Thousand Oaks, CA: Sage Publications, 2014.
3. Creswell JW, Plano Clark VL. <i>Designing and Conducting Mixed Methods Research</i> . Thousand Oaks, CA: Sage Publications, 2011.
Qualitative data analysis
1. Braun V, Clarke V. Using thematic analysis in psychology. <i>Qual Res Psychol</i> 2006;77–101.
2. Boyatzis RE. <i>Transforming Qualitative Information: Thematic Analysis and Code Development</i> . Thousand Oaks, CA: Sage Publications, 1998.
3. Bernard HR, Ryan GW. <i>Analyzing Qualitative Data: Systematic Approaches</i> . Thousand Oaks, CA: Sage Publications, 2010.
Grounded theory
1. Charmaz K. <i>Constructing Grounded Theory</i> . Thousand Oaks, CA: Sage Publications, 2014.
2. Corbin J, Strauss A, Strauss AL. <i>Basics of Qualitative Research</i> . Thousand Oaks, CA: Sage Publications, 2014.
3. Glaser B. <i>Discovery of Grounded Theory: Strategies for Qualitative Research</i> . London: Routledge, 2017.
4. Kennedy TJ, Lingard LA. Making sense of grounded theory in medical education. <i>Med Educ</i> 2006;40:101–8.
Phenomenology
1. Stenfors-Hayes T, Hult H, Dahlgren MA. A phenomenographic approach to research in medical education. <i>Med Educ</i> 2013;47:261–70.
Ethnography
1. MacLeod A. Understanding the culture of graduate medical education: the benefits of ethnographic research. <i>J Grad Med Educ</i> 2016;8:142–4.
2. Reeves S, Kuper A, Hodges BD. Qualitative research methodologies: ethnography. <i>BMJ</i> 2008;337:a1020.
3. Ortner SB. <i>Anthropology and Social Theory: Culture, Power, and the Acting Subject</i> . Durham, NC: Duke University Press, 2006.
4. Ng SL, Bisailon L, Webster F. Blurring the boundaries: using institutional ethnography to inquire into health professions education and practice. <i>Med Educ</i> 2017;51:51–60.
Interviews
1. DiCicco-Bloom B, Crabtree BF. The qualitative research interview. <i>Med Educ</i> 2006;40:314–21.
Focus groups
1. Barbour RS. Making sense of focus groups. <i>Med Educ</i> 2005;39:742–50.
Document analysis
1. Bowen GA. Document analysis as a qualitative research method. <i>Qual Res J</i> 2009;9:27–40.

of the scientific method and the dominance of quantitative research. Today, it is commonly accepted that much of what we hope to understand and explain

cannot be done by quantifying variables and leads the way for the rise of qualitative research. Disagreement occurs among researchers as to whether there is one

objective reality that can be understood in increasingly greater detail (postpositivism) or whether reality is socially constructed through shared meanings and experiences (constructivism). Most qualitative researchers have either a postpositivist or constructivist epistemology and tend to favor the paradigms and methodologies that best align.<sup>8</sup>

A paradigm is defined as a set of “theoretical ideas and technical procedures that a group of scientists adopt and that are rooted in a particular worldview with its own language and terminology.”<sup>2,3</sup> Each has its origins in the social sciences. While some data gathering methods lend themselves better to research within one paradigm or another, there is no strict guideline that requires all ethnographic studies to be done via observation, for example. The research team has the flexibility to choose which method(s) work best for their given situation.

When considering all of the following paradigms and methods, it is important to take a moment for self-reflection and consider which ones resonate with the researcher’s background, experience, and worldview. While quantitative researchers may conduct studies using a wide range of methodologies, most value a degree of impartiality that is not present in qualitative studies. Integral to the qualitative analytic process is the social reality experienced by each member of the research team, including their belief system, which may direct the research questions and approach to analysis.<sup>8,9</sup> We have provided illustrative examples of research projects that may be appropriate for each paradigm and method described (see Table 3).

## Part 1: Paradigms

**Grounded Theory.** The most commonly used paradigm for qualitative research is grounded theory.<sup>10</sup> Grounded theory today resides in a gray area between the constructivist and postpositivist epistemologies. The term “grounded theory” comes from the idea that theories arise from data and that it is up to the researcher to recognize the emergent theories and analyze their significance, rather than to test and verify existing theories. If theories are grounded in the data, the researcher cannot lend his or her own prejudices and assumptions to the data gathering process because the theories exist within the data and just waiting to be uncovered by the researcher; however, it is the researcher’s subjective interpretation of the data that allows him or her to determine if and when a new theory has arisen. Researchers must thus be mindful

of which epistemology they identify with as well as the impact of their personal backgrounds on their projects. Although grounded theory research can be undertaken by a single researcher, she or he must be especially reflective and creative during the analysis process. It is beneficial to have multiple collaborators (including those from different academic backgrounds) to include a variety of perspectives in the analysis.

The fundamental characteristics of any grounded theory research project are an iterative process of data gathering, a systematic coding scheme applied to the data, and the use of theoretical sampling. The iterative process allows data gathering and analysis to happen simultaneously so researchers can identify avenues that must be explored further and seek explanations for unexpected results. Data are organized into key conceptual areas or themes (coding). Analysis is the creation of conceptual theories from these categories. Researchers can take notes throughout the data collection and analysis stages of a project to recall their initial impressions while writing the manuscript. To demonstrate the rigor of a grounded theory project, researchers must show how the coding process emerges from the data rather than being predetermined and “imposed” on the data. Hypotheses generated from the conceptual theories that emerge from qualitative studies can later be investigated using quantitative (hypothesis testing) methods to determine their practical scope and magnitude.

The true value of a grounded theory study is to contextualize the findings within the big picture. Studies must also contain a “creative element” to truly develop a theory. It is beneficial for researchers to continually ask and confidently answer the question, “Why is this important?” to not lose sight of the big picture. The generation of theory cannot occur in isolation; rather, it requires an open-mindedness that must coexist with a knowledge of existing theoretical perspectives to consider how new data may complement or offer alternate explanations to related studies.

**Ethnography.** Ethnographic studies use culture as the lens through which to interpret data. Ethnographers seek to understand a social organization from within,<sup>10</sup> generally conducting research by participating by inserting themselves into the subjects’ reality for a period of time.<sup>2,3</sup> While this paradigm has its roots in anthropologic studies of remote cultures, we now employ it to include the social culture of a communal activity.<sup>8</sup> For example, an ethnographer may seek to

**Table 3**  
Possible Research Questions for Each Paradigm and Data Collection Method\*

Paradigm	Sample Study Question	Sample Details
Grounded theory	How do attending physicians make real-time decisions about what procedures they can entrust residents to perform without supervision?	To understand the process of entrustment at the EM resident level, the researcher would conduct observations to explore the spectrum of attending practice regarding allowing residents to perform procedures independently. Individual open-ended interviews would explore themes that impact entrustment decisions, and transcripts would be analyzed iteratively until themes emerge to guide the researcher in developing theories about how attendings make entrustment decisions.
	How do expert clinicians manage ED workflow to maximize efficiency?	To teach efficiency, educators must first understand the workflow process for those who do it well. Open-ended flexible interviews combined with real-time observations could illuminate behaviors and thought processes that streamline workflow in the ED. Iterative analysis of field notes and interview transcripts would allow the researcher to make comparisons between behaviors and mental constructs to generate theories about efficient practices that may be taught.
Ethnography	Do small group learning sessions yield effective support networks in the first year of medical school?	A researcher would become a member of a small learning group at the start of medical school and record observations and interactions during learning sessions and during extracurricular time for the entire year (or predefined period of time).
Phenomenology	What are the perceptions of EM residency applicants about the interview day, the program strengths, weaknesses, faculty?	A researcher would pose as an interviewee for each interview day at a given program and participate in applicant discussions.
	How do pediatric deaths influence high-risk behaviors in EM residents?	Pediatric deaths are stress provoking events. It is possible that EM residents engage in high-risk behaviors (e.g., excessive alcohol consumption, high-speed driving, recreational drugs, domestic unrest, tobacco use) to quell their stress.
Data collection method	How does the implementation of EHR impact faculty time spent on clinical shifts?	Did faculty attend training sessions? To what degree are faculty comfortable with technology in general? Are there support systems in place (e.g., ED scribes, 24-hour support desk)? What are the differences in time spent with each patient? How do faculty perceive interactions with nurses, trainees before and after implementation?
	What are the experiences of ambulatory patients who check into the ED for moderately severe, non-life-threatening conditions?	Questions could focus on the check-in process, triage, personnel, waiting room experience, ED experience, disposition plan, understanding of treatment and condition, post-ED recovery phase.
Observations	How does pregnancy and childbirth during EM residency affect the resident, their colleagues, and the service needs of the department?	Questions relating to both pregnancy and maternity leave are important and may be viewed differently by each stakeholder group. Different interview questions would be appropriate for each of these groups and could be combined into a single study that examines the entire circumstance or could be a more in-depth evaluation of one group only, e.g., the mother.
	Do homelessness and/or substance abuse in ED patients affect interactions and treatment decisions by the EM resident?	An observer can record resident time spent, tone, types of questions asked, descriptions used during case presentation to faculty, and types of interventions offered to disenfranchised ED patients vs. highly insured or affluent patients.
Focus groups	Do EM residents treat medical students who are EM bound and non-EM bound differently?	The observer could record time spent and quality of discussion between the resident and student. In addition, the observer could note comments to colleagues by the resident after the interaction with the student.
	How does the pregnancy and maternity leave of a coresident impact her colleagues?	Coresidents, program leaders, nurses can weigh in on areas such as increased workload, feelings of resentment or joy, observation that the new mother interacts differently with nurses and patients during or after the pregnancy.
	Are there sex differences in off-service interactions for EM residents?	Joining together male and female EM residents, off-service colleagues, and faculty (EM and off-service) may reveal different attitudes and perceptions of the female experience.

(Continued)

Table 3 (continued)

	Sample Study Question	Sample Details
Document tracing	What factors in personal statements and medical school evaluations predict "problem resident" behaviors?	Across several years (or several programs), program directors could review the personal statements, letters of recommendation, and medical school performance examinations of residents who proved to be a challenge during residency in an attempt to identify recurrent themes that may alert them when choosing future residents.
	How do pediatric patients view their visit to the ED as interpreted by their artwork?	Pediatric patients can be encouraged to draw pictures during their ED stay using materials provided. These can be evaluated for colors used, subjects present in picture, size of patient relative to others, presence of hospital personnel, etc.

\*Readers may use these suggestions to generate new studies. The authors request that this paper be referenced in the resultant work.

answer a question by examining the culture of a specific, but diverse, group of individuals, such as children in Sacramento, members of the European Parliament, Crossfitters, or classic car enthusiasts. Each of these is called a life world. Obviously, a subject may be a classic car enthusiast and participate in Crossfit classes; however, neither of the first two life worlds are relevant to a researcher seeking to understand how the competitive environment in a Crossfit gym might lead to injuries related to overtraining. Institutional ethnography refers to studying the rules and norms that govern everyday practices and interactions, for example, the effect of a set of teaching guidelines imposed by university administration on the level of engagement between students and professors within a classroom.

Ethnography is a distinctively constructivist endeavor that relies on the social construct that people and their communities have meaning and are constantly evolving.<sup>11</sup> Ethnographic studies generally consist of a combination of observation, document analysis, and spontaneous interviews with field contacts. While interviews are not distinctly formal, they rise above the level of a casual conversation. Consent is required and subjects must be informed that the interaction will be included as data. This situation also differs from a formal interview because it is generally the result of ongoing communication and interaction between the researcher and the field contact. Data gathered by ethnographers is unstructured and flexible, which requires researchers to be experts in several methods of data gathering.<sup>2,3</sup> Ethnographers can collect data through observation, casual interviews, and document analysis. Unlike focused observation (discussed below), there is less likelihood that the researcher will affect the subjects. Where formal interviews may be influenced by the Hawthorne effect, subjects in an ethnographic study are under ongoing observation, which makes it easier to discern true habits from showmanship.

Researchers must always be conscious of context when analyzing data; ethnographic studies are culturally relative. Actions and events must be considered in the context of the local culture and researchers must refrain from imposing their own cultural judgments or considering the observations in relation to society at large.<sup>11</sup> At the same time, the researcher as an outsider is able to identify the wealth of unique knowledge possessed by the members of a community that was gradually and subconsciously acquired throughout the socialization process of that community. Like other



methodologies, saturation is reached when the researcher is “no longer gathering significant new information” about his or her subject. However, ethnographic studies, due to their long-term nature, rarely reach true saturation before time and budget constraints force an end to the data gathering.<sup>11</sup>

**Phenomenology.** Similar to grounded theory, phenomenology is used when researchers are seeking new information rather than testing existing theories. Similar to ethnography, phenomenology is concerned with everyday occurrences. Phenomenologic studies allow researchers to “understand everyday experiences without presupposing knowledge of those experiences” and therefore the phenomena being studied are separate from reality.<sup>12</sup> This idea traces back to Plato’s cave, where the shadows on the wall are separate from the people casting them, but the reality experienced by those in the cave is confined to the existence and activities of the shadows. The concept of a phenomenon is drawn from Immanuel Kant’s idea that what occurs in the human mind is separate from reality and imperceptible by the senses. Essentially, phenomenologic studies seek to understand people’s emotional reactions and responses to a particular event or situation.

Phenomenology has two major theoretical approaches that researchers can utilize. Descriptive phenomenology is a postpositivist endeavor, in which human experience and reality are distinct entities and the goal of the researcher is to separate his or her preconceived ideas from the experiences of others to describe the essence of a phenomenon. Interpretive phenomenology is a constructivist endeavor, in which humans exist in the world they interpret and the researcher is concerned with how he or she relates to the phenomenon because it is impossible to separate perception from self.

Phenomenologic studies lend themselves well to gathering data from focus groups because the group interactions allow the researcher to gain insight into how people make meaning from their experiences.<sup>13</sup> The interaction between people who have shared a similar experience can give a research team information answers to questions they would not have otherwise thought to ask. However, individual interviews allow a researcher to delve deeper into particular experiences and extract detailed responses that would otherwise be unavailable in a group setting. As this type of study is particularly reflexive, it is imperative

for the researcher to thoroughly understand his or her own perceptions of a particular phenomenon, although the greatest challenge to phenomenologic research is that it is impossible for a researcher to fully divorce his or her own perception from either an objective reality or the reality experienced by the subjects.

## Part 2: Data Gathering Strategies

Once a researcher has decided what type of study to conduct, one must consider which method(s) will be used to gather data. These methods can be used individually or in combination. Exact procedures are more organic than those set out for quantitative research because there are few rigid requirements that must be adhered to at all times and in all cases. While there are general guidelines and ethical considerations for each method that will be explained here, it is ultimately up to the researcher to design a strategy for how exactly he or she wishes to go about collecting and organizing data.

In all forms, data gathering and analysis occur simultaneously (with the exception of observation by video). Some techniques explicitly facilitate this, such as taking notes during an interview, and some techniques implicitly facilitate analysis, such as an observer adapting to the rules and norms of the group he or she is studying. In all situations, this reflexivity of the researcher is a key philosophical difference between quantitative research and qualitative research. The researcher’s reactions and prejudices are integral to the analytic process because this informs the questions that are asked throughout the project and determines what he or she deems necessary to probe further.

**Interviews.** The interview is the most cognate method between qualitative and quantitative studies. Its sibling is the survey, distributed anonymously with fixed answer choices. Both are intended to explore participant perceptions. Interviews are characterized by their open-ended questions that allow for diversity and elaboration of answers. Construction of interviews should include diverse points of view and they should be read aloud to individuals who are similar to the intended subjects for clarity and process.<sup>14</sup> Interviews are classically conducted in person, but this style of data gathering also includes open-ended surveys. While quantitative surveys and qualitative interviews are capable of asking the same questions, the interview provides deeper, more detailed answers and allows for

further development of thoughts and responses. The drawback of conducting interviews is that they are more time consuming and expensive than a fixed survey-based study.<sup>15</sup>

An effective interview should seem, to the subject, to be an intimate yet focused conversation. Questions should be broad and a combination of set probes and spontaneous follow-ups.<sup>1,10</sup> Beyond this, the researcher should allow the conversation to flow naturally rather than simply moving down a list of questions. A conversation allows the subject to feel comfortable expressing an opinion and provides opportunities for the subject to bring up ideas or experiences that may not have been previously considered by the researcher. It is perhaps easiest to determine when saturation has been reached in interview-based studies because their probing, elaborative nature allows researchers to determine when no new ideas are being gathered.

An interview is perhaps the most direct way for a researcher to understand particular outlier cases. The individual nature of interviews allows researchers to recruit others whose experiences may constitute a pocket of a phenomena that may not have been indicated by an individual outlier that presented with random sampling. Unlike quantitative studies that generally disregard outliers as irrelevant to the data set at large, qualitative researchers are much more interested in the presence of outliers and the series of events that lead to these situations. The interview allows the researcher to ask directly about the subject's thoughts, feelings, and experiences that may have contributed to an atypical outcome.

**Observation.** Observation seems to be the most passive and intuitive form of data gathering, yet it is complex with a whole range of situations and ethical considerations that a researcher must be mindful of to conduct a meaningful study. Observation allows researchers to analyze a social reality from an external perspective, rather than trusting interviewees to truthfully and accurately describe their experiences. Observation gives the researcher the unique opportunity to utilize all five senses to construct a complete picture of the environment being studied. A special challenge of observation is that people frequently behave differently if they are aware that they are being observed. The researcher must take care to integrate into the environment so as not to influence the actions of the observed. Another challenge of observation is that it can be difficult to gain access to the particular

environment you would like to observe, whether because the interactions you hope to observe happen infrequently or because your research team is limited by working hours and funding. For this reason, a thorough understanding of the environment is necessary to successfully conduct an observational study.

Like all qualitative projects, gathering data by observation is an iterative process. This can be broken down into three stages. First, observations should be descriptive, giving researchers a general overview of the surroundings. Next, researchers should focus their observation on the details that are relevant to the research question. Finally, they can purposively select particular phenomena or interactions to observe to expand specific knowledge. Diversity contributes a wealth of knowledge that is inaccessible to any unilateral undertaking. Observational studies especially benefit from a diverse research team because our own personal realities cause us to notice and miss details that might be significant or irrelevant to someone who inhabits a different social reality. At the very least, an observational team should be mixed gendered to capture the two largest subsets of social reality.

A unique challenge for observational studies is determining how to uphold ethical guidelines without compromising a study. In small or intimate settings, it is necessary for an observer to gain consent from all of the subjects; however, this is not necessary in high-traffic public areas. For example, if you are observing behaviors in a shopping center or park, it is neither possible nor productive to seek consent from every single person who passes through. It is thus imperative that the researcher take care to consider the privacy of the subjects while conducting an inherently intrusive study.<sup>2,3</sup>

**Focus Groups.** One of the most commonly used qualitative methods across many disciplines is the focus group.<sup>13</sup> Focus groups are chosen when the researcher believes that the whole of a group's experiences contributes more to understanding a social phenomenon than the experience of a single individual.<sup>15</sup> Focus groups combine interview and observation techniques to gain insight on a topic from the interactions of a small group of people. As its own method, a focus group is neither an observation nor an interview. It is best applied for situations in which there are differences of opinion toward a topic or where creation or implementation of a plan or policy requires input from a diverse group or to better understand the

experiences of a particular subgroup or culture.<sup>1</sup> Unlike an observational exercise, in which particular social structures and choices lead people implicitly or explicitly familiar with one another into a researcher's field of vision, focus group members are deliberately chosen by the research team for their perceived experiential contributions to a topic, as well as their relative anonymity within the group.<sup>1</sup>

The classic focus group consists of six to 10 people who are unfamiliar to each other. Multiple sources claim that eight people is the optimum number for a focus group—this number allows for diversity of perspectives, but is manageable for one person to moderate.<sup>2,3,13</sup> A criticism of these small groups is that they are likely not representative of the population at large. However, complex research questions are not answered over the course of one focus group session. Here, the iterative process allows the research team the creativity to decide how to probe for information. One option is to build multiple similar groups to gather information until it is clear saturation has been reached. Another option is to build groups that draw from different microcosms concerned with the particular topic to see how their experiences vary, such as a group of students, a group of lecturers, and a group of administrators. Ideally, projects would use multiple focus groups drawn from the various microcosms; however, a team with limited personnel, budget, and/or access to subjects must decide which is the greater priority for his or her individual study.<sup>13</sup>

The fundamental difference between a focus group and an interview is in the role of the researcher. In an interview, the subject and the researcher interact with one another as the researcher extracts information from the subject—in this case the researcher takes on the role of investigator. In a focus group, the researcher has a far less personal role as the moderator or facilitator of the group discussion because he or she is interested in the interactions that take place between the subjects in response to the researcher's probe for information.<sup>13</sup> For this reason, focus groups should *not* be employed to answer questions regarding sensitive or personal information. In addition to the moderator leading the focus group session, another member of the research team should be a designated observer to pick up on nonverbal reactions to questions and interactions because these can be equally insightful to verbalized responses and often go unnoticed by a moderator trying to divide his or her attention between multiple people at once.<sup>13</sup>

**Document Tracing.** Document tracing is one of the least common methods used in qualitative medical education research. This method is used abundantly in the social sciences to track how particular individuals, groups, and governments have changed their ideas, opinions, and practices over time by analyzing policy publications, literature, and correspondence. While not as interactive as the other methods described above, document tracing gives researchers an intimate look at the information that humans have chosen to record. On an individual level, this represents a person's primary perceptions and reactions to the world around them—their hopes, goals, challenges, and failures. Within groups and institutions, subtle and overt changes in phrasing and policy can indicate changing priorities and agendas that can alert a researcher to how and why these changes occurred over time.

## THE NATURE OF THE DATA SEARCH

### Purposive Sampling

One of the key differences between qualitative and quantitative research is that qualitative studies give researchers the freedom to purposefully select their sample size and population, rather than adhering to the quantitative standard of randomly selecting representatives of the general population. Yet a common pitfall of qualitative researchers and an overall critique of the qualitative approach is the ability to hand select data that support the conclusion you would like to reach. As in all other aspects of a study, researchers must be cautious that their sampling techniques maintain an adequately high standard of rigor and trustworthiness to maintain the integrity of the study at large.

Purposive sampling refers to deliberately selecting a particular subset of the general population, as well as seeking participants with underrepresented ideas to more thoroughly understand outlier cases. An unexpected challenge for qualitative researchers in the quantitative-dominated world of biomedical journals is that the editors in charge of submissions may not recognize the rigor involved in a qualitative study with a small or nonrepresentative sample. It is thus up to the researcher to write an especially strong proposal that clearly defines and explains the logic of his or her selection process, while potentially educating the editors on unfamiliar concepts and methodologies. This may be a source of frustration for qualitative researchers; however, it is a hidden benefit to reflect on their

study design from the outset to ensure the utmost rigor and quality practices are adhered to and will set the research team up to clearly convey the intent and significance of their study to any audience—from colleagues around the water cooler to formal presentations.

### Saturation

Common practice in research mandates that data be gathered until saturation has been reached. Unlike quantitative studies, where sample size is often determined a priori by power calculations, quantitative researchers must continue to collect data until saturation, when their analysis reveals that no more unique concepts are being discovered. This need for human judgment can seem daunting at first. Where is the line between stopping once saturation has been reached and interviewing the entire population to ensure that every single possible answer has been considered? The answer lies in the quality of the data gathering strategy decided upon in the original study design. If solid theoretical sampling procedures have been utilized—seeking out relevant subjects for the initial data gathering mission, expanding upon unexpected or outlier data, identifying and defining themes that arise—the point at which data can be reliably categorized and coded is the point at which saturation has been reached. While this may seem arbitrary to researchers embarking upon their first qualitative study who are concerned with their ability to be thorough and open-minded, experience will bring a sense of intuition for the ability to recognize when saturation has been reached. In the meantime, the simplest guideline that exists for recognizing saturation is “when a complete and convincing theory has been developed that provides a plausible account of the data without gaps or leaps of logic.”<sup>10</sup>

### CONCLUSION

There are many potential uses for qualitative research within medical education that will provide rich contributions to the field. While quantitative methods continue to dominate the health sciences, it is important to understand that we will never be able to see a complete picture of reality, whether fixed or socially constructed, without first examining the unquantifiable

phenomena that exist in the world. We hope that readers are encouraged to reflect on the concepts and methodologies introduced here and explore the provided studies as inspiration for their future projects.

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