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## Qualitative Research in Emergency Care Part I: Research Principles and Common Applications

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### Abstract

Qualitative methods are increasingly being used in emergency care research. Rigorous qualitative methods can play a critical role in advancing the emergency care research agenda by allowing investigators to generate hypotheses, gain an in-depth understanding of health problems or specific populations, create expert consensus, and develop new intervention and dissemination strategies. This article, Part I of a two-article series, provides an introduction to general principles of applied qualitative health research and examples of its common use in emergency care research, describing study designs and data collection methods most relevant to our field, including observation, individual interviews, and focus groups. In Part II of this series, we will outline the specific steps necessary to conduct a valid and reliable qualitative research project, with a focus on interview-based studies. These elements include building the research team, preparing data collection guides, defining and obtaining an adequate sample, collecting and organizing qualitative data, and coding and analyzing the data. We also discuss potential ethical considerations unique to qualitative research as it relates to emergency care research.

### INTRODUCTION

Qualitative data – which focuses on narratives, instead of quantitative presentations of data – has a critical role in our understanding of health topics. However, even with an upward trend in the number of qualitative studies appearing in print, and statements by journals of commitment to publishing these studies,<sup>1</sup> they remain a very small proportion of the scientific literature.<sup>2</sup> This may be in part due to the fact that qualitative research is plagued by misconceptions and concerns, including that it is inexact, highly subjective, and overly time consuming; the smaller samples sizes that are inherent to qualitative research studies often lead to comments that conclusions are not robust, reliable, or generalizable.

Qualitative research is a systematic and rigorous process, guided by discipline and theory, and following rules and conventions of standard scientific inquiry. There are many

circumstances in which investigators may choose a qualitative, rather than quantitative, approach to a research question (see Table 1). Qualitative research uses an inductive approach to knowledge, in which the experiences of individuals are used to formulate initial understandings of general experiences. Qualitative research helps get to the root of a new or poorly understood problem or population when investigators are still in the early stages of developing explanatory hypotheses. Qualitative research also seeks to uncover a deep understanding of a population or disease experience, and can be highly useful to medical investigators, for whom the true nature of a clinical problem may as yet be elusive and unexpected. Therefore, qualitative research approaches are designed specifically to define and explore such areas, often seeking insights from a wide variety of voices, including emergency department (ED) clinicians and staff, prehospital personnel, patients, families, and hospital administrators.

This monograph will describe the role of qualitative explorations in emergency care clinical research, providing examples of how qualitative studies generate insight into clinical problems under investigation. This will lead to a more detailed description in Part II: Qualitative Research Design, Data Collection, Analysis and Reporting (immediately after this article). While there are many potential qualitative research methods, Part II will focus on in-depth interviewing of individuals and groups, which are common techniques used in emergency care research.

## APPLICATIONS

Qualitative research serves a number of different, broad functions in clinical research.<sup>3-6</sup>

### Identification, Description, and Explanation of a Clinical Problem

An investigator notices a critical health problem: many children with asthma visit the ED without having followed their prescribed medication regimens. Based on anecdotal experience, he suspects that this is more of a problem for non-English speaking parents who have not had language-appropriate instructions about asthma medication use. However, he recognizes that his own conceptualization of the problem may not take into account all the critical aspects of the problem or the different ways in which the problem may affect various members of this diverse patient population. He wishes to collect data from parents, keeping an open mind to any information that may help him get to the heart of the matter and the issues that are actually important to the patient population and their families. During focus groups with these participants, he discovers that comprehension is one part of the problem – but that cultural beliefs and distrust of the medical establishment are others.

Qualitative research seeks to identify the issues or associations that are most relevant to the health problem under study, to “disentangle” the many issues that may be at play in determining clinical outcomes, and to illuminate problems that clinicians and investigators may never even have imagined.<sup>7</sup>

Investigators may also wish to describe a health problem in specific, detailed ways that best suit qualitative processes. For example, it may be particularly important to describe the full range of the experience of a disease, to capture the variation within the experiences of patients and their families, or explore the significance of these experiences within the context of patients' lives. When considering interventions to help patients with various conditions, these descriptive aspects of the disease may have as much, or more, weight as quantitative factors such as incidence, duration, or prevalence of the clinical condition. For example, a patient with poor adherence to his diabetic regimen may face many day-to-day challenges that are not well understood by his physician, but that are more relevant to him than the physician's imperative of achieving an ideal hemoglobin A1c level.<sup>8</sup> Identifying these factors has been described as investigating the "lived experiences" of the population of interest.<sup>3</sup> Qualitative researchers look for common themes in these described experiences, as well as unique themes within specific segments of the population as they gather data, and also for the factors that influence these themes. These themes allow the researchers to develop hypotheses about the driving forces behind the subject under study, and allow for development of interventions that are rooted in the rich context of the patients' experiences.

In part because it is hypothesis generating, qualitative research often represents an early part of exploration of a health issue. The types of early goals that may be best addressed by qualitative research include defining the problem; understanding when the health problem occurs, as well when it does not occur; exploring what makes it happen or more likely to happen, as well as what factors prevented it from occurring; and what relationships or associations are important and relevant when studying the health phenomenon. Olthuis et al., for example, observed patients in the ED in order to better understand their concerns while being cared for.<sup>9</sup> The authors identified five categories of concerns that patients struggle with during emergency care visits, illuminating how patients' perspectives may seem "illogical" to physicians and go beyond appropriate diagnostics, therapies, and transfer of information, but yet are still important in patient care. Such information may be useful to understanding patients' behaviors and complaints, teaching providers about empathy and communication with patients, and improving overall quality of care.

Beyond initial hypothesis generation, roles for qualitative work include deriving instruments to measure health phenomena, establishing best practices or standards of care, and ensuring that interventions are optimized for relevance and efficacy to the patient population. These additional roles are discussed further below, with examples.

### Survey Development

Qualitative research can be used to ensure that the instruments we use to measure behaviors, attitudes, and health status are actually capturing what we think they are.<sup>10</sup> A common criticism of surveys is that participants are limited in their response options, producing descriptive data that do not accurately reflect reality. Qualitative data, because it is more flexible and intended to capture the range of patient experience, is used to generate relevant and meaningful questions, and generate relevant response options that contain a full and accurate range of possible answers. Qualitative data are also used to develop questions that are clearly understood by participants. For example, qualitative data can help identify

examples that can be used to better ensure understanding of the question by patients (e.g., using colloquial terms in the population to articulate examples: "... some people call this xxx."). Representative members of the target population(s) can provide useful feedback to improve understandability, acceptability, and cultural sensitivity of surveys, e.g., finding appropriate response ranges for health behaviors in adolescents versus adults versus the elderly. Qualitative work can also provide content validity or face validity to survey questions. In outcome studies, qualitative methods can also be used to provide deeper understanding to enhance quantitative survey results. For example, in cases where survey responses reveal contrary data to what is expected, qualitative interviews can be used to provide more context to better understand unexpected findings and outlying data.

In the childhood asthma investigation, the researcher originally planned a survey that contained questions about language-based barriers to asthma medication comprehension. The focus groups led the researcher to hypothesize that cultural factors and the patient-physician relationship influence asthma medication adherence (factors that were not considered in early survey development). Therefore, the survey was redesigned to include questions about all three topic areas.

### **Generating Standards of Care**

Evidence-based medicine relies on the best available data to support clinical decision-making. Often the evidence base is incomplete, and so alternative methods must be used to best synthesize the available data for use by clinicians. Qualitative methods for accomplishing this synthesis include expert consensus panels and focus groups. The Delphi method, for example, is commonly used to guide experts to develop a set of recommendations, typically on a topic that is unexplored, requires significant expertise, and for which consensus opinion is most appropriate to guide policy or action.<sup>11,12</sup> Although the Delphi method may incorporate quantitative components, by assessing group consensus through statistical analysis, it typically begins with a cycle of broad, open-ended questions. In subsequent cycles, the group is provided with a summary of the group's responses from the previous round. Experts are invited to review these responses and then revise their answers in light of the opinions of others in the group. Through cycles, the range of responses is expected to narrow until the group converges on the final answers. The process ends after a pre-defined number of cycles or when the researchers feel that consensus has been reached. In emergency medicine, these methods have been used to develop guidelines around health issues in order to standardize the approach to common clinical problems, to provide an initial set of "best practices" while further scientific data is being acquired, or to guide further research efforts. For example, Schuur et al. used a modified Delphi process, eliciting open-ended brainstorming and ranking activity by experts, to create a list of five items that may reduce cost and improve value in the ED.<sup>13</sup>

### **Intervention Evaluation**

Qualitative research provides an important tool not only for intervention development, but also for evaluating and refining interventions being used in the field. For example, qualitative methods are frequently used to complement quantitative measures of

effectiveness to assess essential non-quantitative effects of an intervention. Qualitative methods have the advantage over quantitative methods in that they can be used to characterize the meaning or value of the intervention for the participants, or the community. What may be highly valued outcomes to researchers may not be similarly valued by intervention recipients, and vice versa. Qualitative methods can also be used to adapt interventions to different populations or medical settings by exploring the cultural or setting-specific factors that modify intervention effectiveness.<sup>14</sup>

Qualitative research can provide information on whether the original theory fits, whether the theory fits but only in a limited capacity (e.g., in a specific circumstance, but not in others), explore alternate theories, or shed light on factors that may modify the relationship between a factor and a health outcome.

During a randomized, controlled trial of asthma controller medications prescribed at ED discharge for pediatric asthma visits, the investigator noted that outcomes were affected by low adherence to prescribed medications. The researcher designed exit interviews to complement quantitative medication adherence measures. These interviews were open-ended and researchers used the subjects' objective adherence data to guide the questions that were asked of a specific participant. This data were used to refine the intervention to include language and culturally relevant discharge instructions to improve adherence in future trials.

## TYPES OF QUALITATIVE RESEARCH DATA COLLECTION STRATEGIES

The types of data collection strategies in qualitative research can be thought of in terms of the level of engagement between the investigator and the participant(s) or environment being observed (e.g., as silent observer or active participant), and the level of structure imposed on the investigator's observations (e.g., unstructured observation vs. structured or semi-structured interview).<sup>3,4</sup> Each type comes with advantages and limitations, so the best study design depends on the goals of the research in question. Here, we focus on the data collection strategies most likely to be used in the emergency care setting.

### Observation

Qualitative research may take the form of simple observation of a setting, health-related event, or participants of interest. Observation allows investigators to see how an event unfolds, or the natural interactions between people. So, for example, in a study of the teamwork between EMS providers during transport of a critically ill patient, a researcher might ride in an ambulance and make observations on components of communication and task execution, but will make every effort to be a "fly on the wall" and not interfere with the EMT's routine, day-to-day behaviors. In this example, investigators may be described as *nonreactive*,<sup>4</sup> because they do not interact or demonstrate any reaction to what is happening.

Observation can also occur remotely. Rhodes et al., in a study of domestic violence screening in the ED, attached audio recorders to intravenous poles of female patients in the ED to be able to "observe" interactions with providers around domestic violence screening and counseling.<sup>15</sup> The recordings revealed valuable information regarding identification and treatment of the problem, including the lack of validity in the measures being used to

evaluate provider-patient communications around domestic violence, and individual provider behaviors (inappropriate laughter, awkwardness, and uncertainty) that made screening ineffective, even when it did occur.

The investigator may also take a much more active role in observation, even becoming part of the population of interest as much as possible, for example, having mock patients call clinics to try to arrange mental health follow-up appointments after ED visits, in order to better understand the experience and the barriers.<sup>16</sup> Observations may be unstructured or incorporate structured content, for example, with checklists that direct study staff to pay attention to specific actions or events. Alternatively, observation may be of static data sources, such as review of paper or electronic medical records.

The major disadvantage of observational methods is that they are often time-consuming and labor-intensive to analyze. Extended periods of observation may produce vast amounts of data, increasing the duration and complexity of analysis. However, observation has the advantage of minimizing any artificiality that would be introduced using instruments or pre-determined questions used by other qualitative methods (e.g. interviews). For example, the pediatric asthma researchers concerned about the effect of ED discharge instructions on asthma medication adherence might unobtrusively record and review the discharge conversation between patients and nurses to capture variability in discharge styles, and observe participant responses to particular instructions. Observational qualitative studies can be performed to understand existing disease processes or health environment issues, while minimizing researcher interaction that might create situational dynamics that influence the study data.

## Interviews

Interviews encompass a spectrum of investigation, depending on how structured, prepared, and mandatory questions are. On one end of the spectrum are qualitative interviews, with open-ended questions that allow the interviewer to adapt for patient language or unexpected new domains, resulting in individualized interviews. On the other end of the spectrum are quantitative, closed-ended interviews with highly structured questions that are asked uniformly to all participants. Typically in qualitative interviews, researchers will use some combination of a priori and spontaneous questioning to gain the information that is the goal of the research project.

Interviews typically involve one participant and one investigator, but in some studies, researchers may wish to interview multiple people together, either because they may have similar perspectives, or because it is more comfortable for the participants to have others they know with them being interviewed at the same time. The distinction between multi-person interviews and focus groups is important as the data gathered are substantively different. Focus groups by definition involve group interactions and the data are enriched by interpersonal dynamics, while interviews exclusively involve information exchange between the interviewer and individual participants. Multi-person interviews are often conducted when people are known to each other: dyads, couples, families, patient and caregiver, etc. Focus groups are typically groups of people largely unknown to each other, although still all part of the eligible population of interest. The research question may dictate the necessity of

the approach, for example, if the investigator wishes to examine interactions of dyads, such as parent and child (e.g., in identifying the various challenges of medication administration for pediatric asthma), versus wishing to capture a broad range of common perceptions (e.g., parental attitudes about various categories of asthma medication and potential harms to children).

**Convergent Interviews**—Convergent interviewing techniques are designed to allow participants to inform the questions to be used, therefore avoiding the limitations introduced by researchers if they design questions a priori.<sup>17</sup> This is a highly inductive approach based on the theoretical underpinning that the data to be gathered are truly not predictable, and therefore should not be subject to the constructs of the researcher during the design phase. By allowing the participant responses to dictate the course of the discussion, subsequent interviews can be progressively constructed based on previous data. Initial interviews use a single open-ended question, allowing research participants to respond in an open-ended fashion for as long as possible. Probes are developed spontaneously in response to these open-ended responses. After interim analysis of interviews, subsequent interviews may involve more focused probes. This type of interviewing is particularly difficult to undertake for novice qualitative researchers.

**Semi-Structured Interviews**—In semi-structured interviews, investigators develop a focused interview guide with questions, prompts, and probes with a specific, concentrated purpose.<sup>3,4</sup> However, the guide is flexible and can be adapted ad hoc in order to accomplish the purpose or pursue emergent data. Questions are open-ended and are intended to create room for new, unexpected phenomena. Semi-structured interviews are meant to be a conversation, albeit a focused, intentional one, in which study participants are encouraged to provide narratives that explain their experiences. The tone is collaborative: most interview guides begin with assurances to the participant that “there are no wrong answers” and “we are interested in learning from you.” The investigator and the participant are intended to work together to achieve understanding, or meaning, around a health-related topic.

**Cognitive Interviews**—Cognitive interviews are relatively structured and designed to elicit participants’ responses to, and understanding of, specific content. Cognitive interviews are frequently used by clinical researchers, for example, for survey development.<sup>18</sup> In these cases, focused questions about each survey item are used to assess participants’ thought processes around survey items and responses. As with other interview techniques, investigators use an interview guide and probes, but the questions are focused more narrowly to discover the participant’s process of thinking through each question. The ultimate goal is to make sure participants understand each question and interpret it in the way the investigators intended, to present appropriate response options (i.e., there are enough answer options, options represent how they feel, feel comfortable answering truthfully), and to evaluate the need for or specific wording of instructions and framing of the survey.<sup>19</sup> Researchers may uncover unexpected consequences of the way response options are presented; for example, if respondents cannot recall the answers with verbally administered surveys, or if questions force participants to make difficult judgments or estimates that affect response accuracy.

## Focus Groups

The most familiar use of focus groups is in marketing research, when groups of people are brought together to give feedback on products under development. In clinical research, focus groups are organized for moderated discussion intended to evoke shared narratives that shed light on a health phenomenon. Focus groups often use semi-structured guides, designed to cover all important topic areas, and accomplish this task most effectively in the time allotted. The critical component of the focus group is the interaction between the participants. Disagreement and contrasting experiences are an expected part of focus groups, and the setting enables the investigator to probe the differences and the reasons behind them. While sensitive personal stories may be suppressed or filtered in a focus group (and thus are likely a better fit for a one-on-one interview), the group dynamic enables one person's story or thoughts to stimulate another's thought process – participants can build off one another, question each other, and develop a synergy of thoughts and ideas that is not possible in interviews. Focus groups are a good fit for topics where there is some controversy or difference of opinion, for those in which getting input from a diverse group of stakeholders is necessary, or for topics when a deep understanding of an entire subgroup or culture is needed.

## MIXED METHODS RESEARCH

In practice, qualitative and quantitative research are used together to achieve overall research goals. In mixed-methods research, qualitative and quantitative methods are integrated in order to achieve the common goal of answering the clinical question. Such studies often have a primary methodology type (either qualitative or quantitative), with the other type serving in a supplemental or supportive role. The primary study type may precede or follow the supplemental study type. For example, an initial qualitative study may be used to develop a hypothesis about a clinical event occurring in a given study population. This hypothesis can then be tested by quantitatively measuring the associations between the exposures and outcomes identified in the qualitative part of the study. As another example, focus groups or in-depth interviews may be used in the development phase of an intervention prior to implementation. The focus groups or interviews may continue during and at the end of the intervention to study and refine processes associated with the intervention, and to more richly understand the quantitative outcomes. These mixed methods allow for exploration of unexpected results, and greater understanding of groups with divergent outcomes.

In another scenario, quantitative work may be used to enhance the success of a primarily qualitative study. For example, quantitative methods (e.g., a patient survey) may identify disease prevalence and distribution across age, race and ethnicity, and sex categories, and guide purposive sampling so that one-on-one interviews are conducted on an appropriately diverse sample of the ED population. Many funding agencies recognize the complementary role of qualitative research in intervention development and reward investigators who incorporate both quantitative and qualitative methodologies to achieve a research objective.



## CONCLUSIONS

Qualitative research serves a broad variety of potential functions in emergency care research. In modern research, qualitative methods co-exist with quantitative methods in a synergistic fashion, each informing the other. In Part II of this article, we will describe in more detail how qualitative research is designed and conducted.

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**Table 1**

\*: Comparison of Qualitative and Quantitative Research Methods

Characteristic	Qualitative	Quantitative
Characteristic of construct or concept under study	Constructs, concepts are unfamiliar, poorly defined, or not well understood in new populations/contexts.	Constructs, concepts are clearly defined.
Main goals of study	Gaining meaning, in-depth investigation. Studying selected issues, cases, or events in detail.	Obtaining detailed numerical descriptions or functions of a representative sample. Finding generalizable results and making comparison across populations.
Type of measurement	Exploratory, formative, confirmatory.	Structured, hypothesis-driven, with intent to test hypotheses.
Characteristics of data collection	Flexible approach to allow for in-depth characterizations/ understandings, and/or discovery of the unexpected. Questions posed to participants can be refined in the course of study. Typically concludes when data "saturation" has been met, and/or no new information is emerging.	Validated, repeatability of measurements is important. Research questions (i.e., hypotheses) and measures decided a priori and not subject to change. Concludes at an established sample size or time.
Characteristics of data analysis	Iterative, used to modify research questions for ongoing study.	Constructed a priori, not influenced by data collection.

\* Adapted from materials from Kathleen Morrow and Rochelle Rosen, Centers for Behavioral & Preventive Medicine, Department of Psychiatry and Human Behavior, Warren Alpert Medical School of Brown University, Providence, RI

**Table 2**

## Common Qualitative Data Collection Methods

Technique	Advantages	Challenges	Example(s) of Use
Participant observation	<ul style="list-style-type: none"> <li>Provides insight into a specific culture or setting.</li> <li>Useful when information provided in interviews/questionnaires differ from actual behavior or beliefs.</li> <li>Captures full complexity of a health event or behavior, including roots, interconnectedness, and meaning.</li> <li>Minimizes observer's influence on data obtained.</li> </ul>	<ul style="list-style-type: none"> <li>Time consuming.</li> <li>Gaining entry may be challenging.</li> <li>Researchers may be unable to obtain context behind observed behaviors using observation alone.</li> </ul>	<ul style="list-style-type: none"> <li>Observation and content analysis of verbal instructions provided at ED discharge for asthma.</li> </ul>
Open-ended interviewing	<ul style="list-style-type: none"> <li>Efficient: key informant likely to have insight in many aspects of the issue.</li> </ul>	<ul style="list-style-type: none"> <li>Careful purposive sampling necessary to identify appropriate informants and ensure they are representative.</li> </ul>	<ul style="list-style-type: none"> <li>Interviews with ED clinicians to determine the barriers faced in managing children with asthma, prior to designing an ED-based intervention.</li> </ul>
Semi-structured interviewing	<ul style="list-style-type: none"> <li>Collaborative effort between investigator and participant to gain in-depth understanding of an issue.</li> <li>Allows discussion of sensitive/private topics.</li> </ul>	<ul style="list-style-type: none"> <li>May take significant time to collect an appropriate population and range of narratives and viewpoints (esp. compared to focus groups).</li> </ul>	<ul style="list-style-type: none"> <li>Exit interviews after participation in an RCT with questioning designed to determine acceptability and cultural sensitivity of an asthma intervention.</li> </ul>
Cognitive interviewing	<ul style="list-style-type: none"> <li>Important step in survey development and validation.</li> <li>Development of intervention materials (video, pamphlets, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>Iterative process required.</li> </ul>	<ul style="list-style-type: none"> <li>Analysis of a planned asthma data collection instrument at an item-by-item level using participant feedback.</li> </ul>

Technique	Advantages	Challenges	Example(s) of Use
Focus groups	<ul style="list-style-type: none"> <li>• Allows exploration of different experiences and opinions.</li> <li>• Focus group as unit of measure promotes group discussion / collaboration.</li> </ul>	<ul style="list-style-type: none"> <li>• May not be appropriate for sensitive topics.</li> <li>• Logistically more difficult to coordinate than interviews.</li> <li>• Typically cannot achieve the same depth of understanding of individual concepts as you can in individual interviews.</li> </ul>	<ul style="list-style-type: none"> <li>• Thematic analysis of the collective experience of parents whose children had a prolonged delay in asthma diagnosis.</li> </ul>

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