



Research Techniques Made Simple: An Introduction to Qualitative Research

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Qualitative research has gained increasing prominence in health-related research and is experiencing greater use in dermatology. A major strength of and reason to perform qualitative research is that it allows one to gain an understanding of the insider (e.g., patient, medical provider, other players in the healthcare system) perspectives on health and insights about their behaviors, motivations, and expectations. This is particularly important in the field of dermatology where most diseases are, fortunately, not directly fatal but have major effects on affected individuals' lives in ways that are often not readily quantifiable. As such, it is important for dermatologists, both researchers and clinicians, to understand the basic tenets of qualitative methodology to properly utilize qualitative methods, evaluate the qualitative literature, and identify relevant findings to apply to clinical practice. In this article, we provide an overview of qualitative research and some of the more commonly used qualitative methods with an aim to increase awareness and appreciation of the power of qualitative studies.

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Qualitative research: Its purpose and how it differs from quantitative research

In recent years, an increasing emphasis has been placed on patient centeredness and understanding the patient's experience in health care and health-related research. As such, qualitative research, which seeks to understand the insider (e.g., patient, medical provider, other players in the healthcare system) perspectives of a group, has gained recognition as an essential scientific method in patient-oriented and health services research. The value of qualitative research lies in its ability to capture information about feelings, beliefs, and values that motivate behaviors by eliciting answers to questions that ask how, what, and why (Creswell et al., 2011). Using the collection of experiences provided by individual members of a group (e.g., adults with melanoma), qualitative research often relies on inductive reasoning to generate broad themes or general rules from which hypotheses about a phenomenon or behavior of interest are generated. By nature, because qualitative studies elicit rich information from a relatively small number of participants, qualitative research is not expected to be broadly generalizable (Glaser and Strauss, 1967). In contrast, quantitative research examines and measures relationships among relevant variables that have been identified by experts (i.e., researchers) on the basis of their outsider perspective. Quantitative methods align with a deductive approach, which applies known facts and theories to specific observations (Tashakkori and Teddlie, 2010). Quantitative research answers the questions that ask how many or how much and is aimed at hypothesis testing. The basic principles of qualitative and quantitative research are summarized in Table 1. Figure 1 provides a visual depiction

of the qualitative and quantitative research approaches whereby qualitative research relies on observations of phenomena to develop theories or generate hypotheses, and quantitative research is focused on numerical testing of pre-defined hypotheses.

Qualitative research in dermatology

In dermatology, a field in which most skin conditions are, fortunately, not fatal but can have major negative effects on peoples' lives, understanding the experiences of skin disease from the affected individual's perspective is critical (Jobling and Naldi, 2006). Qualitative methods provide the means to gain this insight. Because many skin diseases still lack standard measures of disease burden, qualitative research also provides the necessary insider data on which instruments to measure disease burden are built. Qualitative studies not only produce meaningful stand-alone data but can also be used to explain and expand on quantitative data (Palinkas et al., 2011). For example, in an effort to understand quantitative data that suggest the presence of racial disparities in biologic treatment for psoriasis, a qualitative study aimed at understanding the perceptions of biologic therapies among Black and White patients with psoriasis was performed (Takeshita et al., 2019). The qualitative study found Black patients, in particular, to be less familiar with biologic treatments than White patients and suggested different exposure to or intake of information about biologics among Black patients compared with that among White patients that may explain racial disparities in psoriasis treatment. These are just a few examples of the utility of qualitative research in dermatology. As qualitative research becomes more common in

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SUMMARY POINTS

Advantages

- Qualitative research utilizes a wide array of rigorous study approaches and techniques to gain an understanding of peoples' experiences and opinions as well as reasons and motivations for behaviors.
- Qualitative research often relies on inductive reasoning, and the outcomes from qualitative studies are used to generate rather than test hypotheses.
- Qualitative studies typically use a purposive sampling approach whereby study participants are strategically chosen to elicit in-depth viewpoints from persons with specific characteristics.
- Mixed methods research designs combine features of qualitative and quantitative approaches to provide a deeper explanation of phenomena.

Limitations

- Qualitative research is time intensive and may be more readily susceptible to researchers' biases.

dermatology, it is important for dermatologists to understand its purpose, role, and impact in dermatologic research.

Qualitative study approaches

The study question is the most important factor in choosing an appropriate qualitative study approach, which in turn influences how data will be collected and analyzed. The question must be clear and specific, and the study approach and data collection methods should appropriately draw out the information of interest. Questions that ask how, what, or why are best answered using qualitative methods; in contrast, simple yes or no questions, or questions that ask how many or how much are best answered using quantitative methods. [Table 2](#) describes some of the main types of qualitative approaches, their purposes, data collection processes, and examples of their use in dermatologic research ([Mack et al., 2005](#); [Patton, 2002](#)). Whereas one of the main purposes of qualitative research is to generate hypotheses, it can also be used to explore already existing hypotheses about the behaviors, experiences, and perspectives of individuals or groups or to validate existing observations or theories.

Qualitative data collection

Qualitative research boasts an extensive toolkit of data collection methods, many borrowed from the social sciences and adapted for health-related research. Participant interviews represent one of the most commonly used methods for qualitative data collection and can be applied to a variety of study designs. They directly elicit information from the individuals or groups of interest. There are several types of

participant interviews, including semistructured interviews and focus groups. Semistructured interviews are generally performed one-on-one and involve a trained research interviewer who asks the study subject open-ended questions about specific topics. Whereas semistructured interviews may vary slightly depending on the interviewer and the interviewee's responses, to maximize consistency of data collection, interviews should follow an interview guide that is composed by the research team and lists the questions to be asked ([Curry et al., 2009](#); [McGrath et al., 2019](#)). To maximize the elicitation of rich responses from study subjects, simple yes or no questions or quantitative questions that ask how much or how many should be avoided in favor of questions that ask, for example, what the individual's experience is or how the individual describes an experience ([Patton, 2002](#)). The research team and interviewers should also remain neutral in their data collection approach and not ask leading questions. As such, interviewers need to be cognizant of how their own characteristics and interactions with the study subjects could impact the interviewee's responses. This is of particular concern in the medical field in which inherent power dynamics often exist (e.g., physician–patient relationship) and sometimes can affect intimate interactions between the interviewer and interviewee. It is, therefore, important for the research team to be careful in their selection of interviewers and the interview setting. For example, for a study aimed at understanding patients' perceptions of physicians, it is likely best to choose a nonphysician interviewer and perform any in-person interviews in a nonmedical setting. These efforts minimize patients' potential concerns that any negative responses may get back to their physicians and impact their care.

Focus groups involve multiple study subjects who simultaneously interact in real time about a topic with discussion that is guided by a trained moderator. A major difference between focus groups and semistructured interviews is that focus groups allow each individual an opportunity to reflect on his or her own experiences in the context of others' experiences. Focus groups represent small-scale communities in which moderators can observe how interactions among participants impact descriptions of their own experiences as well as gain an overall sense of consensus among the group members. However, focus groups may not be appropriate for sensitive or polarizing topics or other situations in which participant anonymity is particularly desired. It is up to the researcher to use discretion in deciding what method is best for their research question and study population. These and other commonly used data collection methods are summarized in [Table 3](#) ([Bernard and Ryan, 2010](#); [Mack et al., 2005](#)).

Sampling and sample size in qualitative research

Because qualitative research seeks in-depth descriptions of experiences and behaviors of specific groups, sampling methods are typically nonrandom. Some of the most commonly used sampling methods in qualitative research include purposive (or purposeful), quota, and snowball sampling. Purposive sampling aims to recruit individuals with specific characteristics who are especially knowledgeable about or have experience with a topic of interest (e.g., women with acne who are on spironolactone for a study to

Table 1. The Basic Principles of Qualitative and Quantitative Research

Characteristic	Qualitative Research	Quantitative Research
Purpose	Hypothesis generating.	Hypothesis testing.
Reasoning	Inductive.	Deductive.
Questions	How? What? Why?	How many? How much?
Data collection and sources	Usually, primary data collection using a variety of methods, including semistructured interviews, focus groups, among others.	A mixture of primary and secondary data collected through surveys, registries, medical records, administrative claims, among others.
Data analysis	Driven by observations, sometimes based on a theoretical framework.	Driven by hypothesis.
Outcomes	Descriptions, themes, and theories as supported by text from written summaries that may include quotes and narrative vignettes.	Numerical descriptive summaries or measures of association among study variables.

understand patients' experiences with spironolactone for acne treatment). There are different subtypes of purposive sampling, each of which is designed to answer specific types of questions and is described in detail elsewhere (Palinkas et al., 2015). Quota sampling sets a specific recruitment goal for characteristics of interest (e.g., 20 women and 20 men). Snowball sampling or chain-referral sampling is a method that depends on existing study subjects recruiting additional study participants from among their social networks (Mack et al., 2005).

Sample size in qualitative studies is based on the principle of thematic or data saturation. Thematic saturation occurs when no new information or concepts are elicited from additional data collection. Specifically, during data collection, researchers identify themes, topics, or ideas of interest from the participant-provided data and recruit additional study subjects until no new ideas are identified (Hennink et al., 2017). To this end, during the course of data analysis, participants with varied perspectives may be purposively sampled to ensure that true thematic saturation is reached. Some literature suggests that 15–30 study participants may be sufficient to reach saturation, but ultimately, this number is dependent on many factors, including the size and homogeneity of the eligible study pool, the nature of the study question, and whether or not the researchers have achieved a

thorough understanding of the themes identified (Patton, 2002). Therefore, it is good practice for researchers to evaluate their own data for thematic saturation before stopping study enrollment and data collection.

Qualitative data analysis and reporting

Once the unit of analysis (e.g., original text from observations of a group or text transcribed from an interview audio recording) is defined and data collection has begun, then data analysis can begin. Each unit of data is parsed into categories or themes, sometimes on the basis of a theoretical framework that guides the methodologic approach used to define and organize themes (Collins and Stockton, 2018). This process of classifying subunits of the data is referred to as coding (Bernard and Ryan, 2010). The coding process is guided by a codebook, a manual developed by the researchers that provides definitions and examples for how the text is categorized. One common approach to qualitative data coding is based on grounded theory methodology, which is intended to ultimately develop a theory or model on the basis of the data (Glaser and Strauss, 1967). A grounded theory approach to data analysis starts with open-ended analysis (open coding) soon after data collection begins. Open coding allows for the development of de novo ideas that emerge from the data and are incorporated into a codebook. However, several other coding approaches to analyze qualitative data exist. Thematic analysis is another commonly used approach that identifies, analyzes, and reports patterns or themes within data and is less bounded by theory (Braun and Clarke, 2006). Content analysis determines the presence of certain words, concepts, or themes within a qualitative data set and can sometimes include a quantitative analysis of the words, concepts, or themes of interest (Bernard and Ryan, 2010). A comprehensive review of the many different coding approaches and endpoints (e.g., theory) that exist for qualitative data is beyond the scope of this article, and more information can be found in other literature (Bradley et al., 2007).

Particularly in the early stages of data analysis, the codebook may be subject to multiple revisions on the basis of what the data reveal. This process of revision and re-evaluation continues throughout the study until analysis is complete. As such, for qualitative studies, data collection and analysis are iterative and integrated processes (Bernard and Ryan, 2010; Glaser and Strauss, 1967). Once the analysis is

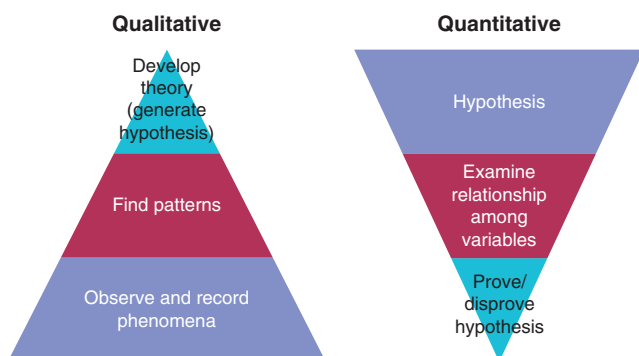


Figure 1. Qualitative and quantitative research approaches. A visual comparison of qualitative and quantitative research approaches is depicted. The qualitative research approach relies heavily on the observation and recording of phenomena to develop a theory or generate a hypothesis based on patterns or themes. The quantitative research approach focuses on the numerical testing of a predefined hypothesis.

Table 2. Main Types of Qualitative Study Approaches

Approach	Purpose	Data Collection	Example of Use in Dermatology
Grounded theory	Generate theory about social processes of a group on the basis of naturally occurring interactions.	Participant observation, participant interviews, focus groups	Noels et al. (2019) : A grounded theory approach was used to understand the underlying motives of dermatologists and general practitioners in the treatment of actinic keratoses.
Phenomenology	Understand the shared lived experiences of a group by eliciting and interpreting the narratives of its members.	Participant interviews, art and photography, text documents, historical archives	Corr et al. (2017) : Interpretive phenomenology was used to explore the impact of wearing a melanoma tattoo on medical students' understanding of the patient experience and attitudes toward patients with melanoma.
Ethnography	Identify the cultural meanings and beliefs of a group on the basis of the experiences of its members.	Participant observation, participant interviews, art and photography, text documents	Cowdell (2019) : Ethnography was used to understand the development of mindlines for the management of atopic eczema among general practitioners.
Case study	Provide an in-depth description of the experience of a single person or single group within its context.	Participant observation, participant interviews, focus groups, art and photography, text documents, historical archives	Okoth and Mirieri (2019) : 20 nurses from a single dermatology unit at Kenyatta National Hospital were repeatedly observed and interviewed about their experiences in treating Stevens–Johnson Syndrome and Toxic Epidermal Necrolysis.

Table presents content from [Mack et al. \(2005\)](#) and [Patton \(2002\)](#).

complete, the results are summarized as text and may include salient quotes from study participants to support important points. It is rarely appropriate to summarize qualitative data with quantitative measures such as the numeric frequency with which specific concepts or themes are mentioned.

Reliability and validity in qualitative research are sometimes referred to as the trustworthiness of the data. The reliability of qualitative study findings depends on the level of agreement among researchers about the definitions of the identified themes and how they are applied to the data. Therefore, multiple study team members participate in the discussion and corroboration of definitions and the application of the identified themes to the data until an agreement is reached among everyone. It is recommended to use multiple coders (typically two) and evaluate the level of agreement among coders. Generally, at least 80% agreement is considered acceptable. The validity of study findings can be ascertained in several ways, including by member checking, peer debriefing, and audit trails, among others ([Bernard and Ryan, 2010](#)).

There are multiple software programs (e.g., NVivo, Atlas.ti, Quirkos, MAXQDA, Dedoose) that assist researchers with storage, cataloging, and coding of qualitative data. It is important to note that these programs are primarily organizing tools for the data, and the researchers remain responsible for data analysis and interpretation. Whereas automated coding procedures are available and continue to be developed, they should be used with caution and under close review by the researchers. Additional information on best practices and standards for reporting qualitative research can be found elsewhere ([O'Brien et al., 2014](#); [Patient-Centered Outcomes Research Institute, 2019](#)).

Mixed methods research

Qualitative research may stand alone or be performed in combination with other methods. Most commonly,

qualitative methods are combined with quantitative methods in what is called mixed methods research. Mixed methods research utilizes study designs that mix or combine qualitative and quantitative data and require the qualitative and quantitative portions of the study to inform one another. Qualitative and quantitative research can be integrated in many ways. The manner in which qualitative and quantitative methods are combined is dependent on the research question and study objectives as well as on the availability of data and resources of the investigators ([Palinkas et al., 2011](#)). Qualitative and quantitative methods can be used simultaneously or sequentially in a stepwise fashion to explore and build on themes found during data collection and analysis ([Creswell et al., 2011](#)). The choice of mixed methods design depends on whether the two or more methods are intended to merge, complement, or expand on the results of each data stream ([Palinkas et al., 2011, 2019](#)). Mixed methods research provides a unique opportunity to leverage and combine the strengths of each individual method while mitigating their respective weaknesses. As such, mixing qualitative and quantitative studies together can result in a richer evaluation of a topic than if each method was used alone. Mixed methods research continues to grow rapidly and includes a diverse and multipurpose toolkit that can support innovative health-related research. Information on best practices and standards for reporting mixed methods research can be found in the Patient-Centered Outcomes Research Institute Methodology Standards report ([Patient-Centered Outcomes Research Institute, 2019](#)).

Summary and future directions in dermatology

Qualitative research involves rigorous methodologic approaches that elicit richly informative and actionable person-centered data that have previously been overlooked in health-related research. Especially in the field of dermatology in which diseases can have major negative

Table 3. Select Qualitative Data Collection Methods

Method	Description and Purpose	Benefits and Knowledge Gained	Setting and Participants	Best Practices and Tips
Semistructured interviews	Create an understanding of the range of each individual's experiences by eliciting responses to open-ended questions about a topic.	In-depth insight about the experiences, behaviors, and perceptions of an individual in his or her own words.	One-on-one conversation between interviewer and study participant. Can be done in person, through telephone, or through other telecommunication modalities.	Conduct interviews to reach thematic saturation. Ask open-ended questions. Avoid leading questions.
Focus groups	Similar to semistructured interviews, but participants have the opportunity to engage and reflect on their own and others' experiences. Moderators can observe engagement and interactions among participants. An overall sense of group consensus is gained.	In-depth understanding of the social interactions and culture among groups of individuals.	Group conversation led by a moderator. Often done in person but can also be done through other telecommunication modalities.	Recommended to include 8–12 people per focus group for a total of 3–4 groups. Include an additional research team member to document observations and oversee administrative work (e.g., sign-in sheets, snacks).
Free listing	Rapidly establish group consensus on the cultural meaning of a phenomenon or event by using prompts to elicit lists of single words.	Identify and understand aspects of a culture or definitions of terms among groups of individuals.	Can be done verbally or in writing through one-on-one or group interactions led by a moderator.	Participants can use short (2–3 words) phrases if having difficulty with single words. Anthropic software can be used for analysis.
Participant observation	Researcher observes (nonparticipatory) or engages with (participatory) participants in their natural setting. This technique is used to elicit a dynamic description of the behaviors and perspectives of people in the group.	Real-time understanding of an individual's or group of individuals' interactions with others and their surroundings.	Performed in the participants' community or other natural settings. The researcher who is observing should be close enough to use all senses to observe but far enough so that their presence is not distracting. Can be done in person or virtually.	Gain and maintain rapport with the group throughout the observation period. Review and document notes within 48 hours of observation.
Content analysis	Analyze the presence of specific words, themes, or concepts within qualitative data (e.g., text, video, photos, other media) to evaluate the patterns, meanings, and relationships among them.	Understanding of communication and social interactions among individuals that may be expressed in a qualitative and/or quantitative manner.	Highly dependent on data source. For example, text data from interviews will come from one-on-one interactions between the research interviewer and study subject interviewee. In another example, content analysis of television advertisements will only require the research team without any study subjects.	Develop and use an explicitly written protocol for data analysis. May also involve a quantitative summary, for example, of the presence of specific words, themes, or concepts.

Table presents content from [Bernard and Ryan \(2010\)](#) and [Mack et al. \(2005\)](#).

impacts on affected individuals' lives in ways that can be difficult to capture quantitatively, qualitative research provides an opportunity to collect new insider knowledge that

cannot otherwise be obtained. This qualitative information serves many purposes, including being essential to adequately measuring disease burden, providing equitable

MULTIPLE CHOICE QUESTIONS

- Qualitative research is designed to _____.
 - Generate hypotheses
 - Provide causal explanations
 - Test hypotheses
 - Understand experiences and behaviors
- Qualitative researchers use ____ reasoning to generate broad generalizations or theories on the basis of the ____ perspectives of members of a group.
 - Deductive; insider
 - Inductive; insider
 - Deductive; outsider
 - Inductive; outsider
- How are sample sizes determined for qualitative studies?
 - Numerical calculations on the basis of the anticipated effect sizes
 - Sample sizes of 30 people per group are always adequate
 - Sample sizes should be as large as possibly feasible depending on the resources for study
 - Thematic saturation
- Which of the following is NOT a way that researchers ensure the reliability of qualitative study results?
 - Use two coders
 - Constant data comparison that includes a revision of the codebook during data analysis
 - Have one person on the study team develop the analytic framework
 - Evaluate the level of agreement between coders
- Mixed methods research includes a combination of _____.
 - Any two different types of research methods
 - Quantitative and qualitative methods, independent of one another
 - Qualitative and quantitative methods that inform one another
 - A, B, and C

care, and developing and implementing interventions that will, ultimately, improve dermatologic outcomes for all. As qualitative methods are increasingly utilized in dermatologic research, it is important for dermatologists to understand the basic principles of qualitative research and the importance of the data that are generated by qualitative studies.

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CONFLICT OF INTEREST

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AUTHOR CONTRIBUTIONS

Conceptualization: FKB, JT; Data Curation: AB, FKB, JT; Investigation: AB, FKB, JT; Project Administration: JT; Resources: JT; Supervision: FKB, JT; Visualization: AB, FKB, JT; Writing - Original Draft Preparation: AB; Writing - Review and Editing: FKB, JT

SUPPLEMENTARY MATERIAL

Supplementary material is linked to this paper. Teaching slides are available as supplementary material.

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RESEARCH TECHNIQUES MADE SIMPLE

DETAILED ANSWERS

1. **Qualitative research is designed to _____**

CORRECT ANSWER: A. Generate hypotheses; D. Understand experiences and behaviors.

Qualitative research is designed to explain an experience, behavior, or phenomenon from which hypotheses can be generated.

2. **Qualitative researchers use _____ reasoning to generate broad generalizations or theories on the basis of the _____ perspectives of members of a group.**

CORRECT ANSWER: B. Inductive; insider.

Qualitative theory utilizes a ground-up, inductive approach that is centered on the insider perspectives from members of a group. On the basis of these perspectives, theories are generated to explain their experiences.

3. **How are sample sizes determined for qualitative studies?**

CORRECT ANSWER: D. Thematic saturation.

Sample sizes for qualitative studies are based on the principle of thematic or data saturation whereby no new information or

concepts are elicited from additional data collection. Whereas it has been suggested in some literature that 15–30 interviews per group may be sufficient to reach thematic saturation for many studies, this is not necessarily always the case and will depend on the study question, among other factors.

4. **Which of the following is NOT a way that researchers ensure the reliability of qualitative study results?**

CORRECT ANSWER: C. Have one person on the study team develop the analytic framework.

Researchers should use a team-based approach to develop the analytic framework to make sure that no single individual has the power to define patient experiences.

5. **Mixed methods research includes a combination of _____**

CORRECT ANSWER: C. Qualitative and quantitative methods that inform one another.

Whereas qualitative and quantitative methods involve inherently independent processes, in mixed methods research, they are integrated and used to support and inform one another.