

Introduction to Qualitative Research for Novice Investigators



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Abstract

Qualitative research has been used for centuries in the discipline of social sciences to examine the experiences, perspectives, and perceptions of individuals and communities. Recently, qualitative research has also emerged as a reputable paradigm of research inquiry within the field of health sciences. Qualitative research may be considered a research approach complementary to quantitative research, which is most commonly utilized in medical disciplines through the use of randomised controlled trials and meta-analyses of treatment effectiveness. It aims to elaborate, explain, and describe social phenomena such as the relationship between patients and healthcare providers, how medical interventions may affect long-term care and quality of life, and how to contextualize the findings of randomized controlled trials to the complex lives of patients by considering the multitude of factors that influence treatment effectiveness. Qualitative research seeks to answer the “why” and “how” of phenomena as opposed to the “what” and “how much.” The majority of novice investigators will use the quantitative research paradigm for an independent study course or their thesis dissertation. When these investigators encounter the qualitative research paradigm, they are struck with the lack of simple and useful resources available that identify, clarify, and explicate the qualitative research process. This article aims to serve as an introductory guide for novice investigators who wish to integrate the tradition of qualitative research into their practices. The authors introduce the purpose, components, and process of qualitative research including common methodologies, data collection methods, sampling strategies, and data analysis approaches.

Keywords: undergraduate research; qualitative research; quantitative research; research methodology; data collection; patient perspectives; patient experiences; social sciences; data analysis; sampling

Introduction

“Quantitative analysis calculates *mean*. Qualitative analysis calculates *meaning*” [1].

Taken from the Coding Manual for Qualitative Researchers, this quote exemplifies an important distinction between the quantitative and qualitative research paradigms. Qualitative research has been used for centuries in the realm of social sciences to examine the experiences, perspectives, and perceptions of people. Only in the last century, however, qualitative research emerged as a reputable and appropriate paradigm of research inquiry in the health sciences discipline. In this paper, the methodological literature is synthesized to provide a guide for novice investigators who may be searching for a brief introduction to qualitative inquiry in health care research. The objective of this article is to discuss the foundations of qualitative research including the purpose of this research paradigm and common methodologies, data collection methods, sampling strategies, and data analysis approaches.

Three Paradigms of Research

In general, there are three distinct paradigms of research [2]. The first paradigm is **quantitative research**, which aims to measure numerical variables and create statistical representations of these variables to test theories. This paradigm of research produces findings that are supposedly objective and neutral by using laboratory equipment, measurement scales, timing devices, structured surveys, and meta-analyses.

The second paradigm, **qualitative research**, seeks to document individual perspectives, experiences, thoughts, and behaviours [3]. Qualitative research generates the narratives of individuals and groups by interacting with them, observing their behaviour, and consider how the nuances of a context may influence their perspectives and experiences. This paradigm of research may be employed to explore the expressed needs of certain communities or ethnic groups, clarify the perspectives of individuals about a specific event or idea, and improve patients’ experience in the trajectory of

Table 1: The Distinctions between Quantitative and Qualitative Research Paradigms

Quantitative	Qualitative
<ul style="list-style-type: none"> ● Outcome-oriented (e.g., treatment effectiveness, feasibility, and impact) ● Testing the effectiveness, generalizability, validity, and accuracy of a theory ● The research process tends to be data-driven and determined <i>a priori</i> ● Numerical data (categorical and/or continuous variables) ● Data may be obtained from laboratory methods, measurement scales, and/or structured surveys ● The focus of data collection is on precise and objective measurement ● Data analysis uses statistics to calculate effect sizes and statistical significance ● The research methods and data should be reproducible and replicable ● The sample size is mostly determined <i>a priori</i> using statistical methods to achieve representativeness ● External validity (i.e., generalizability) of the findings is a major objective 	<ul style="list-style-type: none"> ● Process-oriented (e.g., why was a treatment effective) ● The generation of theories that may explain phenomena ● The research process tends to be participant-driven and iterative ● Non-numerical data (words, concepts, phrases, themes, and categories) ● Data may be obtained from interviews, focus groups, personal narratives, journals, documents, and more ● The focus of data collection may be to obtain rich descriptions of individual experiences to explain phenomena ● Data analysis involves interpreting data to explain or elaborate on events, experiences, and perspectives of persons ● The research methodology and methods may be reproducible but the data cannot be replicated due to the influence of the context on individual experiences ● Sample size may be determined iteratively depending on the explanatory power of the data collected ● Transferability of the findings to other contexts is an important objective but may not be essential for all qualitative investigations

health care. Finally, the third paradigm, **mixed-methods research**, attempts to integrate and coalesce the components of both quantitative and qualitative paradigms into a form of research where both quantitative and qualitative data complement and substantiate each other [4]. [Table 1](#) summarizes the distinctions between quantitative and qualitative research

Why Qualitative Research?

There are many reasons to conduct quantitative, qualitative, or mixed-methods research. Some reasons may prompt investigators to consider one research paradigm over others. Qualitative studies may be conducted for the following purposes: the answer to a research question cannot be quantified, the research question is primarily concerned about opinions and beliefs of individuals, the investigator’s desire for a complex and detailed understanding of an issue, the investigators do not know what information they need to answer their research questions, the emphasis is on exploration and explanation instead of effectiveness, accuracy, and validity, the research topic is sensitive in nature and requires emotional depth, the investigators seek to merge activism and empowerment in their research by engaging participants in the design, conduct, and analysis of the study, or investigators seek to explain why interventions shown to be effective in a clinical trial are not effective in the real world. [5, 6, 7, 8, 9]

For example, to describe the sources and types of information patients with prostate cancer use to make a treatment decision, a qualitative study design may be deemed more ap-

propriate as it provides an insight into the lived experiences and perspectives of these patients [10]. On the other hand, if investigators sought to determine the most effective source of information (e.g., health care providers) for determining a treatment decision, then a quantitative survey study may be more appropriate. To determine whether a qualitative or quantitative approach is more appropriate, it is imperative that investigators delineate their research questions and objectives. Are they answering the “why” or “how” of phenomena (qualitative research) or the “what” and “how much” (quantitative research)?

Qualitative Research Methodologies

In the study of qualitative research, a notable distinction is between *methodology* and *method*. On the one hand, a **methodology** is the package of approaches, processes, and plans to hypothesizing, collecting, analyzing, and clarifying data [11]. **Method**, on the other hand, refers to the different data collection strategies that may be employed in a research study [11]. Similarly, it is also important to acknowledge that the method is one component of a methodology but a methodology also includes data analysis, data storage, privacy and confidentiality, and how the findings may be presented in knowledge products. Moreover, any particular method may be a component of multiple methodologies. For example, interviews are a data collection method that may be employed in the majority of qualitative methodologies depending on the research objectives. The most common qualitative research methodologies are summarized in [Table 2](#).

Table 2: Most Common Qualitative Methodologies

Methodology	Description
Case Study Research	Describing, explaining, or elaborating a phenomenon in different contexts (i.e., cases) [12]
Ethnography	Identifying patterns and trends in the data to create themes in order to understand the behaviours, interactions, attitudes, and/or perceptions of certain groups and cultures [13]
Grounded Theory	The generation of a framework or explanation of a process or action that is grounded in the data [14]
Narrative Inquiry	Collecting and understanding narratives of certain events and/or the experiences of individuals [15]
Participatory Action / Community-Based Research	A solution-focused, collaborative effort between investigators and a community or group to improving their well-being through knowledge production, dissemination, and action [16]
Phenomenology	The study of clarifying how individuals make sense of their lives by examining their experiences [17]

Table 3: Data Collection Methods in Qualitative Research

Data Collection Method	Description
Body Mapping	A creative form of data collection in which a life size body map of the participant is created that represents their life history, physical sensations, and personal journey [19]
Diaries/Journals	Personal accounts of experiences and reflections written in either an electronic or video/audio format [20]
Focus Groups	A “group interview” with the objective of identifying and examining how participants interact with each other while sharing their accounts of a common experience [21]
Interviews	The investigators allow participants to express their feelings and thoughts freely or through a set of guided questions [22]
Participant Observation	Investigators record observations regarding the behaviours of individuals in particular settings or events [23]
Photovoice	The use of photos to communicate feelings and experiences relevant to a particular phenomenon [24]

Data Collection

Data in qualitative research consists of words, phrases, concepts, themes, and categories [1]. In general, these forms of data represent the experiences of persons or groups. There are two types of data in qualitative research: elicited (created with researcher participation or guidance) and extant (created without researcher participation or guidance). The former type of data is usually collected from interviews, focus

Interviews

Interviews are employed to gain insight into participants’ personal experiences and situations [25]. Qualitative research interviews are either *unstructured* or *semi structured*. In **unstructured interviews**, researchers engage in an open-ended discussion led by the participant who is able to freely express their perspectives, experiences, and thoughts [26]. In this interview type, the participant guides the discussion.

In **semi-structured interviews**, on the other hand, participants engage in an open-ended discussion facilitated by the researcher [26]. There is an interview guide with a set of

groups, and participant observation whereas the latter comes from methods such as document analysis [18]. For example, in interviews, the discussion may be facilitated by an interview guide prepared by the researcher; the data, in this case, is elicited. Qualitative research uses a variety of data collection methods, some of which are briefly described in [Table 3](#), followed by a more extensive discussion on interviews, focus groups, and participant observation.

questions that directs the discussion in a way that is relevant to the research questions [22]. Although the questions are designed before the interview, new questions may arise during the interview, which are then included in the interview [27].

Focus Groups

A **focus group** refers to when multiple participants (usually between 6 and 12) are interviewed together at the same place and time [28]. The purpose of a focus group is to elicit information regarding the interactions, relationships, and collective responses of group members who have a shared experience [29]. This data collection method is more cost-

Table 4: Most Common Types of Purposive Sampling in Qualitative Research

Type of Purposive Sampling	Description
Heterogeneous/Maximum Variation	Recruiting participants who are able to provide <i>similar</i> perspectives and experiences
Homogenous	Recruiting participants who can provide <i>distinct</i> perspectives and experiences
Snowball	Consenting participants provide the researchers with connections to others who may be eligible and interested in participating in the qualitative study

effective than interviews because multiple participants may share their experiences about a phenomenon in a shorter period of time [21]. Moreover, for some phenomena that are sensitive in nature, a focus group discussion may provide a higher level of comfort for participants to share their experiences [29]. Focus groups may be used as a data collection method in their own right or to pilot test the design, methodology, and effectiveness of a qualitative study.

Participant Observation

Investigators who use **participant observation** will record what they see while being present in the daily life and activities of participants [23]. Participant observation is a unique data collection method because it occurs in natural, real-world settings as opposed to experimental [23]. There are two types of participant observation. In **indirect observation**, investigators observe participants without being actively engaged in the research setting. In **direct observation**, on the other hand, investigators observe participants by being actively engaged in the research setting. There are several advantages of using participant observation. For instance, participant observation is useful if participants do not feel comfortable in sharing their personal experiences with researchers. Moreover, by closely following the daily life and activities of participants, this method may also reduce the discrepancy between participants' attitudes and beliefs and their behaviours. Finally, participant observation may also provide investigators with information about how participants interact with each other [30].

Sampling

In a previous editorial, sampling was defined in the context of quantitative clinical studies as the process of selecting a sample of individuals that is statistically representative to the population of interest [31]. Sampling in qualitative research, however, follows a different set of assumptions and objectives.

Purposive sampling is the most commonly employed sampling approach in qualitative research [32]. Unlike sampling in quantitative research, the objective of purposive sampling is to seek information-rich cases that are able to provide individual perspectives and experiences that are relevant to the research questions. According to Morse and Niehaus (2009) purposive sampling intends to achieve a *depth* of understanding whereas probability sampling seeks

to achieve a *breadth* of understanding. [Table 4](#) provides an overview of common types of purposive sampling.

Data Analysis

Qualitative data analysis is an inherently creative process that is frequently met with analytic blocks and literary successes. Qualitative data analysis consists of several components one of which is to ensure that the data is available in an organized format. To this end, **memos** may be created by investigators to document their understandings of the findings and any apparent patterns. This analytic device ensures that the investigators comprehend the presentation of the findings, reflect upon the organization and content of the data, or communicate to other members of the research team throughout the research process [34].

Coding is an important analytic approach to qualitative data analysis. It is the process of naming a portion of the data with a label that describes, summarizes, and categorizes the data [14]. Moreover, a **code** is a "word or short phrase that symbolically assigns a summative, salient, essence-capturing and evocative attribute for a portion of language or visual data" [1]. The process of coding involves organizing different parts of the data into themes that will eventually emerge into overarching categories that represent the entirety of the dataset. These categories then form interpretations of the findings and represent them through different mediums such as academic presentations, artwork, poetry, and more [35]. There are three types of coding. **Descriptive coding** answers the 'who', 'where', 'what' and 'how' of the data. **Topic coding** refers to coding different topics of the narrative or interview responses that are related to the research question. Finally, **analytic coding** is when the researcher organizes the dataset based on their own interpretations of the findings [36].

Conclusion

Qualitative research seeks to answer questions related to social behaviour and interpersonal interactions that drive certain social phenomena. It may involve the art of using empathy and compassion to understand human emotion. From gaining and understanding information about the perspectives and experiences of different individuals and communities, qualitative research has great potential to influence policy, program development, and research protocols that are better suited to meet the needs of communities. All forms of

data collection involve divulging into the human experience. Undergraduate researchers interested in learning about how individuals can be empowered in different contexts should explore the different approaches to qualitative research inquiry.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Ethics Approval and/or Participant Consent

N/A

Authors' Contributions

BJ, SS and UM wrote the entire publication based on their experiences and knowledge in addition to the methodological literature on the approaches to qualitative inquiry and conducting effective qualitative research studies.

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