



Qualitative Research in Healthcare: Necessity and Characteristics

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Quantitative and qualitative research explore various social phenomena using different methods. However, there has been a tendency to treat quantitative studies using complicated statistical techniques as more scientific and superior, whereas relatively few qualitative studies have been conducted in the medical and healthcare fields. This review aimed to provide a proper understanding of qualitative research. This review examined the characteristics of quantitative and qualitative research to help researchers select the appropriate qualitative research methodology. Qualitative research is applicable in following cases: (1) when an exploratory approach is required on a topic that is not well known, (2) when something cannot be explained fully with quantitative research, (3) when it is necessary to newly present a specific view on a research topic that is difficult to explain with existing views, (4) when it is inappropriate to present the rationale or theoretical proposition for designing hypotheses, as in quantitative research, and (5) when conducting research that requires detailed descriptive writing with literary expressions. Qualitative research is conducted in the following order: (1) selection of a research topic and question, (2) selection of a theoretical framework and methods, (3) literature analysis, (4) selection of the research participants and data collection methods, (5) data analysis and description of findings, and (6) research validation. This review can contribute to the more active use of qualitative research in healthcare, and the findings are expected to instill a proper understanding of qualitative research in researchers who review qualitative research reports and papers.

Key words: Qualitative research, Focus groups, Interview

INTRODUCTION

The definition of research varies among studies and scholars, and it is difficult to devise a single definition. The Oxford English Dictionary defines research as “a careful study of a sub-

ject, especially in order to discover new facts or information about it” [1], while Webster’s Dictionary defines research as “studious inquiry or examination - especially: investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws” [2]. Moreover, research is broadly defined as the process of solving unsolved problems to broaden human knowledge [3]. A more thorough understanding of research can be gained by examining its types and reasons for conducting it.

The reasons for conducting research may include practical goals, such as degree attainment, job promotion, and financial profit. Research may be based on one’s own academic curiosity or aspiration or guided by professors or other supervisors. Aca-

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demographic research aims can be further divided into the following: (1) accurately describing an object or phenomenon, (2) identifying general laws and establishing well-designed theories for understanding and explaining a certain phenomenon, (3) predicting future events based on laws and theories, and (4) manipulating causes and conditions to induce or prevent a phenomenon [3].

The appropriate type of research must be selected based on the purpose and topic. Basic research has the primary purpose of expanding the existing knowledge base through new discoveries, while applied research aims to solve a real problem. Descriptive research attempts to factually present comparisons and interpretations of findings based on analyses of the characteristics, progression, or relationships of a certain phenomenon by manipulating the variables or controlling the conditions. Experimental or analytical research attempts to identify causal relationships between variables through experiments by arbitrarily manipulating the variables or controlling the conditions [3]. In addition, research can be quantitative or qualitative, depending on the data collection and analytical methods. Quantitative research relies on statistical analyses of quantitative data obtained primarily through investigation and experiment, while qualitative research uses specific methodologies to analyze qualitative data obtained through participant observations and in-depth interviews. However, as these types of research are not polar opposites and the criteria for classifying research types are unclear, there is some degree of methodological overlap.

What is more important than differentiating types of research is identifying the appropriate type of research to gain a better understanding of specific questions and improve problems encountered by people in life. An appropriate research type or methodology is essential to apply findings reliably. However, quantitative research based on the philosophical ideas of empiricism and positivism has been the mainstay in the field of healthcare, with academic advancement achieved through the application of various statistical techniques to quantitative data [4]. In particular, there has been a tendency to treat complicated statistical techniques as more scientific and superior, with few qualitative studies in not only clinical medicine, but also primary care and social medicine, which are relatively strongly influenced by the social sciences [5,6].

Quantitative and qualitative research use different ways of exploring various social phenomena. Both research methodologies can be applied individually or in combination based on

the research topic, with mixed quantitative and qualitative research methodologies becoming more widespread in recent years [7]. Applying these 2 methods through a virtuous cycle of integration from a complementary perspective can provide a more accurate understanding of human phenomena and solutions to real-world problems.

This review aimed to provide a proper understanding of qualitative research to assist researchers in selecting the appropriate research methodology. Specifically, this review examined the characteristics of quantitative and qualitative research, the applicability of qualitative research, and the data sources collected and analyzed in qualitative research.

COMPARISON OF QUALITATIVE AND QUANTITATIVE RESEARCH

A clearer understanding of qualitative research can be obtained by comparing qualitative and quantitative research, with which people are generally familiar [8,9]. Quantitative research focuses on testing the validity of hypotheses established by the researcher to identify the causal relationships of a specific phenomenon and discovering laws to predict that phenomenon (Table 1). Therefore, it emphasizes controlling the influence of variables that may interfere with the process of identifying causality and laws. In contrast, qualitative research aims to discover and explore new hypotheses or theories based on a deep understanding of the meaning of a specific phenomenon. As such, qualitative research attempts to accept various environmental factors naturally. In quantitative research, importance is placed on the researcher acting as an outsider to take an objective view by keeping a certain distance from the research subject. In contrast, qualitative research encourages looking inside the research subjects to understand them deeply, while also emphasizing the need for researchers to take an intersubjective view that is formed and shared based on a mutual understanding with the research subjects.

The data used in quantitative research can be expressed as numerical values, and data accumulated through questionnaire surveys and tests are often used in analyses. In contrast, qualitative research uses narrative data with words and images collected through participant observations, in-depth interviews, and focus group discussions used in the analyses. Quantitative research data are measured repeatedly to enhance their reliability, while the analyses of such data focus on superficial aspects of the phenomenon of interest. Qualitative research in-

Table 1. Comparison of methodological characteristics between quantitative research and qualitative research

Characteristics	Quantitative research	Qualitative research
Research purpose	Test the validity of the hypotheses established by the researcher to identify the causal relationships and laws of the phenomenon and predict the phenomenon	Discover and explore new hypotheses or theories based on a deep understanding of the meaning of the phenomenon
Perspective on variables	View factors other than the variables of interest as factors to be controlled and minimize the influence of confounding factors	View factors as natural and accept assessments in a natural environment
Research view	Objective, outsider view	Intersubjective, insider view
Data used	Quantifiable, measurable data	Narrative data that can be expressed by words, images and so on
Data collection method	Primarily questionnaire surveys or tests	Primarily participant observation, in-depth interviews, and focus group discussions
Nature of data and depth of analysis	Focus on superficial aspects of the phenomenon by using reliable data obtained through repeated measurements	The aim is to identify the specific contents, dynamics, and processes inherent within the phenomenon and situation using deep and rich data
Strengths and weaknesses	High reliability and generalizability Difficulties with in-depth analysis of dynamic phenomena that cannot be expressed by numbers alone; difficulties in interpreting the results analyzed by numbers	High validity Weak generalizability; interjection of subjectivity of the researcher is inevitable

stead focuses on obtaining deep and rich data and aims to identify the specific contents, dynamics, and processes inherent within the phenomenon and situation.

There are clear distinctions in the advantages, disadvantages, and goals of quantitative and qualitative research. On one hand, quantitative research has the advantages of reliability and generalizability of the findings, and advances in data collection and analysis methods have increased reliability and generalizability. However, quantitative research presents difficulties with an in-depth analysis of dynamic phenomena that cannot be expressed by numbers alone and interpreting the results analyzed in terms numbers. On the other hand, qualitative research has the advantage of validity, which refers to how accurately or appropriately a phenomenon was measured. However, qualitative research also has the disadvantage of weak generalizability, which determines whether an observed phenomenon applies to other cases.

APPLICATIONS OF QUALITATIVE RESEARCH AND ITS USEFULNESS IN THE HEALTHCARE FIELD

Qualitative research cannot be the solution to all problems. A specific methodology should not be applied to all situations. Therefore, researchers need to have a good understanding of the applicability of qualitative research. Generally, qualitative research is applicable in following cases: (1) when an exploratory approach is required on a topic that is not well known,

(2) when something cannot be explained fully with quantitative research, (3) when it is necessary to newly present a specific view on a research topic that is difficult to explain with existing views, (4) when it is inappropriate to present the rationale or theoretical proposition for designing hypotheses, as in quantitative research, and (5) when conducting research that requires detailed descriptive writing with literary expressions [7]. In particular, qualitative research is useful for opening new fields of research, such as important topics that have not been previously examined or whose significance has not been recognized. Moreover, qualitative research is advantageous for examining known topics from a fresh perspective.

In the healthcare field, qualitative research is conducted on various topics considering its characteristics and strengths. Quantitative research, which focuses on hypothesis validation, such as the superiority of specific treatments or the effectiveness of specific policies, and the generalization of findings, has been the primary research methodology in the field of healthcare. Qualitative research has been mostly applied for studies such as subjective disease experiences and attitudes with respect to health-related patient quality of life [10-12], experiences and perceptions regarding the use of healthcare services [13-15], and assessments of the quality of care [16,17]. Moreover, qualitative research has focused on vulnerable populations, such as the elderly, children, disabled [18-20], minorities, and socially underprivileged with specific experiences [21,22].

For instance, patient safety is considered a pillar of quality of

care, which is an aspect of healthcare with increasing international interest. The ultimate goal of patient safety research should be the improvement of patient safety, for which it is necessary to identify the root causes of potential errors and adverse events. In such cases, qualitative rather than quantitative research is often required. It is also important to identify whether there are any barriers when applying measures for enhancing patient safety to clinical practice. To identify such barriers, qualitative research is necessary to observe healthcare workers directly applying the solutions step-by-step during each process, determine whether there are difficulties in applying the solutions to relevant stakeholders, and ask how to improve the process if there are difficulties.

Patient safety is a very broad topic, and patient safety issues could be categorized into preventing, recognizing, and responding to patient safety issues based on related metrics [23]. Responding to issues that pertain to the handling of patient safety incidents that have already occurred has received relatively less interest than other categories of research on this topic, particularly in Korea. Until 2017, almost no research was conducted on the experiences of and difficulties faced by patients and healthcare workers who have been involved in patient safety incidents. This topic can be investigated using qualitative research.

A study in Korea investigated the physical and mental suffering experienced during the process of accepting disability and medical litigation by a patient who became disabled due to medical malpractice [21]. Another qualitative case study was conducted with participants who lost a family member due to a medical accident and identified psychological suffering due to the incident, as well as secondary psychological suffering during the medical litigation process, which increased the expandability of qualitative research findings [24]. A quantitative study based on these findings confirmed that people who experienced patient safety incidents had negative responses after the incidents and a high likelihood of sleep or eating disorders, depending on their responses [25].

A study that applied the grounded theory to examine the second victim phenomenon, referring to healthcare workers who have experienced patient safety incidents, and presented the response stages experienced by second victims demonstrated the strength of qualitative research [26]. Subsequently, other studies used questionnaire surveys on physicians and nurses to quantify the physical, mental, and work-related difficulties experienced by second victims [27,28]. As such, quali-

tative research alone can produce significant findings; however, combining quantitative and qualitative research produces a synergistic effect. In the healthcare field, which remains unfamiliar with qualitative research, combining these 2 methodologies could both enhance the validity of research findings and facilitate open discussions with other researchers [29].

In addition, qualitative research has been used for diverse sub-topics, including the experiences of patients and guardians with respect to various diseases (such as cancer, myocardial infarction, chronic obstructive pulmonary disease, depression, falls, and dementia), awareness of treatment for diabetes and hypertension, the experiences of physicians and nurses when they come in contact with medical staff, awareness of community health environments, experiences of medical service utilization by the general public in medically vulnerable areas, the general public's awareness of vaccination policies, the health issues of people with special types of employment (such as delivery and call center workers), and the unmet healthcare needs of persons with vision or hearing impairment.

GENERAL WORKFLOW OF QUALITATIVE RESEARCH

Rather than focusing on deriving objective information, qualitative research aims to discern the quality of a specific phenomenon, obtaining answers to "why" and "how" questions. Qualitative research aims to collect data multi-dimensionally and provide in-depth explanations of the phenomenon being researched. Ultimately, the purpose of qualitative research is set to help researchers gain an understanding of the research topic and reveal the implications of the research findings. Therefore, qualitative research is generally conducted in the following order: (1) selection of a research topic and question, (2) selection of a theoretical framework and methods, (3) literature analysis, (4) selection of the research participants (or participation target) and data collection methods, (5) data analysis and description of findings, and (6) research validation (Figure 1) [30]. However, unlike quantitative research, in which hypothesis setting and testing take place unidirectionally, a major characteristic of qualitative research is that the process is reversible and research methods can be modified. In other words, the research topic and question could change during the literature analysis process, and theoretical and analytical methods could change during the data collection process.

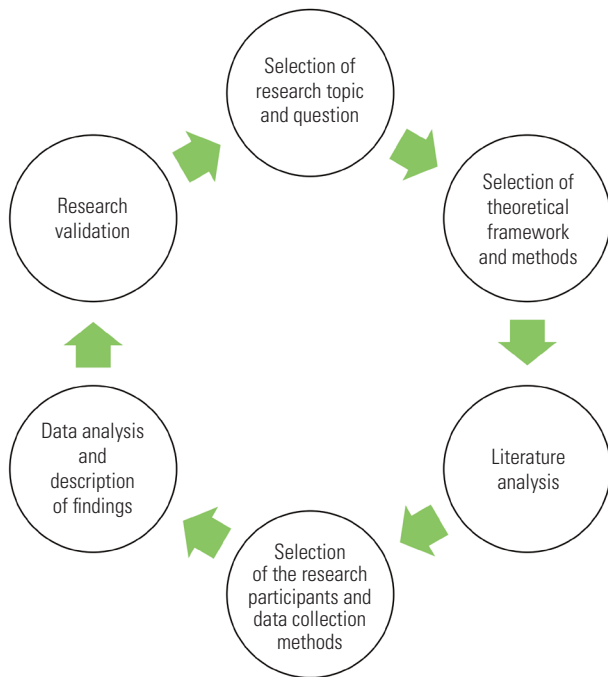


Figure 1. General workflow of qualitative research.

Selection of a Research Topic and Question

As with any research, the first step in qualitative research is the selection of a research topic and question. Qualitative researchers can select a research topic based on their interests from daily life as a researcher, their interests in issues within the healthcare field, and ideas from the literature, such as academic journals. The research question represents a more specific aspect of the research topic. Before specifically starting to conduct research based on a research topic, the researcher should clarify what is being researched and determine what research would be desirable. When selecting a research topic and question, the research should ask: is the research executable, are the research topic and question worth researching, and is this a research question that a researcher would want to research?

Selection of Theoretical Framework and Methods

A theoretical framework refers to the thoughts or attitudes that a researcher has about the phenomenon being researched. Selecting the theoretical framework first could help qualitative researchers not only in selecting the research purpose and problem, but also in carrying out various processes, including an exploration of the precedent literature and research, selection of the data type to be collected, data analysis, and description of findings. In qualitative research, theoretical frame-

works are based on philosophical ideas, which affect the selection of specific qualitative research methods. Representative qualitative research methods include the grounded theory, which is suitable for achieving the goal of developing a theory that can explain the processes involved in the phenomenon being researched; ethnographic study, which is suitable for research topics that attempt to identify and interpret the culture of a specific group; phenomenology, which is suitable for research topics that attempt to identify the nature of research participants' experiences or the phenomenon being researched; case studies, which aim to gain an in-depth understanding of a case that has unique characteristics and can be differentiated from other cases; action research, which aims to find solutions to problems faced by research participants, with the researchers taking the same position as the participants; and narrative research, which is suitable for research topics that attempt to interpret the entire life or individual experiences contained within the stories of research participants. Other methodologies include photovoice research, consensual qualitative research, and auto-ethnographic research.

Literature Analysis

Literature analysis results can be helpful in specifically selecting the research problem, theoretical framework, and research methods. The literature analysis process compels qualitative researchers to contemplate the new knowledge that their research will add to the academic field. A comprehensive literature analysis is encouraged both in qualitative and quantitative research, and if the prior literature related to the subject to be studied is insufficient, it is sometimes evaluated as having low research potential or research value. Some have claimed that a formal literature review should not be performed before the collection of field data, as it could create bias, thereby interfering with the investigation. However, as the qualitative research process is cyclic rather than unidirectional, the majority believes that a literature review can be performed at any time. Moreover, an ethical review prior to starting the research is a requirement; therefore, the research protocol must be prepared and submitted for review and approval prior to conducting the research. To prepare research protocols, the existing literature must be analyzed at least to a certain degree. Nonetheless, qualitative researchers must keep in mind that their emotions, bias, and expectations may interject themselves during the literature review process and should strive to minimize any bias to ensure the validity of the research.

Selection of the Research Participants and Data Collection Methods

The subjects of qualitative research are not necessarily humans. It is more important to find the research subject(s) from which the most in-depth answers to the research problem can be obtained. However, the subjects in most qualitative studies are humans, as most research question focus on humans. Therefore, it is important to obtain research participants with sufficient knowledge, experience, and attitudes to provide the most appropriate answers to the research question. Quantitative research, which views generalizability as a key research goal, emphasizes the selection of research participants (i.e., the research sample that can represent the study's population of interest), whereas qualitative research emphasizes finding research participants who can best describe and demonstrate the phenomenon of interest.

In qualitative research, the participant selection method is referred to as purposeful sampling (or purposive sampling), which can be divided into various types. Sampling methods have various advantages, disadvantages, and characteristics. For instance, unique sampling (extreme case sampling) has the advantage of being able to obtain interesting research findings by researching phenomena that have previously received little or no interest, and the disadvantage of deriving research findings that are interesting to only some readers if the research is conducted on an overly unique situation. Maximum variation sampling, also referred to as theoretical sampling, is commonly used in qualitative research based on the grounded theory. Selecting the appropriate participant sampling method that suits the purpose of research is crucial (Table 2).

Once the researcher has decided how to select study participants, the data collection methods must be determined. Just as with participant sampling, various data collection methods are available, all of which have various advantages and disadvantages; therefore, the method must be selected based on the research question and circumstances. Unlike quantitative research, which usually uses a single data source and data collection method, the use of multiple data sources and data collection methods is encouraged in qualitative research [30]. Using a single data source and data collection method could cause data collection to be skewed by researcher bias; therefore, using multiple data sources and data collection methods is ideal. In qualitative research, the following data types are commonly used: (1) interview data obtained through one-on-one in-depth interviews and focus group discussions, (2) observational data

Table 2. Sampling methods of selecting research participants in qualitative research

Sampling method	Explanation
Typical sampling	Selecting the most typical environment and people for the research topic
Unique sampling (extreme case sampling)	Selecting unique and uncommon situations or subjects who satisfy the research purpose
Maximum variation sampling	Selecting subjects showing maximum variation with a target population
Convenience sampling	Selecting subjects who can be sampled most conveniently considering practical limitations, such as funding, time, and location
Snowballing sampling	Selecting key research participants who satisfy the criteria established by the researcher and using their recommendations to recruit additional research participants

from various observation levels, (3) documented data collected from personal or public documents, and (4) image data, such as photographs and videos.

Interview data are the most commonly used data source in qualitative research [31]. In qualitative research, an interview refers to communication that takes place based on a clear sense of purpose of acquiring certain information, unlike conversations that typically take place in daily life. The level of data acquired through interviews varies significantly depending on the researcher's personal qualifications and abilities, as well as his or her level of interest and knowledge regarding the research topic. Therefore, interviewers must be trained to go beyond simply identifying the clearly expressed experiences of research participants to exploring their inner experiences and emotions [32]. Interview data can be classified based on the level of structuralization of the data collection method, sample size, and interview method. The characteristics of each type of interview are given in Table 3.

Observations, which represent a key data collection method in anthropology, refer to a series of actions taken by the researcher in search of a deep understanding by systematically examining the appearances of research participants that take place in natural situations [33]. Observations can be categorized as participant and non-participant, insider and outsider, disguised and undisguised, short- and long-term, and structured and unstructured. However, a line cannot be drawn clearly to differentiate these categories, and the degree of each varies along a single spectrum. Therefore, it is necessary for a qualitative researcher to select the appropriate data collection method based on the circumstances and characteristics of the re-

Table 3. Detailed types of interview methods according to the characteristics of in-depth interviews and focus group discussion

Classification	Specific method	Characteristics
Level of structuralization	Structured interview	Data are collected by asking closed questions in the order provided by highly specific interview guidelines Useful for asking questions without omitting any details that should be checked with each research participant Leaves little room for different interpretations of the participant's responses or expressing original thoughts
	Semi-structured interview	Between a structured and unstructured interview; interview guidelines are developed in advance, but the questions are not strictly set and may vary The most widely used data collection method in qualitative research, as it allows interviews to be conducted flexibly depending on the characteristics and responses of the participants Researcher bias may influence the interview process
	Unstructured interview	The interview is conducted like a regular conversation, with extremely minimal prior information about the research topic and adherence to interview guidelines to exclude the intention for acquiring information needed for the research Can obtain rich and realistic meaning and experiences of the research participants The quality of information acquired and length (duration) of interview may vary depending on the competency of the interviewer, such as conversational skills and reasoning ability
Sample size	One-on-one in-depth interview	Excluding cases in which a guardian must accompany the research participant, such elderly or frail patients and children, a single participant discusses the research topic with one to two researchers during each interview session This data collection method is recommended for research topics that are difficult to discuss with others and suitable for obtaining in-depth opinions and experiences from individual participants The range of information that can be acquired may vary depending on the conversational skills and interview experience of the interviewer and requires a relatively large amount of effort to collect sufficient data
	Focus group discussion	At least 2 (generally 4–8) participants discuss the research topic during each interview session led by the researcher This method is effective when conducting interviews with participants who may be more willing to open up about themselves in a group setting than when alone, such as children and adolescents Richer experiences and opinions can be derived by promoting interaction within the group While it can be an effective data collection method, there may be some limitations in the depth of the interview; some participants may feel left out or not share their opinion if 1 or 2 participants dominate the discussion
Interview method	Face-to-face	The interviewer personally meets with the research participant to conduct the interview It is relatively easy to build rapport between the research participant and interviewer; can respond properly to the interview process by identifying non-verbal messages Cannot conduct interviews with research participants who are difficult to meet face-to-face
	Non-face-to-face	Interview between the interviewer and research participant is conducted through telephone, videoconferencing, or email Suitable data collection method for topics that deal with political or ethical matters or intimate personal issues; in particular, email interviews allow sufficient time for the research participant to think before responding It is not easy to generate interactions between the research participant and interviewer; in particular, it is difficult to obtain honest experiences through email interviews, and there is the possibility of misinterpreting the responses

search topic.

Various types of document data can be used in qualitative research. Personal documents include diaries, letters, and autobiographies, while public documents include legal documents, public announcements, and civil documents. Online documents include emails and blog or bulletin board postings, while other documents include graffiti. All these document types may be used as data sources in qualitative research. In addition, image data acquired by the research participant or researcher, such as photographs and videos, serve as useful data sources in qualitative research. Such data sources are relatively objective and easily accessible, while they contain a significant amount of qualitative meaning despite the low ac-

quisition cost. While some data may have been collected for research purposes, other data may not have been originally produced for research. Therefore, the researcher must not distort the original information contained in the data source and must verify the accuracy and authenticity of the data source in advance [30].

CONCLUSION

This review examined the characteristics of qualitative research to help researchers select the appropriate qualitative research methodology and identify situations suitable for qualitative research in the healthcare field. In addition, this paper

analyzed the selection of the research topic and problem, selection of the theoretical framework and methods, literature analysis, and selection of the research participants and data collection methods. A forthcoming paper will discuss more specific details regarding other qualitative research methodologies, such as data analysis, description of findings, and research validation. This review can contribute to the more active use of qualitative research in the healthcare field, and the findings are expected to instill a proper understanding of qualitative research in researchers who review and judge qualitative research reports and papers.

Ethics Statement

Since this study used secondary data source, we did not seek approval from the institutional review board. We also did not have to ask for the consent of the participants.

CONFLICT OF INTEREST

The authors have no conflicts of interest associated with the material presented in this paper.

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