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Fundamental principles on qualitative research

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Βασικές αρχές ποιοτικής έρευνας

Περίληψη στο τέλος του άρθρου

Key words

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Applied research is commonly categorized into qualitative and quantitative research. Qualitative research is primarily exploratory, aiming to achieve an in-depth understanding of complex and multidimensional concepts and phenomena, such as behaviors, emotions, perceptions, thoughts, and opinions. Quantitative research focuses on measuring study characteristics and phenomena, followed by statistical analysis. Measurement plays a critical role, as it links empirical observations to mathematical expressions or equations. Both approaches are widely employed in health sciences, either complementarily or independently. They may address the same research question to enhance validity or investigate different questions using distinct methodologies. These differences primarily concern (a) the overall framework, (b) the research focus, (c) the form of questions, (d) the type of data collected, and (e) flexibility in design. Data collection methods in qualitative research differ significantly from those in quantitative research and mainly include (a) observation, (b) interviews, (c) focus groups, and (d) the Delphi method. In qualitative research, the most common non-probability sampling methods are (a) convenience sampling, (b) purposive sampling, (c) quota sampling, and (d) snowball sampling.

1. INTRODUCTION

Applied research is commonly categorized into qualitative and quantitative research. Qualitative research is primarily exploratory, aiming to achieve an in-depth understanding of complex and multidimensional concepts and phenomena, such as behaviors, emotions, perceptions, thoughts, and opinions. This approach enables researchers to generate hypotheses that can subsequently be tested through quantitative methods. Quantitative research, on the other hand, focuses on the measurement of study characteristics and phenomena, followed by statistical analysis. Measurement plays a critical role, as it links empirical observations to mathematical expressions or equations.[1,2]

Both approaches are widely employed in health sciences, either complementarily or independently. They may address the same research question to enhance validity or investigate different questions using distinct methodologies. Qualitative research is particularly valuable for exploring dimensions of human beliefs, attitudes, experiences, and knowledge that cannot be fully captured through quantitative methods. It is especially useful in early-stage investigations where existing knowledge is limited.[3–5]

In many cases, qualitative research precedes quantitative research, particularly in fields with limited prior evidence. This sequence allows researchers to gain a deeper understanding of the subject and develop hypotheses for subsequent quantitative testing. For example, the experiences of parents of children with cystic fibrosis may first be explored qualitatively in a small sample, leading to the development of a questionnaire for use in a larger quantitative study. Conversely, quantitative research may occasionally precede qualitative research, particularly when initial findings are ambiguous or controversial. In such cases, qualitative methods can provide clarification and identify underlying causes. For instance, user experiences with primary health care services may first be assessed through a survey; if unclear results emerge, qualitative research can offer deeper insights.

Ultimately, the choice between quantitative and qualitative research –or their combination– depends on the nature of the research question and the intended direction of research. Neither approach excludes nor supersedes the other; rather, they can be integrated to strengthen the overall research design and outcomes.

2. DIFFERENCES BETWEEN QUANTITATIVE AND QUALITATIVE RESEARCH

Both quantitative and qualitative research aim to answer research questions by applying appropriate methodologies, collecting and analyzing data, and drawing valid conclusions. Although health sciences share common methodological principles, significant differences exist between these two approaches. These differences primarily concern (a) the overall framework, (b) the research focus, (c) the form of questions, (d) the type of data collected, and (e) flexibility in design.[6,7]

Quantitative research typically involves hypothesis testing and seeks to identify relationships among variables, often using structured designs and statistical analysis. In contrast, qualitative research focuses on explaining and interpreting phenomena, emphasizing participants' subjective experiences.[8] For example, a quantitative study investigates the relationship between educational level and racism, whereas a qualitative study explores the causes of this relationship by examining the source directly, namely the individuals themselves.

Quantitative research aims to quantify variability and predict relationships between determinants and outcomes, making it primarily predictive. Qualitative research, however, seeks to describe and interpret variability, making it primarily descriptive. Quantitative studies often generalize findings to populations, whereas qualitative studies explore individual experiences that are difficult to generalize.[9]

Quantitative research uses closed-ended questions (e.g., "How satisfied are you with your health care?"), while qualitative research employs open-ended questions (e.g., "Describe your experience with health care"). This difference results in greater researcher-participant interaction in qualitative studies, fostering a more dialogic and adaptive process. In this way, it becomes clear that in qualitative research, scholars interact to a much greater extent with participants compared to quantitative research. In the former, participants are given the opportunity to respond freely with whatever expresses them, whereas in the latter, they must choose among specific predefined answers. Consequently, qualitative research fosters a more familiar relationship between researchers and participants, as researchers engage in dialogue and shape subsequent discussion based on what has already been said. In contrast, in quantitative research, participants simply answer predetermined questions by selecting from fixed options.[9–11]

As a result of the question format mentioned earlier, quantitative research collects numerical data (e.g., gender, age, height, weight, socioeconomic status), whereas qualitative research records participants' responses in text form, typically obtained through interviews. For this reason, quantitative research allows data to be quantified using statistical methods and enables the investigation of relationships between variables through appropriate statistical techniques. In contrast, in qualitative research, statistical analysis is limited to a descriptive presentation of the data, making the examination of relationships practically impossible.[12]

The most critical difference between the two types of research is flexibility in design, with qualitative research being much more adaptable compared to quantitative research. Specifically, the protocol of a quantitative study serves as a strict guide for researchers and must be followed as closely as possible, as deviations raise questions and doubts about the validity of the results. Furthermore, participants' responses to one question do not influence subsequent questions, which are predetermined in the study protocol, while the study design is based on specific statistical assumptions depending on the type and distribution of variables. In contrast, in qualitative research, the study protocol is flexible and can be adapted to circumstances, such as adding, removing, or rephrasing interview questions. Additionally, participants' responses influence subsequent questions, with researchers adjusting to participants as much as possible, while the study design evolves according to what researchers gradually learn from participants. For example, after a participant's response, researchers may probe deeper by asking "why" or "how," leading to new lines of thought and conclusions. Moreover, in qualitative research, researchers must listen carefully to participants, interact continuously, adapt to their unique personalities, and encourage their engagement.

3. DATA COLLECTION

Data collection methods in qualitative research differ significantly from those in quantitative research and mainly include (a) observation, (b) interviews, (c) focus groups, and (d) the Delphi method.[10,12,13]

Through observation, researchers systematically observe individuals in their daily life or work to understand their behavior and interactions within their natural environment. Researchers may either participate and intervene during observations to gain direct insight into the experiences occurring among participants or remain non-participatory, simply observing events. For example, in a study investigating aseptic techniques used by healthcare professionals

in an intensive care unit, researchers may either observe participants' actions without involvement or interact with them while simultaneously observing.[14]

Researchers also conduct in-depth individual interviews with participants to understand their views as comprehensively as possible. These interviews may be:

- Semi-structured, where researchers begin with predetermined questions or topics but allow the discussion to evolve based on participants' responses; or
- Unstructured, where researchers do not follow a specific guide, giving participants the freedom to direct the conversation in any direction.[15]

In focus groups, a small group of individuals (usually 5 to 15) participates in a discussion on a specific topic under the supervision of researchers, who guide the discussion and record it using an audio recorder for subsequent data analysis. For example, a group of 10 patients hospitalized in public hospitals may form a focus group in a study investigating patients' views on the quality of healthcare provided during their hospitalization. Focus groups are used to gather information in a collective rather than individual form and to understand the meanings behind individuals' opinions.[15–17]

The Delphi method is used to explore the opinions and or predictions of a panel of experts on a specific topic. It is essentially a consensus method aimed at identifying areas of agreement among experts, as well as finding a middle ground on points of disagreement. For example, to develop a questionnaire assessing health sciences students' knowledge of tissue and organ transplantation, the Delphi method could be applied by involving health sciences faculty members as experts to formulate appropriate questions.[18]

4. SAMPLING METHODS

Sampling refers to the selection of a sample of participants from the source population, which includes all potential participants. For example, in a study investigating the emotions of children with type 1 diabetes living in a country, the source population includes all children with this condition in this country. Researchers must then select a sample from this source population, which essentially constitutes the study population. Sampling methods include probability sampling, in which the probability of selecting each individual from the source population into the study population is known, and non-probability sampling, in which this probability is unknown. Probability sampling is advantageous, because it allows for the random selection of a sample from the source population, thereby enabling the generalization of study findings to the source population. However, probability sampling is much more complex, time-consuming, and costly, and it is not used in qualitative research. This is because the aim of qualitative research is not to select a random and representative sample for generalization, but rather to choose a sample with characteristics related to the research hypothesis, providing the richest possible information for explaining and interpreting the topic under study.

In qualitative research, the most common non-probability sampling methods are (a) convenience sampling, (b) purposive sampling, (c) quota sampling, and (d) snowball sampling.[3,6,10,12]

In convenience sampling, researchers collect data from individuals who are easiest to access and most willing to participate in the study. For example, in a study investigating the attitudes of individuals aged 18–22 years toward tissue and organ transplantation, convenience sampling could be conducted among university students in lecture halls. Convenience sampling is an extremely simple, quick, easy, and low-cost sampling method.[7,11]

In purposive sampling, researchers first focus on their research hypothesis and its various dimensions, and then determine specific characteristics that participants must have in order to address the study questions as comprehensively as possible. For example, in a study investigating experiences of sexual harassment in the workplace, researchers may wish to explore this issue among both men and women, as well as among individuals who have experienced harassment to varying degrees; mild, moderate, and severe. In this case, purposive sampling would be applied to ensure the inclusion of men and women and participants across the full spectrum of harassment experiences. Purposive sampling is also used when researchers aim to include participants who meet highly specific and strict criteria. For instance, if researchers wish to study domestic violence among women over 18 years old, married, living with their husbands in an urban area, they would need to apply purposive sampling to obtain the required sample.[1,3]

Quota sampling is essentially an extension of purposive sampling, in which researchers not only determine specific characteristics that participants must have but also set quotas for the proportion of participants with those characteristics. This approach ensures that the study includes individuals with various characteristics in sufficient proportions to draw more reliable conclusions. For example, in a

study investigating experiences of sexual harassment in the workplace, researchers may wish to include participants who have experienced harassment to varying degrees; mild, moderate, and severe. In this case, they anticipate that the proportion of individuals who have experienced severe harassment is very small, and purposive sampling alone would result in too few participants in this category. Therefore, they choose quota sampling so that their sample consists, for example, of 35% of individuals who experienced mild harassment, 35% who experienced moderate harassment, and 30% who experienced severe harassment.[3]

In snowball sampling, individuals who have already agreed to participate in the study refer researchers to other potential participants through their social contacts and networks. This approach enables researchers to reach additional participants who may be suitable for the study. Snowball sampling is particularly useful in studies investigating sensitive and highly personal topics that may lead to stigma, as individuals in such cases often try to "hide" and avoid disclosing certain characteristics. For example, in a study involving undocumented immigrants, researchers would likely face significant challenges in locating participants. However, if some undocumented immigrants are found and persuaded to participate –after being assured of confidentiality– they are likely to introduce researchers to other undocumented immigrants.[10]

5. ETHICAL ISSUES

Ethical issues in qualitative research primarily concern the interaction between participants and researchers, aiming first and foremost to safeguard all participants' rights and secondarily to achieve the research objective. It is clear that in every study, participants' rights take precedence over research interests, meaning that research must be sacrificed for the well-being of individuals if necessary. The protocol of each study must receive written approval from the appropriate ethics committee or the scientific board of a university, hospital, or health service. This ensures that researchers design a study in accordance with ethical principles, prioritizing participants' welfare above all else, followed by the benefit to public health.[11,19]

The fundamental ethical principles that researchers must apply in a study include respect for participants, ensuring benefit, fairness, and maintaining confidentiality.[19] Specifically, researchers must respect participants' autonomy and self-determination and avoid pressuring them to disclose information. This is particularly important when data are collected through interviews, as participants may experience anxiety or emotional distress if certain questions or discussion topics involve sensitive personal aspects of their lives. For example, in a study exploring the feelings of individuals who have experienced sexual abuse, researchers must exercise great care during interviews and respect participants' personal boundaries to avoid causing discomfort or violating their privacy. Researchers must also make every effort to maximize benefits and minimize risks, including psychological and social risks, for participants. For instance, they should create an appropriate environment for interviews so that participants feel comfortable and at ease. Furthermore, researchers must treat all participants fairly, which fosters trust and ensures the study is conducted ethically. For example, in a focus group study involving both native citizens and immigrants, researchers must treat both groups equally and avoid bias. Maintaining confidentiality is crucial for preserving researchers' credibility and the trust of both participants and the scientific community. Anonymity must be guaranteed, and when study results are published, it should be impossible to link participants to their real identities. Additionally, if interviews are conducted, researchers must be particularly careful not to share one participant's views with another, as doing so would undermine their reliability and integrity.[19]

In every study, informed consent from participants must be ensured, and ideally, it should be written rather than merely verbal. Specifically, researchers must inform potential participants both orally and in writing about (a) the purpose and methodology of the study, (b) the anticipated risks and benefits, including psychological and social aspects, (c) their freedom to choose whether to participate and their right to withdraw at any time without negative consequences, (d) how anonymity and personal data will be protected, (e) their role in the study, including the time required, and (f) the name and contact details of the researcher responsible for addressing any questions regarding their rights in the study. This ensures that potential participants are fully informed about the process they will be involved in, understand the study methodology, and are free to decide whether to participate, knowing that refusal will not result in any negative consequences. In this way, informed consent is guaranteed, and participants' trust in researchers is strengthened, ensuring that the study serves the common good rather than personal interests. Special attention is required when the study population includes minors or individuals with intellectual disabilities, as in these cases, informed consent must be obtained from parents or legal guardians.[19]

Informed consent is usually obtained in written form,

but there are cases where it is either impossible to obtain from participants or not necessary.[19] For example, the purpose of a study may be to develop an intervention for more effective management of medical waste in an intensive care unit. In this case, researchers observe and anonymously record the behavior of healthcare professionals regarding how they manage medical waste. If healthcare professionals are informed in advance about the study, they are likely to modify their behavior positively, trying to manage medical waste in the best possible way. However, this would introduce significant systematic bias into the study, as researchers would not capture the professionals' actual behavior but rather their modified, ideal behavior. In such cases, informed consent cannot be obtained, but it is clear that there is no risk to participants' health, their personal rights are not violated, and their personal data are not disclosed. On the contrary, the study will ultimately benefit participants, as researchers will design an effective intervention for improved waste management.[19]

6. CONCLUSIONS

Both qualitative and quantitative research are essential for drawing reliable conclusions in health sciences. While there are similarities between these two types of research, there are also significant differences. In any case, both can contribute to conducting studies accurately and validly, thereby expanding our knowledge on various health issues. Researchers should always consider the research question and its dimensions in order to select the appropriate type of research. In some cases, it is even necessary to conduct both types of research to fully address a research question.

ΠΕΡΙΛΗΨΗ

Βασικές αρχές ποιοτικής έρευνας

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Η εφαρμοσμένη έρευνα διακρίνεται στην ποσοτική και στην ποιοτική έρευνα. Η ποιοτική έρευνα είναι κατά κύριο λόγο διερευνητική και στοχεύει στη βαθύτερη διερεύνηση και κατανόηση σύνθετων και πολυδιάστατων εννοιών και φαινομένων, όπως η συμπεριφορά, τα συναισθήματα, οι αντιλήψεις, οι σκέψεις, οι απόψεις κ.ά. Η ποσοτική έρευνα περιλαμβάνει αρχικά τη μέτρηση των χαρακτηριστικών και των φαινομένων μιας μελέτης και ακολούθως τη στατιστική τους ανάλυση. Η έννοια της μέτρησης είναι καθοριστικής σημασίας, καθώς συνδέει τις εμπειρικές παρατηρήσεις μιας μελέτης με μαθηματικές εκφράσεις ή ισότητες. Η ποσοτική και η ποιοτική έρευνα χρησιμοποιούνται στις επιστήμες υγείας είτε συμπληρωματικά η μια της άλλης είτε ανεξάρτητα, καθώς είναι δυνατόν είτε να διερευνήσουν συνδυαστικά το ίδιο ερευνητικό ερώτημα με σκοπό την εξαγωγή πιο έγκυρων συμπερασμάτων είτε να διερευνήσουν διαφορετικά ερευνητικά ερωτήματα με διαφορετική προφανώς μεθοδολογία. Συνοπτικά, οι διαφορές μεταξύ των εν λόγω δύο ειδών έρευνας αφορούν (α) στο γενικότερο πλαίσιο, (β) στο ερευνητικό αντικείμενο, (γ) στη μορφή των ερωτήσεων, (δ) στη μορφή των δεδομένων που συλλέγονται και (ε) στην ευελιξία στον σχεδιασμό. Οι μέθοδοι συλλογής δεδομένων στην ποιοτική έρευνα διαφέρουν σημαντικά από την ποσοτική έρευνα και περιλαμβάνουν κυρίως (α) την παρατήρηση, (β) τις συνεντεύξεις, (γ) τις ομάδες επικέντρωσης και (δ) τη μεθοδολογία Delphi. Στην ποιοτική έρευνα, οι συχνότερες μέθοδοι δειγματοληψίας χωρίς πιθανότητα είναι οι εξής: (α) Δειγματοληψία ευκολίας, (β) σκόπιμη δειγματοληψία, (γ) δειγματοληψία με προκαθορισμένα ποσοστά και (δ) δειγματοληψία με τη μορφή χιονοστιβάδας.

Λέξεις ευρετηρίου: Δειγματοληψία, Ηθικά ζητήματα, Μεθοδολογία Delphi, Ομάδες επικέντρωσης, Ποιοτική έρευνα, Ποσοτική έρευνα

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