



## WASP (Write a Scientific Paper): Sampling in qualitative research



## ARTICLE INFO

**Keywords:**  
Qualitative research  
Sampling

## ABSTRACT

This paper outlines key concepts and considerations pertaining to sampling in qualitative research as part of a series of articles on qualitative research methods aimed at a medical and health sciences audience with a predominantly quantitative background. Planning of the sampling approach, including within-case sampling, multiple-case sampling, sample size considerations and qualitative sampling strategies are addressed. Concepts specific to the qualitative paradigm, including the iterative approach and saturation are discussed and a framework for evaluating the rigour of qualitative sampling strategies is presented.

The added value that qualitative research methods can bring to traditionally quantitatively-oriented health research is being increasingly recognised in recent years. While the proportion of qualitative research published in medical journals is still relatively low compared to quantitative research, the number of qualitative papers has shown a steady increase [10]. Additionally, the World Health Organisation has stressed the importance of the inclusion of qualitative evidence in the guideline development process, considering it ‘useful to assess the needs, values, perceptions and experiences of stakeholders...and... thus crucial for complex health decision-making’ [6], as well as highlighting the role of qualitative measures in the assessment of health and well-being [13]. These last few years have also seen public statements from prominent groups of researchers challenging the narrow view of health of many medical journals and the structural barriers to the publication of qualitative research that their editorial policies uphold, and emphasising the important contributions of qualitative data to health research [2,5,12].

These developments imply that researchers coming from healthcare backgrounds (very often with predominantly quantitative training) are increasingly likely to come across qualitative research in their respective fields that they wish to appraise, or themselves be involved in qualitative research projects. This article aims to provide an overview of sampling considerations from the qualitative perspective, as part of a series of articles on qualitative research methods being featured in this journal.

In qualitative research, initial decisions regarding sampling approach are guided by a study's research questions and conceptual framework [8]. This helps to focus the research and establish crucial definitions, such as the boundaries of a ‘case’. To qualitative researchers, a case is not necessarily a person but could consist of anything from a household, a hospital, a culture, an organisation or a procedure, to name a few examples. Once a researcher has established what constitutes a ‘case’, they need to make ‘within-case sampling decisions’ [8] regarding the activities/times of day/processes/events/settings/roles nested within the case they will choose to focus on. Researchers may analyse documentary evidence and other materials such as

photographs, drawings, online forums, web pages, journals or objects in addition to (or sometimes instead of) carrying out data collection through direct interaction with individuals or groups. The choices made will affect the conclusions that can be drawn from a study and their perceived reliability by others, thereby markedly influencing later analysis stages.

While within-case sampling serves to add depth and richness to analysis through the exploration of various aspects of a case and/or multiple forms of evidence, researchers may choose to sample multiple cases to increase the confidence in study findings through replication. Multiple-case sampling can also help the researcher to explore whether their emerging theory is able to predict which settings their findings hold true in and which they do not. In this respect, multiple-case sampling can increase the analytic generalisability of the findings with respect to broader theory (as distinct from the statistical generalisability achieved through representative samples of a population) [1].

While quantitative studies often aim to maximise statistical power through the use of as large a sample size as feasible, qualitative studies usually work with a small number of cases that are feasible to study in depth. While subjects/cases in quantitative studies are stripped of their context, the smaller numbers involved in qualitative research allows exploration of the detail and richness of the data collected.

The sampling process is iterative and is expected to continue to develop and be refined during the research process [7]. In contrast with the demarcated, successive stages of quantitative research, sampling in qualitative research can be conceptualised as a cyclical or spiral process. Analysis and interpretation of data collected after initial sampling feeds back to influence sampling methods and decisions regarding sample size. As the research progresses, and the sampling of additional data yields no further themes/ideas/concepts on analysis, the point of data ‘saturation’ is reached and sampling can cease. This implies that it is oftentimes not possible to predict the sample size at the start of the study. As Marshall puts it, ‘An appropriate sample size for a qualitative study is one that adequately answers the research question’ [7]. In recent years some qualitative scholars have emphasised that the

saturation concept as a marker of research quality is not applicable to all qualitative methodologies and should not be considered a 'sine qua non' [9].

### 1. Approaches to sampling

Approaches to sample selection fall under two broad categories; **conceptually-driven approaches** (purposive and theoretical sampling) and non-conceptually-driven approaches with no specific emphasis or guiding principles in their sampling approach (convenience and opportunistic sampling). These sampling approaches can be applied both within complex cases as well as for the selection of multiple cases.

### 2. Convenience sampling

In this approach, the potential participants/research settings/materials that are most easily accessible to the researcher are sampled. This is the least rigorous sampling approach, which can potentially compromise the research's credibility and result in poor quality data. Its advantages are that it is less expensive and time- and effort-intensive.

### 3. Opportunistic sampling

This sampling method involves the researcher taking advantage of circumstances that occur as the study progresses, taking up emerging opportunities for data collection along the way. This flexible approach lends itself to exploratory field research where little is known about the research setting.

While there may be an element of convenience or opportunism in the sampling approach of many qualitative studies, it is generally accepted that sampling approaches that are conceptually-driven are preferred [1]. As emphasised by Stake, when the research question necessitates the sampling of cases 'nothing is more important than making a proper selection of cases' [11].

### 4. Conceptually-driven approaches

Conceptually driven approaches encompass purposive and theoretical sampling.

### 5. Purposive sampling

Purposive or judgement sampling is a frequently-applied conceptually-driven approach. It involves the researcher deliberately and purposefully selecting the sample they believe can be the most fruitful in answering the research question. This selection process can be guided by consideration of the variables or qualities of potential participants that affect the contribution they could provide to the study. These variables may be simple demographics such as age, gender and socioeconomic status but can also include more nuanced aspects such as specific attitudes or beliefs.

As guided by the theoretical underpinnings of their chosen methods and the specific aims of their study, researchers may choose to adopt various forms of purposive sampling (including combinations of more than one approach). These include:

- **Maximum variation sampling** - entails the recruitment of study participants who vary widely on the dimensions of interest with the aim of identifying central themes/elements that hold true across the diverse sample.
- **Deviant sampling** - involves the selection of extreme or outlying cases of the studied phenomenon, such as crises, exceptions or remarkable failures or successes, in an attempt to glean as much information relevant to the research question as possible from each case.
- **Typical case sampling** - focuses on typical/average cases with the

aim of building up a profile of a typical case. General agreement on what constitutes a 'typical' case is required for this approach.

- **Homogenous sampling** - aims to select a group of cases with similar backgrounds and experiences, simplifying analysis and facilitating group interviewing.
- **Critical case sampling** - selects cases that will produce critical information with maximum generalisability of information to other cases. Given that the researcher correctly identifies what makes a 'critical case', knowledge gained may be applied to other cases. A simple example would be exploring the understandability of a set of flat-pack furniture instructions with a group of talented engineers. If they're unable to understand them, it's reasonable to assume the general population won't either.
- **Confirming and disconfirming sampling** - involves the selection of a mixture of cases that tie in with expectations or findings up to that point in the study and cases which deviate from them. The confirming cases serve to add depth, detail and enhance credibility while the disconfirming cases challenge the prevalent narrative and may bring to light alternative interpretations. This approach is generally utilised at later stages of a study when preliminary field-work has already established what qualifies as a 'confirming case'.
- **Stratified purposeful sampling** - selects participants from specific sub-groups of the population of interest, enabling easier comparison of the variation across sub-groups as well as exploration of any cross-cutting themes/issues.
- **Snowball sampling** - involves identification of participants by a technique known as 'snowballing' whereby initially identified participants are asked to suggest other possible candidates. This is especially useful when the studied population is hard to access and/or may not publicly signal that they belong to the group of interest (e.g. drug-users).

### 6. Theoretical sampling

Theoretical sampling is an approach where sampling decisions are guided by the theoretical framework that underlies the study or by the theory that starts to emerge from the collected data (the latter is especially relevant to grounded theory methods). The goal of sampling is to collect data that either further develops or challenges existent hypotheses. Initial cases selected have similar characteristics and are studied in depth. The researcher then samples outlying cases to see whether the developing hypothesis 'holds up' to these. Once no new insights are derived from further data collection, sampling is ceased. This approach necessitates that data analysis and coding commence while data collection is still ongoing.

### 7. Appraising the rigour of qualitative sampling strategies

While some qualitative researchers reject the concept of standardised assessment criteria for qualitative sampling strategies because they hold that by nature qualitative research cannot be satisfactorily appraised using universal principles, others appreciate that such criteria help to establish a basic framework for rigour in qualitative research and serve as invaluable guidance to novice researchers.

Among those who subscribe to the latter school of thought one finds Miles and Huberman, who propose a 'checklist' for the evaluation of qualitative sampling strategies in their seminal qualitative sourcebook [8]. The criteria presented below are based on this checklist, as elaborated on by Curtis et al. [1].

When planning their sampling approach for a qualitative study, researchers should consider:

- The relevance of the sampling approach to the aims of the research and conceptual framework. The researcher needs to consider whether any conceptual framework being utilised for the study contains categories upon which sampling could be based. Additionally one

needs to reflect on how the sampling approach will influence the potential for inductive theory generation from the data.

- Whether the phenomena of interest appear (or could appear in principal). The sample selected should have the potential for generating rich data which can be used to put together ‘thick description’ of the studied phenomena or cases.
- Whether the plan for sampling increases the analytic generalisability of the results through conceptual power or representativeness (this may not be relevant in all cases).
- The sampling strategy’s potential to produce believable, true-to-life descriptions and explanations. Will the sample provide a convincing account that can be considered reliable? Issues to be considered include the ‘completeness’ of the sample and whether any sources have significant biases that might influence results. The exclusion of certain sources may place limitations on the conclusions that can be drawn from the study.
- Ethical issues raised by the sampling approach such as those surrounding informed consent, potential benefits or harms to participants and relationship with the participants, including any power imbalances between researchers and participants. The researcher should also consider the ethical implications of excluding certain sources from the study.
- Pragmatic considerations of feasibility, including person-hours, funding and access to sources required for sampling. Feasibility is also related to researcher qualities and abilities that may be necessitated by certain sampling strategies, such as communication and language skills, capacity to relate to participants and deal with the circumstances in which sampling will take place.

This paper aimed to outline key concepts and considerations related to qualitative sampling. Planning of the sampling approach is a crucial stage of qualitative research as it is an important factor in determining whether a study can successfully and efficiently provide answers to a research question. A well-reasoned and clearly-explained sampling approach increases the rigour of a study and enhances validity of research findings and their credibility to readers.

### Acknowledgments

The inspiration for this series of papers arises from the international Write a Scientific Paper course (WASP - <http://www.ithams.com/wasp>) [3,4].

### Conflict of interest statement

There are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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