

QUALITATIVE RESEARCH

Critically appraising qualitative research

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Six key questions will help readers to assess qualitative research

Over the past decade, readers of medical journals have gained skills in critically appraising studies to determine whether the results can be trusted and applied to their own practice settings. Criteria have been designed to assess studies that use quantitative methods, and these are now in common use.

In this article we offer guidance for readers on how to assess a study that uses qualitative research methods by providing six key questions to ask when reading qualitative research (box 1). However, the thorough assessment of qualitative research is an interpretive act and requires informed reflective thought rather than the simple application of a scoring system.

Was the sample used in the study appropriate to its research question?

One of the critical decisions in a qualitative study is whom or what to include in the sample—whom to interview, whom to observe, what texts to analyse. An understanding that qualitative research is based in experience and in the construction of meaning, combined with the specific research question, should guide the sampling process. For example, a study of the experience of survivors of domestic violence that examined their reasons for not seeking help from healthcare providers might focus on interviewing a sample of such survivors (rather than, for example, healthcare providers, social services workers, or academics in the field). The sample should be broad enough to capture the many facets of a phenomenon, and limitations to the sample should be clearly justified. Since the answers to questions of experience and meaning also relate to people's social affiliations (culture, religion, socioeconomic group, profession, etc), it is also important that the researcher acknowledges these contexts in the selection of a study sample.

In contrast with quantitative approaches, qualitative studies do not usually have predetermined sample sizes. Sampling stops when a thorough understanding of the phenomenon under study has been reached, an end point that is often called saturation. Researchers consider samples to be saturated when encounters (interviews, observations, etc) with new participants no

longer elicit trends or themes not already raised by previous participants. Thus, to sample to saturation, data analysis has to happen while new data are still being collected. Multiple sampling methods may be used to broaden the understanding achieved in a study (box 2). These sampling issues should be clearly articulated in the methods section.

Were the data collected appropriately?

It is important that a qualitative study carefully describes the methods used in collecting data. The appropriateness of the method(s) selected to use for the specific research question should be justified, ideally with reference to the research literature. It should be clear that methods were used systematically and in an organised manner. Attention should be paid to specific methodological challenges such as the Hawthorne effect,¹ whereby the presence of an observer may influence participants' behaviours. By using a technique called thick description, qualitative studies often aim to include enough contextual information to provide readers with a sense of what it was like to have been in the research setting.

Another technique that is often used is triangulation, with which a researcher uses multiple methods or perspectives to help produce a more comprehensive set of findings. A study can triangulate data, using different sources of data to examine a phenomenon in different contexts (for example, interviewing palliative patients who are at home, those who are in acute care hospitals, and those who are in specialist palliative care units); it can also triangulate methods, collecting

Box 1 Key questions to ask when reading qualitative research studies

- Was the sample used in the study appropriate to its research question?
- Were the data collected appropriately?
- Were the data analysed appropriately?
- Can I transfer the results of this study to my own setting?
- Does the study adequately address potential ethical issues, including reflexivity?
- Overall: is what the researchers did clear?

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Cite this as: *BMJ* 2008;337:a1035
doi:10.1136/bmj.a1035

This is the last in a series of six articles that aim to help readers to critically appraise the increasing number of qualitative research articles in clinical journals. The series editors are Ayelet Kuper and Scott Reeves.

For a definition of general terms relating to qualitative research, see the first article in this series.

different types of data (for example, interviews, focus groups, observations) to increase insight into a phenomenon.

Another common technique is the use of an iterative process, whereby concurrent data analysis is used to inform data collection. For example, concurrent analysis of an interview study about lack of adherence

to medications among a particular social group might show that early participants seem to be dismissive of the efforts of their local pharmacists; the interview script might then be changed to include an exploration of this phenomenon. The iterative process constitutes a distinctive qualitative tradition, in contrast to the tradition of stable processes and measures in quantitative studies. Iterations should be explicit and justified with reference to the research question and sampling techniques so that the reader understands how data collection shaped the resulting insights.

Box 2 Qualitative sampling methods for interviews and focus groups⁹

Examples are for a hypothetical study of financial concerns among adult patients with chronic renal failure receiving ongoing haemodialysis in a single hospital outpatient unit.

Typical case sampling—sampling the most ordinary, usual cases of a phenomenon

The sample would include patients likely to have had typical experiences for that haemodialysis unit and patients who fit the profile of patients in the unit for factors found on literature review. Other typical cases could be found via snowball sampling (see below)

Deviant case sampling—sampling the most extreme cases of a phenomenon

The sample would include patients likely to have had different experiences of relevant aspects of haemodialysis. For example, if most patients in the unit are 60-70 years old and recently began haemodialysis for diabetic nephropathy, researchers might sample the unmarried university student in his 20s on haemodialysis since childhood, the 32 year old woman with lupus who is now trying to get pregnant, and the 90 year old who newly started haemodialysis due to an adverse reaction to radio-opaque contrast dye. Other deviant cases could be found via theoretical and/or snowball sampling (see below)

Critical case sampling—sampling cases that are predicted (based on theoretical models or previous research) to be especially information-rich and thus particularly illuminating

The nature of this sample depends on previous research. For example, if research showed that marital status was a major determinant of financial concerns for haemodialysis patients, then critical cases might include patients whose marital status changed while on haemodialysis

Maximum-variation sampling—sampling as wide a range of perspectives as possible to capture the broadest set of information and experiences)

The sample would include typical, deviant, and critical cases (as above), plus any other perspectives identified

Confirming-disconfirming sampling—Sampling both individuals or texts whose perspectives are likely to confirm the researcher's developing understanding of the phenomenon under study and those whose perspectives are likely to challenge that understanding

The sample would include patients whose experiences would likely either confirm or disconfirm what the researchers had already learnt (from other patients) about financial concerns among patients in the haemodialysis unit. This could be accomplished via theoretical and/or snowball sampling (see below)

Snowball sampling—sampling participants found by asking current participants in a study to recommend others whose experiences would be relevant to the study

Current participants could be asked to provide the names of others in the unit who they thought, when asked about financial concerns, would either share their views (confirming), disagree with their views (disconfirming), have views typical of patients on their unit (typical cases), or have views different from most other patients on their unit (deviant cases)

Theoretical sampling—sampling individuals or texts whom the researchers predict (based on theoretical models or previous research) would add new perspectives to those already represented in the sample

Researchers could use their understanding of known issues for haemodialysis patients that would, in theory, relate to financial concerns to ensure that the relevant perspectives were represented in the study. For example, if, as the research progressed, it turned out that none of the patients in the sample had had to change or leave a job in order to accommodate haemodialysis scheduling, the researchers might (based on previous research) choose to intentionally sample patients who had left their jobs because of the time commitment of haemodialysis (but who could not do peritoneal dialysis) and others who had switched to jobs with more flexible scheduling because of their need for haemodialysis

Were the data analysed appropriately?

Qualitative studies should include a clear description of a systematic form of data analysis. Many legitimate analytical approaches exist; regardless of which is used, the study should report what was done, how, and by whom. If an iterative process was used, it should be clearly delineated. If more than one researcher analysed the data (which depends on the methodology used) it should be clear how differences between analyses were negotiated. Many studies make reference to a technique called member checking, wherein the researcher shows all or part of the study's findings to participants to determine if they are in accord with their experiences.² Studies may also describe an audit trail, which might include researchers' analysis notes, minutes of researchers' meetings, and other materials that could be used to follow the research process.

Can I transfer the results of this study to my own setting?

The contextual nature of qualitative research means that careful thought must be given to the potential transferability of its results to other sociocultural settings. Though the study should discuss the extent of the findings' resonance with the published literature,³ much of the onus of assessing transferability is left to readers, who must decide if the setting of the study is sufficiently similar for its results to be transferable to their own context. In doing so, the reader looks for resonance—the extent that research findings have meaning for the reader.

Transferability may be helped by the study's discussion of how its results advance theoretical understandings that are relevant to multiple situations. For example, a study of patients' preferences in palliative care may contribute to theories of ethics and humanity in medicine, thus suggesting relevance to other clinical situations such as the informed consent exchange before treatment. We have explained elsewhere in this series the importance of theory in qualitative research, and there are many who believe that a key indicator of quality in qualitative research is its contribution to advancing theoretical understanding as well as useful knowledge. This debate continues in the literature,⁴ but from a pragmatic perspective most qualitative studies in health professions journals emphasise results that relate to practice; theoretical discussions tend to be published elsewhere.

Does the study adequately address potential ethical issues, including reflexivity?

Reflexivity is particularly important within the qualitative paradigm. Reflexivity refers to recognition of the influence a researcher brings to the research process. It highlights potential power relationships between the researcher and research participants that might shape the data being collected, particularly when the researcher is a healthcare professional or educator and the participant is a patient, client, or student.⁵ It also acknowledges how a researcher's gender, ethnic background, profession, and social status influence the choices made within the study, such as the research question itself and the methods of data collection.^{6,7}

Research articles written in the qualitative paradigm should show evidence both of reflexive practice and of consideration of other relevant ethical issues. Ethics in qualitative research should extend beyond prescriptive

SUMMARY POINTS

Appraising qualitative research is different from appraising quantitative research

Qualitative research papers should show appropriate sampling, data collection, and data analysis

Transferability of qualitative research depends on context and may be enhanced by using theory

Ethics in qualitative research goes beyond review boards' requirements to involve complex issues of confidentiality, reflexivity, and power

Further reading

Books

Crabtree F, Miller WL, eds. *Doing qualitative research*. 2nd ed. Thousand Oaks, CA: Sage, 1999.

Denzin NK, Lincoln YS, eds. *Handbook of qualitative research*. 2nd ed. Thousand Oaks, CA: Sage, 2000.

Finlay L, Ballinger C, eds. *Qualitative research for allied health professionals: challenging choices*. Chichester: Wiley, 2006.

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Lingard L, Kennedy TJ. *Qualitative research in medical education*. Edinburgh: Association for the Study of Medical Education, 2007.

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Internet resources

National Health Service Public Health Resource Unit. *Critical appraisal skills programme: qualitative research appraisal tool*. 2006. www.phru.nhs.uk/Doc_Links/Qualitative%20Appraisal%20Tool.pdf

guidelines and research ethics boards into a thorough exploration of the ethical consequences of collecting personal experiences and opening those experiences to public scrutiny (a detailed discussion of this problem within a research report may, however, be limited by the practicalities of word count limitations).⁸ Issues of confidentiality and anonymity can become quite complex when data constitute personal reports of experience or perception; the need to minimise harm may involve not only protection from external scrutiny but also mechanisms to mitigate potential distress to participants from sharing their personal stories.

In conclusion: is what the researchers did clear?

The qualitative paradigm includes a wide range of theoretical and methodological options, and qualitative studies must include clear descriptions of how they were conducted, including the selection of the study sample, the data collection methods, and the analysis process. The list of key questions for beginning readers to ask when reading qualitative research articles (see box 1) is intended not as a finite checklist, but rather as a beginner's guide to a complex topic. Critical appraisal of particular qualitative articles may differ according to the theories and methodologies used, and achieving a nuanced understanding in this area is fairly complex.

Contributors: AK wrote the first draft of the article and collated comments for subsequent iterations. LL and WL made substantial contributions to the structure and content, provided examples, and gave feedback on successive drafts. AK is the guarantor.

Funding: None.

Competing interests: None declared.

Provenance and peer review: Commissioned; externally peer reviewed.

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TEACHING ROUNDS

Teaching in an ambulatory care setting

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Cite this as: *BMJ* 2008;337:a1156
doi:10.1136/bmj.a1156

Four third-year medical students are coming to the clinic for half a day a week. They have just finished their basic clinical skills training and the aim of their attendance is to further develop their history taking and examination skills in the maelstrom of clinical practice. What organisational issues do you need to consider?

Medical education is on the move. In the past, clinical education was provided almost exclusively in hospital, but now the emphasis is increasingly on learning in ambulatory settings.^{1,2} Ambulatory care has been defined as that delivered to patients who are not residing in a healthcare institution—so ambulatory settings comprise outpatient clinics, emergency rooms, and primary care.³ Learning in an ambulatory setting offers a number of advantages. Patients are generally less sick than in hospital and are often easier for students to interact with. It is also more likely that patients are known to the healthcare team, which in turn leads to more complete understanding of illness and its impact on patients' lives. Ambulatory based teaching can also provide multiple exposures to the same clinical problems, allowing undergraduate and postgraduate learners to build more complex and transferrable knowledge.⁴ Further, important areas such as health promotion are more often practised in ambulatory environments, and patients are encountered closer to their own social context.⁴

What to teach in ambulatory care?

Most of the knowledge, skills, and attitudes required for professional practice can be learnt in ambulatory settings. The diverse contexts offer different opportunities. In hospital outpatients, for example, learners can attend specialist clinics and learn about diagnosis and management of specific diseases. In primary care, learners can see early presentation of disease or observe the long term impact of disease on patients and families. Ambulatory investigation centres allow learners to observe diagnostic procedures, understand the underlying rationale, and appreciate patients' perspectives.

Much that occurs in ambulatory settings is unplanned and led by patients' needs. With forethought, however, we can exert some control over the organisation of ambulatory care so that it best meets the dual roles of providing service and meeting learners' needs.

What are the challenges of ambulatory teaching?

Teaching in ambulatory settings is characterised by conflicting time pressures, unpredictability, and lack of continuity.⁵ It is useful to consider the many obstacles to effective teaching in these situations (box 1).

Ambulatory contexts are busy and challenging places in which to teach, but with careful planning and good communication the ambulatory clinic can provide an effective and efficient learning environment. We outline three key steps in planning.

Step 1—Orient the learners

Learners who arrive fresh in a new clinical environment may feel bewildered and “in the way,” which may hinder their ability to learn and to make the best of the opportunities that arise. Similarly a teacher (preceptor) who meets a new group of students knows little about their knowledge, abilities, or interests. Thus the first step in any new student attachment should be to describe the learning and working environment. Crucial early steps are to find out students' names; introduce them to other staff; show them where they can store bags and coats, locate toilets, and access the coffee room; and direct them to where paper and virtual sources of evidence are located.

Ideally, teachers should take time, before clinics start, to sit with students and discuss previous experiences and current learning needs. This will ensure that teaching (even if brief and cursory) is focused.

Box 1 Barriers to effective teaching in ambulatory settings⁵

- The rapid patient throughput typical of ambulatory contexts means that teachers may have inadequate space and time to teach
- Large patient workloads require a sharing of the teaching burden, which means learners may be taught by inexperienced teachers
- Pressure of work and the associated lack of time mean that learners practising history taking and physical examination are rarely observed by teachers
- The frenetic and public nature of many ambulatory clinics means that feedback on learners' performance is rarely provided
- Students' orientation to the ambulatory clinic's operations is often inadequate, leading to confusion and diminished use of learning opportunities
- Seeking consent for patients to be interviewed and examined by students or residents can be viewed as an unwelcome additional teaching burden

This series provides an update on practical teaching methods for busy clinicians who teach. The series advisers are Peter Cantillon, senior lecturer in the department of general practice at the National University of Ireland, Galway, Ireland, and Yvonne Steinert, professor of family medicine, associate dean for faculty development, and director of the Centre for Medical Education at McGill University, Montreal, Canada

Box 2 Timetable for a teaching clinic

08 30—Brief and orient the learners (include specific suggestions about what learners are expected to observe and do). The orientation should be followed by bursts of consultation activity, followed by review periods in which themes are revisited, misconceptions dealt with, and further learning directed. The teacher interacts in the traditional way with questions, observations, and demonstrations while focusing on the clinical task

08 45—Consult with Patient No 1

09 00—Consult with Patient No 2

09 15—Consult with Patient No 3

09 30—Catch-up and review learning so far

09 45—Consult with Patient No 4

10 00—Consult with Patient No 5

10 15—Consult with Patient No 6

10 30—Review, reflect, and identify further learning tasks for students to follow up

10 45—If the clinical workload is high, it is reasonable at this point to ask learners to carry out agreed learning tasks in the library or skills lab while the clinic continues.

To assess learning needs, the teacher should ascertain where learners are in their training programme and what their interests and areas of perceived deficit are. It is helpful to conduct a case discussion to provide a guide to the state of students' knowledge. As in patient consultations, it is also important to explore students' concerns (for example, regarding learning in a busy clinic, about being "in the way"), and expectations (what they think the session is about). The teacher should aim to facilitate a shared learning plan. Learning should be considered as a partnership, with the teacher as facilitator, not director of the process. Learners need to feel sufficiently comfortable to take risks and that their opinions are valued and the atmosphere supportive.

Other staff in the ambulatory clinic need to be briefed about how the teaching might affect them and what level

Box 3 Ideas for effective teaching in busy ambulatory settings

Hot seating—This is a technique developed in primary care postgraduate education, in which the teacher hands over part of the consultation to a learner.¹¹ The teacher and learner literally change seats so that the focus of the consultation shifts to the learner during learning task (taking a sexual history, for example). This allows the teacher to observe and provide feedback on snippets of the learner's performance without losing control of the clinic timetable.

Directed observation—To keep the learners fully engaged when you are focused on the consultation, make sure that they have specific observation and recording tasks—for example, "take particular note of the manner in which I clarify the presenting complaint" or "write down your differential diagnosis after the presenting complaint."

Productive diversion—Ask the students to clerk a patient from further down the clinic list and to be prepared to present the patient's story when their allocated timeslot is reached (say, in 30 minutes). The danger of using this technique too often is that you do not witness students eliciting histories and examining patients

Educational prescriptions—This term was coined by Sackett et al to describe evidence based medicine tasks arising from encounters with patients.¹² The same idea can be applied to ambulatory settings: questions that require more than a quick response can be given to students as an educational prescription that specifies the question and the time and date for follow-up¹¹

Hot review—More of a good habit than a technique. It is best to discuss and elaborate on new experiences while they are "hot"—taking time to review key learning events from a clinic after it has ended (over lunch, for example) provides powerful reinforcement for the earlier learning experiences¹¹

of commitment is required. They should know the stage of the learners and be briefed on the intended learning outcomes. Basic knowledge of the curriculum is also helpful. Providing guidance notes that outline a structure to work with may be more practicable for busy clinicians than attending formal faculty development sessions.⁶

Step 2—Organise the clinic to ensure effective teaching
Manage patient consent

All teaching with or about patients should be done with their explicit consent. Assuming consent is implicit is no longer acceptable.⁷ There are many opportunities to inform patients about the presence of students, for example when they book or are sent an appointment in the post. Consent can be documented then and reconfirmed when they attend the clinic. Posters in the waiting room explaining the presence of learners and emphasising the positive role patients can play are also helpful. Considering which patients will provide examples of particular conditions, and taking time to discuss their potential contribution with them, maximises learning opportunities.⁸

Manage time

Most ambulatory clinics have both new and review patients, with opportunities for learners to see a variety of presentations, observe decision making, and interview and examine patients. Making the best of these opportunities requires careful review of patient flow, available space, and teaching roles. Teaching need not be the sole responsibility of senior clinicians, but can be supported by junior medical and specialist nursing staff. Questions to consider include:

- How should you make the best use of available teacher resources?
- How should you brief and organise your teachers?
- Who can best teach what?

It is also feasible to establish dedicated teaching clinics to which patients with particular conditions are invited.⁷ An example might be a clinic dedicated to learning about how to diagnose and manage asthma as well as about how it affects patients' lives. A creative approach to combining service and teaching commitments in an outpatient setting, the ambulatory care teaching centre described by Dent is essentially a teaching outpatient clinic in which preselected patients are given longer appointments with clinical teachers.⁹ The longer appointment slots, typically 15-30 minutes, allow teachers to watch students perform and to provide timely feedback.

Even if clinic timetables cannot be changed, it is still possible to both orient the learners and insert some time for teaching within a busy clinic structure, as box 2 shows. The timings can be changed to suit shorter or longer consultation slots as workloads allow. Being explicit about structure and organisation helps learners orient and be clear about what is expected of them.

Learning should be considered a partnership, with the teacher as facilitator not director of the process. The learner needs to feel sufficiently comfortable to take risks,

Box 4 Example of a reflective learning log

Patient—60 year old man with diabetic foot

What did you learn?—The range of problems that foot paraesthesia can cause

What will you do differently next time?—I will always examine diabetic patients' feet

What learning needs did you identify?—The nerve pathways for proprioception, vibration sense, and pain in the lower limb

How will you address these learning needs?—Consult my anatomy books and draw relevant pathways into my logbook

and to know that their opinions are valued and the atmosphere is supportive. Many of the better known techniques for teaching under pressure of time have been described by Irby and Wilkerson.¹⁰ Some other approaches are described in box 3.

Step 3—Encourage learners to take more responsibility for their own learning

In ambulatory settings, the teacher rapidly moves between patients, balancing the needs of providing care with opportunities for teaching. However, responsibility for learning should also reside with the student. Lipsky describes different approaches for ensuring that learners take more responsibility for their own learning, which should be explained to students at the start of a clinic or attachment.¹³

Self initiated orientation is an alternative to the more planned, teacher led approach described earlier. Learners can be expected to request an orientation to a new setting as soon as they arrive, but this could be from staff other than the designated teacher—for example, nursing staff. It improves efficiency if learners are asked to prepare a list of learning needs and expectations in advance.

Precepting preparation means that learners prepare for a clinic by reviewing the case records of patients to be seen, and tackling relevant knowledge deficits before the clinic starts. This is also an opportunity for students to learn how to navigate clinical records and rapidly extract relevant information from them (scanning discharge summaries, identifying problem lists, etc).

If feedback from the teacher is not forthcoming, learners should be encouraged to remind them by volunteering a self assessment and asking for comment. Learners can also seek feedback from peers.

Reflection, like feedback, is critical to learning but difficult to facilitate in a busy ambulatory clinic. Students need to develop a system for capturing and

KEY POINTS

- Reconceptualise and reorganise the ambulatory clinical environment so that it can facilitate both excellent clinical care and effective learning
- Ensure that patients have given verifiable consent for clinical teaching in ambulatory contexts
- Orient the learner and the teaching team to the objectives and expectations of the teaching task
- Be prepared to adjust clinical timetables to meet the dual needs of patients and learners
- Encourage learners to take greater responsibility for their own learning

revisiting experiences after the clinic has finished. A simple log will serve this purpose (box 4).

Conclusion

The ambulatory setting is a potentially rich educational environment, but opportunities for effective learning are often lost through lack of planning. Effective teaching in such contexts requires careful attention to managing the often chaotic nature of ambulatory care, and balancing service and educational commitments. Four essential steps are to ensure adequate orientation of the learner to the learning environment; focus on providing opportunities for observing learners' performance; provide timely feedback on learners' actions; and encourage learners to take increasing responsibility for their own learning, both during and after ambulatory clinical encounters.

Contributors: CS researched and wrote the original draft of the article; PC, JM, and JS contributed to further revisions. JS is guarantor.

Competing interests: None declared.

Provenance and peer review: Commissioned; externally peer reviewed.

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Further resources

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