

Appraising qualitative research articles in medicine and medical education

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SUMMARY *Although qualitative research is gaining recognition in medicine and in medical education, most clinical teachers do not know how to perform a critical appraisal of articles in these fields. This article describes a grid for the critical appraisal of qualitative research articles so that clinical teachers are in a better position to evaluate this type of research and to teach the critical appraisal of it. The grid is comprised of 12 items with an explanation and suggestions for additional reading for each item.*

Introduction

Recently, we emphasized the need for more qualitative research, especially because it looks at the complex health issues that physicians often face (Turgeon & Côté, 2000). The purpose of this article is to present a new grid designed to help clinical teachers better understand this research approach and, especially, to help them appraise articles in medicine and in medical education. It will also be useful to practitioners who are teaching the critical appraisal of scientific publications in their respective settings. Lastly, it may serve as a guide for those who are involved in qualitative research protocols and articles.

Why a new grid?

By searching the literature, we located guidelines for authors (Rowan & Huston, 1997; Reid & Leduc, 1998), and appraisal grids (Cobb & Hagemaster, 1987; Polit & Hungler, 1995; Rowan & Huston, 1997; Devers, 1999; Seale, 1999; Giacomini & Cook, 2000a; Giacomini & Cook, 2000b; Mays & Pope, 2000). However, the accompanying notes generally referred to more than one item at a time and are not oriented to medical education. This grid:

- is short and fairly simple for clinical teachers, residents and medical students to use;
- is written in qualitative language that is as easy as possible for individuals who are not experts in qualitative research to understand;
- follows the usual structure of a research article in a medical journal.

For each grid item explanations, clinical or pedagogical examples, and suggestions for additional reading are given.

Presentation and explanation of the grid

The grid is comprised of 12 items, each of which is divided into five sections: introduction, methods, results, discussion, and conclusion (Figure 1). The reader will note that the general appraisal criteria are basically the same as for

quantitative research. However, the application of appraisal criteria in qualitative research is somewhat different because it has its own assumptions and end purposes.

Introduction

Item 1: The issue is described clearly and corresponds to the current state of knowledge (Morse & Field, 1995). The introduction describes the issue being studied and states the research question or objective. Using reasoning that is logical, progressive and understandable, the author demonstrates the importance of the subject and the relevance of his choice of the qualitative approach. The issue must be placed in the context of the current state of knowledge; through his survey of the literature, the author sheds new light on the issue by taking stock of what other researchers have written (theories) or done (previous studies) in relation to this issue or similar issues. Qualitative research studies are often exploratory, that is to say, their purpose is to provide a better understanding of ill-defined subjects or even to examine from a new perspective a problem for which there is as yet no satisfactory response.

Item 2: The research question and objectives are clearly stated and are relevant to qualitative research (Griffiths, 1996). It goes without saying that the research question (and objectives) must be clearly formulated and flow logically from the issue. As a general rule, qualitative studies strive to describe in greater depth the how and why of phenomena, whereas quantitative studies are used to measure a phenomenon for generalizing the results or testing a hypothesis. Verbs such as *explore*, *describe* and *understand* are often used in describing the objective of a qualitative research study. According to the research question, a number of topics may be relevant to qualitative research studies: the relational processes associated with care (e.g. the doctor–patient relationship) and the decision-making processes; an understanding of specific health issues (e.g. non-compliance with treatment), a medical education issue (e.g. the process by which students choose role models, the career paths of clinical teachers, and the process of learning the doctor–patient relationship).

Methods

While the issue reflects the conceptual phase of the study, the methods refer to the operational phase, i.e. the way in which

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	Yes	±	No
Introduction			
1. The issue is described clearly and corresponds to the current state of knowledge.			
2. The research question and objectives are clearly stated and are relevant to qualitative research (e.g., the process of clinical or pedagogical decision-making).			
Methods			
3. The context of the study and the researchers' roles are clearly described (e.g. setting in which the study takes place, bias).			
4. The method is appropriate for the research question (e.g. phenomenology, grounded theory, ethnography).			
5. The selection of participants is appropriate to the research question and to the method selected (e.g. key participants, deviant cases).			
6. The process for collecting data is clear and relevant (e.g. interview, focus group, data saturation).			
7. Data analysis is credible (e.g. triangulation, member checking).			
Results			
8. The main results are presented clearly.			
9. The quotations make it easier to understand the results.			
Discussion			
10. The results are interpreted in credible and innovative ways.			
11. The limitations of the study are presented (e.g. transferability).			
Conclusion			
12. The conclusion presents a synthesis of the study and proposes avenues for further research.			

Figure 1. Grid for the critical appraisal of qualitative research articles in medicine and medical education.

the researcher answered his research question. In any research article, we expect the author to describe the methods that he used clearly and precisely and to demonstrate their ability to answer the research question. Even though the researcher must choose a methodology based on the purpose of the study and the time and resources at his/her disposal, realism and rigour must always inform this process. In the section on methods, five things must be considered: the context of the study and the role of the researchers, the method chosen, the selection of participants, data collection, and data analysis.

Item 3: The context of the study and the researchers' roles are clearly described (Devers, 1999). Qualitative research makes it possible to study complex phenomena in their natural context. In fact, an in-depth understanding of phenomena cannot be achieved outside the context in which they occur. Even though some contexts appear to be similar (e.g. the faculty of medicine at University X and at University Y), each context is still unique, as are the experiences of the individuals involved. The context must be clearly and adequately described so that the reader is able to properly understand the phenomenon being studied. The reader must be provided with meaningful information concerning the characteristics of the setting and the individuals involved (e.g. the types of educational approaches used, the arrival or

departure of influential persons) and all other information needed to understand the phenomenon (e.g. any major organizational conflicts that emerged over the course of the study).

Another aspect of qualitative research is the role that it gives the researcher, i.e. the proximity that he/she has to the setting and the study participants. Qualitative theory questions the notion of objectivity, arguing instead that researchers have their own reasons for choosing one type of research over another. Thus, no research situation is ever completely 'neutral' and it is always interpreted by the researcher through the lens of his/her own perception of the results, whether or not they have been quantified. Unlike quantitative research, in which the researcher 'distances' him/herself from the subjects so as not to introduce bias into data collection, qualitative researchers often work 'with' their participants. For example, a qualitative researcher studying interdisciplinary collaboration in an emergency room would be more likely to go to the setting to observe the professionals at work and to meet with them in individual or group interviews.

In a qualitative research article, the researcher–setting relationship needs to be described, given that they will inevitably influence each other. This will provide the reader with the information he/she needs to determine whether the researcher has a good understanding of the setting and if

he/she is sufficiently involved to truly understand the study phenomenon. It is also essential for determining whether his/her role could influence the collection and analysis of data. Each role involves potential bias.

Item 4: The method is appropriate for the research question (Morse, 1994). Another criterion of scientific robustness is the appropriateness of the method chosen to answer the research question. While many qualitative research methods exist, the most commonly used methods in the field of health are phenomenology, grounded theory and ethnography. The boundaries between these methods are often blurred and they are often combined; consequently, the researcher must be very careful to avoid any confusion.

If the purpose of the study is to understand the meaning or significance of a phenomenon based on the experiences of those living with it (e.g. life after myocardial infarction, being a PBL tutor), phenomenology is the method of choice. Phenomenology focuses on the experience of one or more individuals, documented over the course of individual interviews.

The grounded theory method begins with no theory or concept. Data are collected first and then conceptual categories or theory arise from the data. This method is often used to study a process (e.g. student's choice of learning strategies) or to analyse interactions (e.g. clinical supervision during residency). The theory is usually generated through individual or group interviews.

Lastly, the strength of the ethnographic method lies in understanding the nature of certain cultural elements of a group (notions, representations, beliefs) based on the point of view of members of this group, on observations of how they function or an analysis of various types of relevant documents. An educational researcher might be interested in how surgeons describe good clinical instruction in the operating room.

Item 5: The selection of participants is appropriate to the research question and to the method selected (Sandelowski, 1995). In this section of the research article, the researcher convinces the reader that, to the extent possible, he/she selected the participants who are the most likely to assist in answering his/her research question. Often, relatively restricted samples are painstakingly selected, based on the study goals and the methodology used. The size of the sample is not as important as its quality. Participant selection must allow for diversification of the data, i.e. it must capture various points of view or representations of the study phenomenon.

In the field of health, the researcher will usually select individuals or groups as his/her unit of analysis, although he/she may also work from various types of documents (e.g. interview videos, files, etc.). The most common technique for selecting participants (Patton, 1990a) is the theoretical (or intentional) sample based on the researcher's judgement in choosing individuals that he/she feels will be relevant because of their characteristics (wealth of opinions on, or experience with, the subject) and the goals of the study. These individuals become key participants. The inclusion of extreme or deviant cases, i.e. individuals who stand out because of a particular experience or viewpoint (e.g. teachers who are either very satisfied or very unsatisfied with their work) is very useful, even essential, to some studies. It should

be noted that, in research using the grounded theory method, situations, individuals or groups are chosen in successive stages based on the information that the researcher is looking for (Strauss & Corbin, 1998).

Item 6: The process for collecting data is clear and relevant (Britten, 1995; Brown, 1999). In addition to knowing specifically how the data were collected, the reader must be able to determine whether the process used by the researcher to collect these data was adequate and realistic. The researcher must, therefore, describe this process in sufficient detail. In qualitative research, two of the main data collection techniques are individual interviews (semi-structured and unstructured) and group interviews such as focus groups.

Depending on the study goals, some techniques are more appropriate than others. For example, if the purpose of the study is to understand why hypertensive patients do not follow their doctor's recommendations, semi-structured individual interviews would most probably be preferable to focus groups since they allow individuals, especially the shyer ones, to express themselves more easily. On the other hand, if the purpose of the study is to better understand why physicians chose a certain type of practice, focus groups might be appropriate since the group synergy and interaction might generate information that would be difficult to collect through individual interviews. If the purpose of the study is to understand how teachers actively involve students in their learning activities, an observation technique might be used and then rounded out with individual interviews.

To study certain issues (e.g. the doctor-patient relationship), it is useful to use more than one source of information (e.g. physicians and patients). This is a form of *data triangulation*. It is also possible to use more than one technique for collecting data (e.g. individual interviews with physicians and patients and direct observation of medical consultations) or more than one method of data analysis. This is a form of *method triangulation* (Begley, 1996). Lastly, data collection must be conducive to data *saturation*, i.e. to the greatest possible understanding of the study topic and to the researcher's conviction that adding more participants would not add any new data that would contribute to this understanding.

Item 7: Data analysis is credible (Miller & Crabtree, 1994; Devers, 1999). In qualitative research, data collection and analysis is often an iterative process in which the researcher goes back and forth from one step to the other so that they enrich each other.

In order for data analysis to be credible, the researcher must demonstrate that it is precise, consistent and exhaustive. The analytical process must be described with enough detail to enable the reader to determine whether the process is credible. As indicated above, credibility refers to the overall methodological quality of the study. In qualitative research, this refers to internal validity.

Even though there are several strategies for analysing qualitative data (Miles & Huberman, 1994), they usually refer to inductive inference of thematic content, i.e. the process of creating categories based on an analysis of statements by participants. In practice, this type of analysis involves the following steps: transcribing the interview material in full, reading the material several times, selecting

the units of significance or units of meaning, identifying general themes, and categorizing and classifying the data. For the grounded theory method, this method includes a specific step of codification and analysis, i.e. constant comparison analysis (Strauss & Corbin, 1998). For ethnographic and phenomenological studies, the researcher must describe how the notes taken during field observations were processed.

Researchers can also analyse their data by combining qualitative data from content analysis and quantitative data, for example, the frequency of various statements. This combination can be useful because it combines two perspectives. Clarity, precision, and relevance are criteria used to evaluate these types of analyses. A word of caution: numerical data do not comprise a criterion of robustness. It all depends on the study question!

Regardless of the analytical procedure used, credibility is enhanced if the data are analysed by more than one researcher (researcher triangulation). In addition, many authors recommend submitting the analyses to participants for their feedback (member checking).

Results

Item 8: The main results are presented clearly (Mays & Pope, 1995). Usually, the amount of data generated from a qualitative study is considerable. Often, several hundred pages of interviews and notes taken by the researcher are analysed. The researcher must present, in a way that is understandable to the reader, the results that he/she feels are most relevant, theoretically and practically, to his/her research question. Where there are illustrations or tables, they must be clear and contribute to the reader's understanding of the themes, categories or concepts.

Item 9: The quotations make it easier to understand the results (Morse, 1994). When qualitative research results are presented, it is recommended that several participants be quoted. A reasonable number of short, clear quotations make the results easier to understand and more credible. Usually, the researcher presents the point(s) of view most likely to help the reader understand the study results and those that support the emergence of a new concept.

Discussion

Item 10: The results are interpreted in credible and innovative ways (Patton, 1990b; Frankel, 1999; Grbich, 1999). Interpreting the results means explaining them and giving them meaning in terms of the purpose of the study and, if applicable, within the theoretical framework used. In addition to proposing plausible interpretations, i.e. interpretations that demonstrate some consistency between the results and the meaning that he/she has attributed to them, the researcher should add to our knowledge of the subject through new theoretical or practical interpretations. For example, the researcher might come up with an explanation not offered in previous studies or he/she might make recommendations for implementing the results. The researcher must make the connection between the study results and the current state of knowledge to emphasize the innovative nature of his/her interpretations.

Lastly, in order for the discussion to be credible, the researcher must discuss all of the relevant results, including results that were unexpected and results that did not correspond to the main explanations of the phenomenon being studied (i.e. negative or contradictory results).

Item 11: The limitations of the study are presented (Morse, 1999). A good researcher neither under- nor overestimates the strength of his/her study. Often, due to logistical and time constraints, the study has limitations (for example, in terms of the selection of participants). The researcher must mention these without over- or underemphasizing them.

In qualitative research, the researcher must discuss the transferability of the study results (external validity). This refers to the concept of the generalization found in quantitative research. In fact, one of the main criticisms of qualitative research is that it produces results that cannot be generalized. In response to this criticism, qualitative researchers argue that their participants and contexts are painstakingly selected for the very purpose of data diversification and saturation. In-depth analysis of one or more aspects of an issue from several points of view produces new knowledge (processes, concepts, and theories). As in quantitative research, it is this new knowledge that is generalizable. The reader must first ask him/herself whether the study issue and the interpretation of data are applicable to his/her own context or to contexts that he/she feels are similar.

Conclusion

Item 12: The conclusion presents a synthesis of the study and proposes avenues for further research (Bordage, 1989; Devers, 1999). In this section, the researcher presents the key messages of his/her study. This is not simply a list of the various elements of the study, which would be a summary. The researcher also discusses the benefits of his/her study by proposing new avenues for research or describing the study's implications for clinical practice, for example.

Conclusion

We hope that this grid will provide clinicians and teachers with a better understanding of qualitative research and its unique criteria for robustness. However, a cautionary note is in order. A grid is one way of systematically organizing information but it does not provide a detailed description of the epistemological values or challenges of qualitative research. Remember that we cannot evaluate qualitative research in the same manner as quantitative research, nor should we.

Practice points

- Qualitative research is relevant to the study of various issues in medicine and medical education.
- Its credibility is based on the clarity and rigour of the research process.
- Using specific criteria, it is possible to appraise the value of each part of a qualitative research article.

Note

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