Computer-Assisted Qualitative Data Analysis Software

Diane G. Cope, PhD, ARNP, BC, AOCNP®

Advances in technology have provided new approaches for data collection methods and analysis for researchers. Data collection is no longer limited to paper-and-pencil format, and numerous methods are now available through Internet and electronic resources. With these techniques, researchers are not burdened with entering data manually and data analysis is facilitated by software programs. Quantitative research is supported by the use of computer software and provides ease in the management of large data sets and rapid analysis of numeric statistical methods. New technologies are emerging to support qualitative research with the availability of computer-assisted qualitative data analysis software (CAQDAS). CAQDAS will be presented with a discussion of advantages, limitations, controversial issues, and recommendations for this type of software use.

Background

Since the 1990s, numerous software programs have been developed to facilitate qualitative data management (Richards, 2002). Qualitative research is characterized by vast amounts of data in forms such as transcribed recordings of interviews or focus groups, field notes, or diary entries. Since the introduction of the early CAQDAS, developed in the 1960s and later becoming popular in the 1980s and 1990s, software packages have become more specialized for the specific type of qualitative research method (Banner & Albarran, 2009; McLafferty & Farley, 2006). Some CAQDAS only use text, whereas others can import images, audio and video data, newspaper clippings, and books. The software systems also have the capability to define and organize coding and information, and analyze relationships and themes in the data. Some of the available software packages include Ethnograph, NUD*IST, Atlas Ti, NVivo, and Qualrus (Banner & Albarran, 2009; Evers, 2011).

Advantages

The use of CAQDAS has many advantages for nurse researchers. By using these software programs, researchers save time performing manual activities and clerical tasks such as transcribing, importing data, and manually coding. The software also facilitates an environmentally friendly approach by limiting waste of paper, pens, storage space, and filing cabinets (St. John & Johnson, 2000). In addition, writing the research report becomes straightforward because text can be copied into the final document or manuscript.

CAQDAS provides efficiency and flexibility in managing sizable transcripts and allows for ease in coding changes, adding notes, and merging, as well as deleting and moving, data. Researchers can store information and link to graphics, audio, or websites. CAQDAS also facilitates use by multiple researchers and research assistants in sharing data and ideas. The capability of multiple researchers to examine the same data set assists with tracking changes and systematic analysis. In this manner, scientific rigor is enhanced and an audit trail is created (Banner & Albarran, 2009).

One of the major advantages of CAQDAS is that the use of qualitative analysis software programs enables the researcher to focus on analytical techniques and intellectual thought in identifying meaning and emerging themes, rather than the manual tasks. With the use of multiple codes, the researcher is able to study relationships and gain depth in analysis (St. John & Johnson, 2000).

Limitations

Although CAQDAS offers many advantages, several limitations also exist for researchers undertaking analysis with software packages. A researcher should be aware of potential obstacles before committing to this data analysis approach.

Many CAQDAS packages are now available; however, each system is unique and may not fit with the purpose of the qualitative study. For researchers who are novice with CAQDAS, extensive time may be required to learn how to use and become familiar with the software package (McLafferty & Farley, 2006). For this reason, numerous tutorials are available online as resources. Some researchers also may have difficulty with the limitations of only visualizing small sections on the screen, which creates challenges in seeing the whole of the data. Novice users also may become frustrated with the ongoing scrolling back and forth and return to the more comfortable approach of manually coding text with different colored pens.

Controversial Issues

Disengagement from the data is a potential concern in using software packages (Banner & Alberran, 2009; St. John & Johnson, 2000). Researchers may focus on the process of the technique instead of the meaning of the data. Transcribing interviews gives the researcher the opportunity to become immersed in the richness of the data, whereas using the CAQDAS can become cumbersome with the number of codes and categorizations created by the software.

Limited research explores the study outcomes after performing computer-assisted qualitative data analysis compared to manual qualitative data analysis. Additional research is needed to explore researchers' perceptions of software packages, potential differences in study results, and approaches to minimizing researcher disengagement from the data.

Application

In this issue of *Oncology Nursing Forum*, Clayton, Reblin, Carlisle, and Ellington (2014) used the Roter Interaction Analysis System (RIAS) to identify and describe communication behaviors used by hospice nurses when eliciting and addressing patient and caregiver concerns. The RIAS is a coding system that does not transcribe recordings, but performs coding by listening and applying codes for each utterance or thought expressed by a single person, both negative and positive. The RIAS illustrates the efficient manner in which large amounts of data can be analyzed without the time-consuming efforts of transcribing and manually coding data.

Recommendations

CAQDAS is an effective, practical technique for qualitative data analysis. Recommendations to consider prior to the use of a CAQDAS include:

- Examining qualitative data analysis software packages to ensure a fit between the research question, methods, and design
- Allocating sufficient time to learn and become familiar with the use of the selected software package
- Avoiding preoccupation with coding and other management procedures of the software that can result in distractions from the data
- Maintaining perspective and vision of the essence of qualitative research.

New technologies will continue to emerge and evolve. Comprehension of the CAQDAS as a facilitator and data management system, and not an alternative for data immersion and analysis, will serve the qualitative researcher well.

Diane G. Cope, PhD, ARNP, BC, AOCNP®, is an oncology nurse practitioner at Florida Cancer Specialists and Research Institute in Fort Myers. No financial relationships to disclose. Cope can be reached at dgcope@comcast.net, with copy to editor at ONFEditor@ons.org.

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Methods & Meanings

Methods & Meanings comments and provides background on the methodology used in one of the studies reported in the that month's issue of *Oncology Nursing Forum*. For more information, contact Associate Editor Diane G. Cope, PhD, ARNP, BC, AOCNP®, at dgcope@comcast.net.