

## Secondary Data Analysis: Research Method for the Clinical Nurse Specialist

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### **Abstract:**

This article presents a description of secondary data analysis and suggests that this type of research methodology may be helpful in facilitating research by the clinical nurse specialist (CNS). The article discusses the advantages and disadvantages of the use of this method specifically in relation to the CNS and offers suggestions for sources of data.

### **Key words:**

secondary data analysis, research role

### **Article:**

The role of clinical nurse specialist (CNS) promises the nurse a wide field of diversity, excitement and challenge; nevertheless, as those who have tried to negotiate the many different paths of the role find out, there are thorns and snares along the way. Many consider the thorniest of the components of the CNS role to be that of research. This article offers the suggestion of using secondary data analysis for "dethorning" this role and for making the performance of research less complex, less expensive, quicker, and more meaningful for the CNS and his or her colleagues.

### *The CNS Research Role*

Although research is accepted as one of the five roles of the CNS, Robichaud and Hamric (1986) found that only 2.2% of the time of the CNSs whom they evaluated was spent doing research. These findings probably come as no surprise to CNSs who repeatedly examine their monthly time logs and who promise themselves each time that next month they will surely make more time for research activities, But what can be done to help the problem?

Topham (1987) points out that although CNSs are exposed to research methodologies in a master's program, the doctoral degree is more consistent with the knowledge base of a researcher. Cronenwett (1986) has even recommended that the master's prepared CNS should not be used as the primary investigator in the conduct of research but should be used only for the facilitation and dissemination of research through integration of the research into practice. Yet Walker (1986) in a survey of 81 institutions found that administrators felt that 15% of the CNS's time should be spent in research activities. In concurrence, while Tarsitano, Brophy, and Snyder (1986) found agreement between administrators and CNSs concerning most of the CNS roles, they found that administrators place a higher value on research than do practicing CNSs.

Thus, a conflict appears to exist which may relate to the lack of CNS research methods education or to a lack of the CNS's time or interest, Those CNSs who learn to use secondary data analysis will remove some of the barriers to research that they believe may exist and can become more comfortable and competent in the research role.

### *Definition of Secondary Data Analysis*

Secondary data analysis is research involving the analysis of data previously gathered for other research work. Such data may have been gathered earlier and then reexamined by the same researcher. This type of secondary data analysis is seen frequently in social science and educational studies. The method may also be used to analyze data gathered by other researchers. Polit and Hungler (1983) use this criterion in their definition of the method when they state that the technique is "a form of research in which the data collected by one researcher are reanalyzed by another investigator, usually to test new research hypotheses."

Secondary data analysis enables beginning researchers to utilize the data-collecting skill of more experienced and sophisticated researchers, both in nursing and in other disciplines, giving the CNSs access to much larger amounts of data than they could easily or economically acquire on their own. Yet, in a review of nursing literature, McArt and McDougal (1985) found no attention to the method of secondary data analysis in nursing journals. They further found a discussion of the research method in only 2 of the 11 standard nursing research tests that they reviewed. These reviewers felt that the lack of use of this method in nursing research may have been caused by the inclination by nurse researchers to conduct original research, to limited access to clinical data bases, or to the lack of attention in nursing literature given to secondary analysis as a valid mode of inquiry.

Clinical nurse specialists, because of their involvement in and easy access to copious clinical data in the medical records department, the quality assurance program, and other in-house data collections, are in a privileged position to take advantage of the secondary data analysis method. They have only to get over the mindset that many new graduates from master's degree programs in nursing seem to have, that "real" research must involve all the steps in each chapter of the nursing research text and thus "real" research must involve original data collection. This is incorrect, and CNSs who are willing to try secondary data analysis research will find that the advantages of the method outweigh its disadvantages, as long as the latter are taken into account.

#### *Advantages of Using Secondary Data Analysis*

Research is facilitated using secondary data analysis. Often, the CNS is bothered by an obviously researchable problem, but time constraints and the pressures of other role components make the thought of data collection an insurmountable hurdle which blocks the research from ever commencing. Frequently, however, much data have already been collected in other departments of the hospital or by the CNS, and these data are readily available to be investigated after the formation of the appropriate research question or hypothesis. The sharing of data bases between CNSs, or between the CNS and faculty members in nearby colleges of nursing, also serves to bond collegiality and helps the CNS to take advantage of the academic research setting.

Secondary data analysis is good for knowledge generation. Once initial investigation of the data has led to various conclusions, secondary data analysis may be used to reexamine and rethink the data. This concept is useful not only when reexamination is done by the same researcher but also when further investigation of an earlier researcher's work is performed. Thus, the method may be a way to fill the gap between the development of propositions and the development of middle range theories.

The method is also economical. Data collection is frequently the most expensive part of research; when secondary data analysis is used, the primary data have already been collected and are often in a usable form, ready for analysis. This yields economy not only in terms of money but also in terms of time and effort. Confidentiality is usually not a problem with secondary data analysis. Much of the data available on computer tapes generated by quality assurance and similar programs have already been coded or compiled such that individual subjects cannot be identified and confidentiality is assured. This speeds acceptance of the research project through hospital ethics committees.

The method simplifies the logistics of the research. It requires fewer research assistants, because there are no data collection, fewer forms, fewer appointments, and no boxes of survey sheets, measuring devices, and research tools. Secondary data analysis also enables CNSs to work with larger data bases than would be available if they were the original data collectors. Not only are in-house data available, but CNS researchers

may use even larger data bases such as those available through various state and national agencies. This enables them to do comparison studies of client population with state and national populations and widens the scope of their research much beyond the usual convenience sample of less than 100.

Although secondary data analysis enables CNSs to look at larger data bases, it also enables them to examine a more restricted population. For example, using data from medical records, information on all diabetic women who had left total hip replacements performed in Operating Room 6 on Mondays for the last 5 years could be available. If the medical records data were already computerized, it would be relatively easy to locate the above sample. The thought of collecting such data from scratch would surely halt most researchers.

Finally, because the last step in any research project should always be the dissemination of the knowledge gained from the project, secondary data analysis aids in that dissemination. Because of the larger sample size used, the research may be even more impressive to the hospital administration and others and, therefore, may elicit more attention. If the analysis is performed on data which were collected during an earlier project that was surrounded by publicity (a large, well- funded survey, for example), some of the aura generated by the publicity may lend impact to the study of the data performed by the CNS, making publication easier.

### *Disadvantages of Using Secondary Data Analysis*

There are indeed disadvantages to using the secondary data analysis research method, and they must be carefully taken into account. To take full advantage of secondary data analysis, the data must be on computer file. Thus, the researcher must have the appropriate computer technology available and be able to use it or have a close working relationship with someone who can use it. The researcher using this method is also dependent on the reliability of the original data collection and data entry. These methods must be closely examined before analysis of the data is attempted, inasmuch as further work, even using exemplary research methods, could be meaningless.

It is critically important that the researcher correctly understands the names, measurements, and definitions of all the originally measured variables. Numbers on data tapes can be meaningless or misleading if there are no code books or no clear description of exactly what the data represent. When using data collected by an earlier researcher, it is thus very helpful to have that researcher available for consultation and clarification. The time frame of the secondary study is restricted to that of the original data. An ongoing, longitudinal study can, of course, not be performed with data that were collected at some specified time in the past. The age of the original data is also an important consideration, inasmuch as research performed upon outdated data may not be of significance unless viewed in a historic perspective.

Secondary data analysis can be a "lonely" type of research to perform, and the CNS researcher who feels the need for peer interaction and feedback must initiate such contact if working alone. Informal dialogue does not develop as naturally as it would when several researchers and research assistants are working together on data collection.

Perhaps the greatest disadvantage of secondary data analysis is that the variables that the CNS must use are restricted to those on which the original data were collected. It is most important that these variables truly operationalize the constructs of the theoretical model in the secondary study. If a different conceptual framework underlies the selection of variables in the original study, operationalization of the constructs in the secondary study may be difficult and there may be the temptation to "force" their operationalization (Table 1).

### *Sources of Data Bases*

In addition to in-house sources of data such as quality assurance and medical records surveys mentioned earlier in this article, CNSs may find data available for secondary data analysis in their own past studies. Data bases may also be shared by nursing and other faculty at academic institutions associated with the hospital or may be shared between CNSs in neighboring hospitals. State agencies, especially departments of health and/or environmental control, may be contacted, as well as private local, state, and national health groups.

Additional sources are numerous. McArt and McDougal (1985) point out that the federal government annually conducts more than 200 surveys and censuses. In addition, the authors list 11 national large scale data bases which are accessible through national data libraries. The Inter-University Consortium for Political and Social Research publishes copious listings of social science research data bases and includes brief descriptions of the research. The data bases are available directly to computer files via modem link or through purchase of actual tapes. These data may be obtainable through a university that subscribes to this service. The National League for Nursing has recently published a most helpful book, *Information Sources for Nursing, a Guide* (Shockley, 1988), which provides good information on various sources for references for nursing data as well as computer data management. In the back of the book are listed bibliographies of nursing and other resources including statistical data bases. Helpful addresses and telephone numbers are included.

**Table 1**  
**Advantages and Disadvantages of Secondary Data Analysis**

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<p>Advantages</p> <ul style="list-style-type: none"> <li>Facilitates research</li> <li>Speeds data collection</li> <li>Bonds colleagues through data sharing</li> <li>Generates knowledge</li> <li>Economical</li> <li>Confidential</li> <li>Simplifies logistics of research</li> <li>Enables access to large data bases</li> <li>Enables close examination of subunits</li> <li>Aids in dissemination of nursing knowledge</li> </ul>	<p>Disadvantages</p> <ul style="list-style-type: none"> <li>Computer access may be necessary</li> <li>Research is dependent on reliability of original data collection and entry</li> <li>Original code books or researchers may not be available for data clarification</li> <li>Secondary study restricted to time frame of original data</li> <li>Less frequent informal peer interaction during study</li> <li>Variables dependent on original study's variables</li> </ul>
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Again, It must be emphasized that data bases must not be blindly selected. Careful consideration must first be given to the appropriateness of the originally measured variables to the secondary research problem and model. A clear description of the original research methods must also be available (Table 2).

***Example of Using Secondary Data Analysis to Answer a Research Question***

The author used this technique to examine the relationship between the intake of selected nutritional variables to wellness in older South Carolinians (Herron, 1986). Two large state surveys had been conducted in order to gather health and nutrition information. These surveys were supported by the South Carolina High Blood Pressure Control Project through a grant from the National Heart, Lung and Blood Pressure Institute (National Institutes of Health); the South Carolina Diabetes Control Project through a grant from the Centers for Disease Control; Ross Laboratories; and the Pet Dairy Company. The surveys were conducted by the South Carolina Department of Health and Environmental Control and the College of Public Health at the University of South Carolina. The data collected had been stored on open access tapes at the University, but little work had been done with the information beyond descriptive statistics.

The sample selected for the first survey, The Carolina Health Survey, consisted of 5200 people and was statistically representative of the South Carolina population as measured by the 1980 census. The Nutrition Survey used a carefully constructed subset of the original sample and was also representative of the entire South Carolina population. Coding enabled the researcher to concatenate the two surveys so that nutrition and health information could be examined on the same subjects.

The secondary study attempted to assess the impact of calcium, cholesterol, total fat, and dietary fiber Intake of adults ages 65 years and older upon their self-assessed health status. Data on the independent variables were gathered during 24-hour diet recalls and 652 nutritional variables were determined and entered on the Nutrition Survey tape for each subject. Self-assessed health was measured by the answer to one of the questions on the Carolina Health Survey

**Table 2**  
**Sources of Data Bases**

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CNS' earlier research
Colleagues' research
Nursing faculty at affiliated universities
Quality assurance records, in-house and other hospitals
Medical records, in-house and other hospitals
Patient utilization review records, in-house and other hospitals
Departments of Health and/or Environmental Control
Other local, state, and federal agencies
Private local, state, and national health groups
Local, state, and federal surveys and censuses
Inter-University Consortium for Political and Social Research

tape, which contained 137 variables. Multivariate discriminate analysis was used to perform the statistical analysis, backed up by multivariate regressions. No significant relationships were found between the dependent and the independent variables, notwithstanding preliminary indications to the contrary in the literature review. Reasons for these findings were thought to be the vast number of variables involved in wellness and the lack of longitudinal data.

The lack of empirical findings to answer the research question of the study, although disappointing, was not without value. As a result of the initial secondary data analysis study, several others studies were conducted (Bower, 1988; Ryan and Bates, in press). Bower investigated the relationship of socioeconomic status and living arrangements with nutritional status in older people in South Carolina and found that, although the literature supports a positive effect between living arrangements and nutritional status, this effect was caused almost entirely by socioeconomic status. Ryan and Bates found that although older South Carolinians who were counseled by dieticians had a greater amount of nutritional knowledge than those receiving nutritional knowledge from other sources, that knowledge had no significant relationship with nutritional intake or self-perceived health.

All three of the studies using the secondary analysis of the data on the South Carolina Health Survey and Nutrition Survey had significant implications for further nursing research. Additional investigations are being conducted.

### *Summary*

Although secondary data analysis has been underutilized in nursing research, it offers many advantages that are specific to the CNS. Once CNSs have become knowledgeable about the advantages and disadvantages of this method and familiar with sources of data bases which are available, they will find that using secondary data analysis does much to cut through the brambles along the research path. Although secondary data analysis may not promise a completely smooth path, it does much to clear the way for the CNS research role.

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