

Nursing Effectiveness Research Using Existing Databases

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This paper includes a description of what databases currently exist and provides examples showing the use of those databases for documenting nursing effectiveness. An apparent finding from a review of the literature, is the absence of nursing research descriptions of the use of databases for effectiveness research. This paper then, describes the possibilities instead of the actualities. Unfortunately, data on the current state of practice are often unavailable; however, it may be possible to use data gathered for other purposes. Finally, this paper highlights the potential role of the clinical practice guidelines developed by expert panels facilitated by the Agency for Health Care Policy and Research for improving nursing research effectiveness through interpolation with current databases and recommends further research.

Databases For Outcomes Research

In a recent paper summarizing health services research in nursing, Ingersoll et al defined only 113 studies published between 1980 and 1989 (Ingersoll, et al, 1990). The article summed the areas of research in health services and outcomes research, and identified the gaps in research. The gaps included comprehensive cost-benefit and cost-effectiveness analyses, effects of technology on patient care, evaluations of information systems, evaluations of innovative care delivery approaches, and studies of ethical issues related to the use of scarce resources. The article stresses the need for nurses to access databases for health services research.

Databases that may be used for synthesis of research results, combined analysis, or meta-analysis are available but have infrequently been described in annual reviews of nursing research. Databases that may be used for health policy components of nursing effectiveness research include:

Medicare and private sector claims data, collected by Medicare peer review organizations, the National Disease and Therapeutic Index, and the National Ambulatory Medical Care Survey.

A number of other data bases that have age specific data are also proposed for consideration, including the following:

1. The SEER (Surveillance, Epidemiology, and End Results) program (in the United States) and its international equivalents
2. Hospital and physician use and expenditure data from the Health Care Financing Administration, possibly linked with other data sets
3. The Global Epidemiological Surveillance Program of WHO, which may have useful information for cause-of-death validation studies based on consistency checks, time and age trend checks

- 4 Existing data bases from international studies such as MONICA, which have the advantage of highly standardized methods and good quality control. It is believed that researchers could have access to these data
- 5 The Intersalt Study (sodium and blood pressure); however, the numbers in the data base are quite small for the elderly population
- 6 ARIC (Atherosclerosis Risk Communities)
- 7 The CARDIA (Coronary Artery Risk Factors Development in Young Adults) Study, which is limited by small numbers
- 8 Other international community-registries, although they often have a low age limit. (Vital and Health Statistics (Proceedings of 1988 International Symposium on Data on Aging) Series 5: Comparative International Vital and Health Statistics Report, No. 6.

A new database for nursing effectiveness research is an existing network. It is published by the Library of Medicine and is called "E.T. Net." Susan Sparks has been working on the development of this (NLM, Fact Sheet, "E.T. Net", March 1991). Many nurses may not even be familiar with this, or have even thought of looking at a currently available network already available through the National Library of Medicine. The only costs associated with its use are for the linkages that have to be purchased for the system. Consider the use of that network in establishing a system to monitor and exchange information about outcomes research in this country; an "effectiveness network". This network should be explored as a prime opportunity to make accessible the clinical practice guidelines. Feedback could be obtained from nursing professionals or professional associations about the use of that database in their current practices. The practitioners involved in practice, the researchers involved in

clinical trials, and the academicians involved in theoretical research outcomes, could participate in that database and provide a rich resource for effectiveness research.

Databases that may be used in clinics practice for monitoring complex observations over time, measuring contributions of nursing practice to outcomes, and/or manipulating of data that require multiple transformations, are database management systems that have been described by McCormick on numerous occasions over the past 6 years (McCormick, 1985, 1988a, 1988b; Saba and McCormick, 1986). Currently, natural language query systems have been developed for use with database management systems now, and programming is not necessary to use these systems to monitor outcomes of care.

Much has been published about the database of the future in which the contents are developed using the Nursing Minimum Data Set (Werley and Lang, 1988). Through this database, it is anticipated that nursing research outcomes could be linked with various nursing databases for the purpose of possibly performing meta-analysis to test specific nursing theories related to nursing's clinical outcomes.

Examples of using databases for effectiveness research come from the Inpatient Clinical Geriatric Continence Project supported by the National Institute on Aging and the Health Care Financing Administration. The database was described in a paper by McCormick and McQueen in 1986. Examples included the use of nursing documentation to support the clinical trial of changing patient's wetness to dryness status in nursing homes. In addition, the costs of care were also collected. A separate publication describes the potential cost savings when nursing monitors their outcomes and documents the cost impact (McCormick et al, 1990). The uniqueness of this type of database format is that:

- 1) it structures the input of nursing documentation,
- 2) it cues the nursing personnel about what aspect of care to documentation that are clinically useful and relevant to outcomes,
- 3) it provides graphics and feedback about the care being delivered in a timely manner so that the plan can be changed, and/or interventions can be changed,
- 4) it monitors both positive, negative and the absence of trends, so that patients care can be prioritized,
- 5) it produces tables of results that can be used to summarize treatment effects,
- 6) it provides statistical analysis so that trends can be compared and significance applied to findings as they happen,
- 7) it includes word processing capabilities so that results can be summed and sent for publication so that others can utilize the research outcomes in dissemination.

Clinical Practice Guidelines

How will clinical practice guidelines facilitate nursing effectiveness research utilizing existing databases? The clinical practice guidelines are “systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical conditions.” (Program Note, August, 1990) The guidelines, developed by panels of experts composed of multidisciplinary groups, synthesize the existing research and indicate what the appropriate obtainable outcomes have been. In addition, they describe the diagnosis and treatment options that exist for clinicians. The AHCPR facilitated guidelines will also have algorithms/flowcharts available that map the appropriate course of action for a health professional to take. Thus, the guidelines provide

the potential uniform content for database systems that can be used to document nursing practice, report the outcomes achieved, and monitor the use of diagnostic and treatment options that effect positive outcomes most frequently. While the guidelines provide this structure, they also remain flexible enough to include diagnostic and treatment options may be used.

Through its grant mechanisms, the AHCPR welcomes applications from nurse researchers who are interested in incorporating clinical practice guidelines into current databases to determine their usefulness for the nursing profession.

Future Research Needs

What are potential directions for future research? Some research areas of the future are those in which nursing outcomes can be generated from computer databases that are structured around repetitive tasks, interpolations, and integration as follows:

Repetitive tasks:

- 1) Identify more costly tasks that can be automated
- 2) Evaluate whether automation of new repetitive tasks reduces times, costs, and personnel needs;

Interpolation:

- 1) The use of patient care documentation to determine patient care needs, outcomes, and costs,
- 2) The use of patient care documentation to automate quality assurance monitoring
- 3) The use of patient care documentation to define further research needs
- 4) The use of patient care documentation to define continuing education needs
- 5) The use of previously collected databases for secondary analysis of nursing care, patient care needs, outcomes, and costs

Integration:

- 1) The use of computers in practice for decision-support
- 2) The use of decision-support to influence patient outcomes
- 3) The use of decision-support to influence costs
- 4) The use of decision-support to influence delivery of care services
- 5) The use of bibliographic retrieval in determine appropriate assessments and actions related to patient care.

In summary, the outcomes research recommendations should be to encourage the use of clinical guidelines in current databases, to compare the content in clinical practice guidelines to content currently in existing databases, to design new database systems that are most useful to nursing for nursing information and patient outcomes achieved by nursing, to support nursing research into different types of claims data in order to define what is useful to nursing and what is not, to support the use of further meta-analysis reviews of current nursing research outcomes literature, to further define the Nursing Minimum Data Set and test its usefulness in defining nursing effectiveness, and to support more research on clinical conditions where nursing makes the difference in outcomes of care.

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