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# An Inventory of Nursing Education Research\*

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## Abstract

**Purpose:** To describe nursing education research literature in terms of quality, content areas under investigation, geographic location of the research, research designs utilized, sample sizes, instruments used to collect data, and funding sources.

**Design and Methods:** Quantitative and qualitative research literature published between January 1991 and December 2000 were identified and classified using an author-generated Relevance Tool.

**Findings:** 1286 articles were accepted and entered into the inventory, and an additional 22 were retained as references as they were either literature reviews or meta-analyses. Not surprisingly, 90% of nursing education research was generated in North America and Europe, the industrialised parts of the world. Of the total number of articles accepted into the inventory, 61% were quantitative research based. The bulk of the research was conducted within the confines of a course or within a program, with more than half based in educational settings. Sample sizes of the research conducted were diverse, with a bare majority using a sample between 50 and 99 participants. More than half of the studies used questionnaires to obtain data. Surprising, 80% of the research represented in these articles was not funded. The number of publications of nursing education research generated yearly stabilised at approximately 120 per year.

**Conclusion:** Research programs on teaching and learning environments and practice in nursing education need to be developed. Lobbying is needed to increase funding for this type of research at national and international levels.

**KEYWORDS:** nursing, education, research, evidenced-based teaching

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Nursing education informs and directs nursing by developing and preparing students for practice (Stevens, 1999). It is a source of knowledge and research utilization that nurses can use to support their professional practice (Estabrooks, 1998; 1999). Increasingly, nurses are required to implement evidence-based nursing to enhance the effectiveness of their practice, thus improving patient outcomes (Estabrooks, 1998; Grossman & Bautista, 2002; Ramber, 1999). Nurse educators need to prepare practitioners who understand the process of reflection and incorporate research into their practice (Alberta Association of Registered Nurses (AARN), 1997; Walker & Redman, 1999). Practitioners are expected to employ evidence-based practice (EPB) just as nurse educators are required to employ evidence-based teaching (EBT). Stevens describes this development as the conscientious, explicit, and judicious use of current best evidence to make decisions about the education of professional nurses.

Burgeoning research in the area of nursing education is characteristic of the present, making it difficult for nurse educators to keep abreast of current research output. Annual publications of nursing education studies increased from 12 per year between 1976-1982, to 393 per year between 1993-1997 (Stevens, 1999). Summaries such as systematic reviews identify not only the body of existing knowledge but also the gaps (Stevens). More specifically, systematic reviews of nursing education literature inform nurse educators about the state of existing knowledge.

## **PURPOSE**

The researchers conducted an inventory of nursing education research literature. This is part one of a two-part paper and serves as a starting point for beginning researchers by identifying potential areas of research, tracking research trends, promoting research-based practices, and assisting in theory development and testing. The researchers used the results of their inventory to group nursing education research articles into domains. Twenty or more articles were required to create a domain. The inventory also assisted the researchers to form future research questions, identify areas requiring replication, and determine needs for meta-analyses.

## **LITERATURE REVIEW**

Educators continuously question their practices and develop educational technologies and curricula to meet the demands of an ever-changing student population and a fluctuating health care context (Kessenich, Guyatt & di Censo,

1997). Boyer (1990) in his pivotal work, *Scholarship Reconsidered: Priorities for the professoriate*, identified the scholarships of discovery, integration, practice, teaching, and learning. He gave credit and value to teaching and learning and in so doing gave educational research, regardless of the discipline, credibility. Tanner and Lindeman (1987), in one of the first research studies which examined research in nursing education, noted in their review of the literature that many one-of-a kind studies could not be generalized and were 'more problem-driven than theory-driven' articles, and that many studies were inadequate in terms of research design. They concluded that nursing education research should have scientific merit, be focused and organized using frameworks, be focused on the clinical nature of nursing, and be ranked equally as important as nursing practice research.

A trend in health care exists towards systematic reviews of the literature and EBP. French (2002) revealed the results of a frequency analysis of the keywords 'evidence-based medicine,' totalling 5612 papers. One of the most notable developments in systematic reviews has been the Cochrane Collaboration stemming from the work of Archibald Cochrane, a medical epidemiologist who advocated randomised controlled trials (Levin, 2001). Currently, the Cochrane Collaboration has 15 centres in 13 countries each with a designated role. Essentially, the centres identify a need, form a review group, develop a protocol and publish it in the Cochrane Library. The centres demonstrate a great deal of structure, guidance, and use of peer reviews (Levin). At present, few articles pertaining to nursing education research are located in this collection.

Nursing literature refers to the need for EBP, which promotes the ideal that all nurses' actions be based on objective data grounded in science (Grossman & Bautista, 2002). However, Estabrooks (1998) claims EBP is a movement in which many proponents have not questioned its professed value (Perkins, Simnett, Wright, 1999). The movement has its origins in evidence-based medicine (EBM), as typified by Cochrane (Estabrooks; Closs & Cheater, 1999) as is thought to constitute a new paradigm for medical practice (Evidence-Based Medicine Working Group, 1992). After the emergence of EBM, authors have preferred to use such terms as EBP or evidence-based health care (French, 2002). Kitson (2002) describes EBP as being at odds with the other major political and policy influences that are at work as modernizing forces in many healthcare systems, namely patient-centred healthcare initiatives. EBP means a clinician looks at the evidence from valid and reliable research and does not rely on intuition or simply past experiences (Evidence-Based Medicine Working Group). The standard definition of EBM is as follows: "evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the

care of individual patients. The practice of evidence-based medicine means integrating individual clinical evidence from systematic research” (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996, p.71).

One of the key words in this definition is decisions. Given the implicit hierarchy of decision-making (Kitson, 2002), clinicians need to be informed. However, each of these decisions leads to a narrowing of focus or judgment, which affects the final results, and the current techniques and practical applications of EBM effectively limit patient choices (Rogers, 2002). From this source, evidence cannot easily be generalized (Upton, 1999) because the clinical setting is complex and practice is embedded in this complexity. Deep conceptual conflicts seem to be inherent in competing concepts of evidence for it fails to conceptualize or explain the broader domain of everyday practice. Evidence needs to be understood from a plurality of disciplines and applied at a point of time within a cultural context (Kitson; McCormack et al., 2002). An additional concern is that the majority of what is written about evidence-based practice is based on subjective, albeit expert or informed, opinion (French, 2002).

Evidence-based teaching (EBT) as defined by Stevens (1999) is, “the conscientious, explicit and judicious use of current best evidence in making decisions about the education of professional nurses...or more simply put, the use of knowledge generated through research to guide nursing education practice” (p.3). To have EBT, a large body of nursing education research is required, which is then systematically analyzed to yield guidelines, models, or analogues to direct decision making and actions. The final step is implementation and evaluation of the EBT decision (Stevens).

The purpose of this research was to describe nursing education literature in terms of its research quality, content areas under investigation, geographic locations of the research, research designs used, sample sizes, tools used to collect data, and funding sources. Ethical approval for the study was not sought because human participants were not involved. The research had two phases: an inventory of qualitative and quantitative nursing education research literature published between January 1991 and December 2000; and secondly, systematic reviews of specific domains or topics that emerged from the assembled inventory. The latter will not be addressed in this manuscript. The central research question guiding the research was: “To promote evidence-based teaching, what are the sound methodological quantitative and qualitative research articles published in the nursing education literature?” Further questions guiding the research were:

1. What groupings of research and content areas (domains) emerged?
2. Where is the research being completed?

3. What methodologies are being used?
4. What are the sample sizes?
5. Which instruments are used to obtain the research data?
6. Is the research funded?

The following inclusion criteria were used. The journal article must:

1. Be a research study pertaining to nursing education at the Associate Degree, Baccalaureate and Graduate levels or to patient education, and carried out by nurses.
2. Refer to some aspect of the teaching or learning process with either teacher or learner as a focus of the research.
3. Pertain to any educational situation involving nurses or nursing students as either teacher or learner, including teaching carried out in educational institutions, in-service training, continuing professional education, and patient education.
4. Be written in English.
5. Be published between January, 1991, and December, 2000, or publication be pending.
6. Exclude duplicate publications.

The databases searched included CINAHL, Medline, ERIC, Embase, HealthStar, Dissertation Abstracts and Sociofile. Abstracts and descriptor information contained in the retrieval database records were used to determine if the inclusion criteria were met. If the abstract and descriptor information for a particular record were not sufficient to determine whether the inclusion criteria were met, the complete article was obtained.

## **INSTRUMENT**

After the abstracts/articles were assembled, they were screened using a researcher generated Inventory Checklist, an instrument developed to ensure articles met the inclusion criteria (Estabrooks et al., 2000). The researchers pretested the instrument on four articles published before 1991, then revised it for comprehensiveness and ease of use. After the Inventory Checklist was developed, two researchers vetted each article to determine if it met the inclusion criteria, and therefore would be included in the next phase of the study. If the two researchers disagreed on their assessments, a third researcher rated the article. This rating was compared to the other two ratings, and the rating closest to the third rating was used.

## DATA ANALYSIS

The data were organized in PROCITE, a data sorting computer program allowing the import of the abstract and key words from the original database. Research assistants entered the results from the Inventory into PROCITE, using keywords to describe the content area, geographic locations, methodologies used, sample sizes, tools used to obtain data, and presence or absence of funding.

## FINDINGS

A total of 1487 articles were reviewed. Of these, 1286 were accepted and entered into the inventory, 179 were rejected, and 22 were retained as references as they were either literature reviews or meta-analyses.

With respect to the question, what groupings or research and content areas (domains) emerge, a domain was defined as a topic area consisting of 20 or more articles. As shown in the table, continuing education, patient education, and preceptorship were the most prominent topics researched in the area of nursing education.

The total number of articles that could be grouped into domains was 895; the remaining 391 articles did not contain sufficient numbers in an area to form a domain. Other domains of interest emerging for academics conducting nursing research education were: teaching and learning, skill acquisition, computers and technology, clinical teaching, graduate education, curriculum, and critical thinking. Additionally, research related to nursing specialties such as gerontology, mental health, community health nursing, and HIV/AIDS also became apparent.

In relation to the question, where is the research being completed, the majority of the research originated in North America, accounting for 58% of all the articles. However, Americans were responsible for generating 83% of the research within North America, while Canadians generated 17%. Europeans generated 31.6% of the research, with the United Kingdom being the major contributor. The reason the United Kingdom had so many research articles was related to the reporting of Project 2000, a project that has completely reformed nursing education in that country. Australian nurses contributed 6.7% of the research articles, Asians 2.8%, Africans 0.7%, and South American nurses 0.2%.

Table  
*Domains within Nursing Education Literature, 1991-2000*

<b><i>Domain</i></b>	<b><i>Number of Articles</i></b>
Continuing Education	128
Patient Education	119
Preceptorship	74
Community Health Nursing	61
Teaching and Learning	56
Faculty	55
Skills Acquisition	46
Computers & Technology	43
Graduate Education	42
Clinical Teaching	39
Curriculum	38
Gerontology	38
HIV/AIDS	36
Mental Health	36
Critical Thinking	30
Recruitment & Retention	30
Stress & Anxiety	24

With respect to the question, what methodologies are being used, the research designs were categorized as quantitative, qualitative, or mixed (quantitative and qualitative). The majority of the research conducted was quantitative, representing 61% of the total articles included in the inventory. Qualitative research designs represented a smaller proportion, amounting to 26%, of the inventory articles. The remaining 13% were mixed.

The question, what are the sample sizes, categorized sample sizes as N<10, 11-24, 25-49, 50-99, 100-199 and N>200. Five percent of the inventory articles reported samples smaller than 10, while 15% used samples of 10 to 24; 18% used samples of 25 to 49; 22% used samples of 50 to 99; 20% used samples of 100 to 199; and 19% of all inventory articles utilized samples with 200 or more participants.

Another question referred to the instruments used to obtain research data. Of the 1286 articles entered into the inventory, over half used questionnaires to obtain data. Of these, the majority were generated by the authors.

The last question asked if the research was funded. Eighty per cent of the research as represented in the 1286 articles was not funded.

An additional area that was analyzed was the scope of the research. The scope, which referred to the breadth of research, was categorized as course, program, multiprogram, national, or international. A course referred to research that drew its sample only from one course; similarly a program referred to research that drew its sample from all sectors of the program or faculty. Multiprogram referred to research that accessed two or more programs. National research accessed programs across a country and international research accessed programs in two or more countries. Thirty three per cent of the research was conducted within the confines of a course, 38% within the boundaries of a program, and 19% was conducted across multiple programs. Only 8% of research was national in scope and 2% was international in scope.

Another aspect examined in the manuscripts was the setting in which the research occurred. The setting categories were: educational, practice, or other. Fifty three percent of the research was conducted within educational settings and 39% was conducted in practice settings. Eight percent of the articles did not indicate the setting. A final item examined was the number of articles published in each year. From 1991 to 1995, 100 to 120 articles were published per year. From 1996 to 1998, the number of published articles increased to over 140 per year, but declined to 120 in each of the remaining two years of data collection.

The outcome of this research project formed the basis for systematic reviews of selected domains within nursing education literature. Based on the research teams' interests, four domains from the inventory were selected for a systematic review: preceptorship, HIV/AIDS, critical thinking, and graduate education. Ultimately these reviews will have implications for designing future research projects, working with and advising graduate students, as well as determining the research agenda, because they will clarify conceptual issues and identify gaps and strengths in these areas of research.

## DISCUSSION

Not surprisingly the bulk of nursing education research was generated within the industrialized parts of the world as North America and Europe represented 90% of the research. Programs that accept exchange of international students, international teaching initiatives, and action research in the area of nursing education may help to generate more research in other regions of the world.

However, the lack of monetary resources for research in nursing education will continue to hamper productivity in all regions.

With respect to the number of articles published yearly, it appears that there has been a levelling of published research being generated within nursing education as publications have stabilised at about 120 per year. According to Stevens (1999), up until 1982 nursing research focused on educational issues. This focus changed in the mid 1980s since researchers began to focus on clinical issues. In 1994, Stevens assessed 115 dissertations from a pool of 2227 and found 19% focused on educational topics, 47% on clinical topics, and 9% on the health care system. She claimed that the "shift from educational research toward clinical research has been dramatic and sustained" (p. 8). This trend will continue in the United States because organizations like the National Institute for Nursing Research formed in 1986 have identified clinical research as a priority (Stevens).

The research team also noted many articles that could not be formed into a domain and very few authors with multiple publications. Members questioned if this observation reflected an inability to obtain funding for this type of research compared to more clinical-oriented research, if administrative support had not been given for this type of research, or if these researchers did not have the vision to create a program of research around nursing education issues. Another observation was the large number of author-generated questionnaires. This generation may have occurred because of their inability to access standardized questionnaires, a lack of questionnaires for gathering the type of data required by nurse educators, or the convenience of this method of obtaining data. Sample sizes corresponded to the use of qualitative and quantitative methods. Large data sets (greater than 200 participants) were not reported for this type of research.

## **FUTURE**

Nurse educators are expected to teach students nursing content that is evidenced-based. The methods they use to teach this content must also be evidenced-based. For example, if nurse educators embark on a curriculum change, questions they need to ask are: what is the research evidence for implementing this new curriculum; how will effectiveness be measured; will evaluation methods be considered as research methods; or, will research findings from the old curriculum be used to devise the new curriculum? Changing the focus from nurse educators as educator developers to nurse educator researchers demands a new set of questions be asked. On a micro level, each teaching method that is used must be critically examined to determine the research basis. A simple example is the use of PowerPoint. This commonly used tool has had limited research to

determine its effectiveness and nurse educators need to know this research when deciding to teach content using PowerPoint.

Another future directive is the actual content of what will be researched. Currently, most articles pertained to continuing education followed by patient education reflecting the professional development of nursing. Nurse educators need to question if this should remain as the research priority area. Preceptorship formed the third most researched domain reflecting changes in curriculum implemented in the past 20 years. Given these three research areas based on quantity of research articles, what is researched and why it is researched in the area of nursing education appears to be driven from single researchers or small groups of interested researchers. What is needed is a national nursing education research agenda. Research teams oriented to nursing education need to be developed and mechanisms of funding identified.

In summary, nurse educators are poised to be leaders in researching teaching evidence. Nursing education journals are available, conferences specifically focused on nursing education are hosted nationally and regionally, and nurse educators do receive research grants from national funding agencies. This inventory is a first step in discussing the research agenda, and the integrative literature reviews to follow in part two, will identify research questions, clarify research priorities and rate the quality of the research.

### **LIMITATIONS**

The research has a number of limitations. Articles may have contained insufficient information; authors are subject to editorial guidelines and perhaps required information was omitted because of journal space limitations. Another major limitation was the amount of time required to search and enter data. History also had an effect. The review period covered a 10-year span, ending in 2000. Therefore, speed of dissemination was a concern. The project was massive and time consuming. It involved a number of research assistants, each requiring orientation and supervision. Regardless, errors were found in data entered into PROCITE. Even with a librarian on the research team, the use of hand searches and using multiple databases, the authors were still concerned the inventory generated was not comprehensive. Lastly, the article is an inventory or listing of published research articles, thereby omitting numerous sources of research including theses, reports, or not published research.

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