

Readiness for Evidence-Based Practice: Information Literacy Needs of Nurses in the United States

Annelle Tanner ^a, Susan Pierce ^b, Diane Pravikoff ^c

^aLouisiana Department of Health and Hospitals, Office of Public Health, Region VI, Alexandria, LA, USA

^bCollege of Nursing, Northwestern State University, Shreveport, LA, USA

^cCinahl Information Systems, Glendale, CA, USA

Abstract

In this paper U.S. nurses' readiness to provide Evidence-Based Practice (EBP) as measured by their information literacy knowledge and skills is described. The Institute of Medicine directed health care providers to use EBP as a means to improve patient safety, efficiency and effectiveness of health care services. Information literacy has been identified as a nursing informatics competency for the basic nurse. As such, information literacy is an essential component in the application of EBP. The importance of developing information literacy skills is enhancement of the nurse's ability to use current best available research literature in the conduct of EBP with subsequent improvement in nursing sensitive patient outcomes. This study describes the level of nurses' information literacy knowledge and gaps in their skills for identifying, accessing, retrieving, evaluating and utilizing research evidence to provide best care for patients. The value of this study is to increase awareness among nurse administrators, educators, and clinicians of the need for information literacy education to enable evidence-based nursing practice and to guide development of supportive curricula and professional continuing education.

Keywords:

Databases, Bibliographic; Education, Nursing, Continuing; Evidence Based Medicine/Nursing; Information Storage and Retrieval; Libraries, Hospital; Needs assessment; Nurses; Professional Competence; United States

Introduction

Evidence-Based Medicine is "the conscientious, explicit and judicious use of the current best evidence in making decisions about the care of individual patients." [1] In response to demands for improved health outcomes and decreased medical errors, the Institute of Medicine recently recommended that healthcare providers employ Evidence-Based Practice (EBP) principles and processes in their practice.[2] Primary factors influencing nurses' readiness for Evidence-Based Practice include: (a) advances in information technology that have increased the rate, volume, and accessibility of available research and (b) consumer and third party payer demands for practitioner accountability to improve quality, including fewer errors and cost effective delivery of services. The worsening nursing shortage, repercussions of which have been indicated as causative factors related to patient

safety, [3] further convolutes quality and cost effective outcomes and drives the need for finding means to better assure safety and quality. In spite of the shortage, the Bureau of Labor Statistics reports that nurses are the largest group of health care professionals [4] and, as such, are pivotal forces on the health care team. By virtue of the fact that nurses are the healthcare providers who spend the greatest percentage of time interacting with patients, they are positioned to influence positive outcomes and to serve as a first line of defense in prevention of negative outcomes. Ideally, nurses' clinical decision-making should be supported by research-based evidence. Therefore, engaging in Evidence-Based Nursing Practice (EBNP) is critical.

Nurse as a Knowledge Worker [5]

The role of today's nurse demands the use of finely tuned information management skills to provide best practice and effect positive patient outcomes. Much is expected of nurses in today's health care environment. To meet these demands for accountability, nurses must change their practice paradigm to systematically incorporate current, best evidence into routine care and they must collect and interpret nursing sensitive data to identify information about the impact of nursing care on the patient and organizational outcomes. This must be done within the context of best evidence for clinical decision-making or EBNP. The result of failure to shift to EBNP is imposing. Not only can the cause and effect relationships between nursing interventions and quantifiable patient outcomes not be effectively measured and used to determine organizational quality benchmarks, but patient safety is ultimately compromised. Therefore, it is essential that nurses acquire demonstrable information literacy and computer literacy competencies.

Information Literacy and EBNP

Information literacy and computer literacy are essential to EBP. Both skill sets have been identified as core competencies for the basic or entry-level nurse. [6] While computer competency has been recently examined by others, [7] it is information literacy competency that is of interest to the authors of this paper. As discussed by Brown [8] and Friedland [9], the steps of EBP are:

- Develop a researchable clinical question
- Locate and retrieve relevant research evidence

- Appraise the evidence for credibility, clinical significance, and applicability to practice
- Make a practice decision
- Evaluate the outcomes of the decision and the application of the EBP process

Information literacy is the ability to “recognize when information is needed and know how to find, evaluate, and use information effectively to solve a particular problem or make a decision.” [10] The process is not new, having been basic to information (library) science for many years. However, the awareness of information literacy is just beginning to enter the context of nursing. Verhey [11] initially introduced it systematically into nursing education, but until the new Scope and Standards of Nursing Informatics Practice [6] was published, little emphasis has been placed on significance of the competency. The Association of College and Research Libraries outlined five steps of information literacy in 1989. [10]

- Acknowledge awareness of a need for information
- Identify and retrieve needed information
- Evaluate the information for relevance
- Integrate the information into practice
- Evaluate the effect of the information on the problem or issue

The steps of information literacy parallel the steps of EBP closely and without information literacy skills, EBP is not possible. Locating and retrieving relevant research depends on the skills to use electronic databases effectively and on having the needed access to research-based information at the point-of-care and the time-of-need. The quality of a clinical decision is only as good as the evidence used to make the decision. Therefore, competency in information literacy is essential for EBNP.

Need for Study

In order to effectively develop educational offerings to enhance computer literacy and information literacy competencies for nurses, it is essential to measure the current level of knowledge and skills among nurse educators, practicing nurses, and nurse administrators. To lobby for and assure appropriate access to research-based evidence in the clinical settings, the current state of access must be determined. The need for this national study was based on the findings of three previous studies of nurse educators, [12] practicing nurses, [13] and nurse administrators [14]. Participants of the first two studies were representative of nurses throughout one southern U.S. state, while the third included two states. Outcomes were similar across the three studies, indicating significant gaps in information literacy knowledge and skills of all groups of nurses, leading to the hypothesis that these limitations exist on a national level. Specifically, nurses identified barriers to use of research as lack of time, difficulty understanding research, lack of skills to search and critique research, lack of familiarity with electronic databases, and lack of computer skills. With the exception of time, all of these are teachable skills. Nurses also identified access issues that included limited Internet access for nurses on the nursing units, limited support in the library for the nurse user, and lack of administrative support for searching such as time (staff shortages, long shifts, patient

acuity) or providing access (electronic access, training, nursing research journals subscriptions on the nursing units). Until these gaps are identified and described, effective remediation cannot be developed; until nurses are trained in information literacy and have appropriate and timely access to research, engaging in EBNP is not possible. Without EBNP, quality and cost effective delivery of nursing care are compromised.

Current Study

Purpose

The purpose of the current study was to identify information literacy knowledge and competency of U. S. professional nurses and to describe their access to research information in order to address barriers to EBNP. The overarching research question was: Are nurses ready for evidence-based practice? To answer this question, the researchers were interested in describing the extent to which nurses had the knowledge and skills for EBNP and the gaps that exist in their information-seeking behaviors and resources. To answer the primary question, five secondary questions were asked:

1. Are nurses aware of the need for research-based information?
2. Do nurses identify information needed for evidence-based practice?
3. Do nurses have the ability and availability to electronically search for information?
4. Do nurses apply electronic information seeking processes?
5. For what purposes do nurses use information retrieved?

Methodology

Instrument

A panel of experts composed of nurse informaticists, library scientists, and clinicians reviewed the investigator-designed questionnaire to establish content validity prior to use in three pilot studies [15]. Simple revisions in the wording of some demographic items allowed correlation of the findings with the National Sample Survey of Registered Nurses in the US (NSSRN) [16].

Sample and Procedures

The university Institutional Review Board granted approval for the study. Staff from a national nursing publication that maintains a comprehensive database of RNs licensed to practice in the U.S. provided the regionally stratified, random sample of U.S. RNs. These nurses received the survey by mail. To ensure the greatest rate of return, the investigators employed Dillman’s Tailored Design Method [17] for mailed surveys. Survey tools were scanned using Teleform® technology to aggregate data that were then analyzed with descriptive statistics. Analyses included frequencies and percents as well as cross tabulations using version 12.5 of the Statistical Package for Social Sciences (SPSS).

Three thousand (3000) surveys were mailed. The post office returned 53 of these, noting addressee deceased or “unable to be delivered,” leaving a total available sample of 2,947. Of these,

1,097 questionnaires were returned (37.2%). One hundred ten (110) of the responding nurses were retired and/or no longer working in nursing or the surveys were unusable because of missing key data. Therefore, researchers collected and analyzed data from 987 surveys. The regional return rate ranged from 26.5% to 54.4%, with the highest rate of return from the West North Central region (54.4%) or 11.9% of the total surveys returned. This was followed by the East North Central region (50.7%) or 23.7% of the total, then the New England region (26.5%) or 4.9% of all surveys. Responses were received from nurses in all 50 states.

Results

In order to describe information literacy knowledge and skills of RNs, results were analyzed according to Information Literacy criteria established by the American Library Association [10].

Awareness

To determine whether nurses are aware of the need for information, they were asked how often they need information to support their nurse roles. Over sixty-four percent (64.5%) of the respondents indicated that they need information regularly or often. Conversely, 35.5% responded that they needed information only occasionally or seldom.

Identifying

Because identification of appropriate resources for information is essential, nurses were asked if they have the ability and availability to electronically search for information in the workplace; 42.9% of the nurses responding rated workplace information resources as totally inadequate or less than adequate. Several specific deficits were identified.

Retrieving

When asked to rate their abilities to retrieve research-based information using the CINAHL[®] database, nearly 75% of the nurses indicated that they do not search CINAHL and another 6% indicated poor search skills. Their perceived success in using other electronic databases was similar: almost 55% reported that they do not search or that they have poor success (6.5%) when searching MEDLINE. On the other hand, 59% claimed to be successful or highly successful searching the Internet or World Wide Web. Further, when asked whether they had ever received instruction in the use of electronic databases, over 73% stated they have never received formal instruction. Also, nearly 89% deny participation in a listserv or chatroom as a means to gain nursing information. Most frequently, nurses ask a peer or colleague for needed information. Some nurses never seek information from a published source. Computer skills are necessary to access electronically stored information. When asked them rank personal computer skills, many nurses perceive their abilities as less than average.

Evaluating

Participating nurses were asked how often they evaluate research reports and over 66% responded "not-at-all." Less than 10% report reading research at least three or more times per year.

Utilizing

Integrating research findings into the practice environment is the ultimate goal of the research process. Therefore, participants were asked how frequently they use research in practice. Fifty-two percent (52%) said they never use research.

Familiarity with Evidence-Based Practice

Further findings of interest are nurses' self-reported familiarity with Evidence-Based Practice (EBP) and their perception of whether policies related to EBP are in place in their workplaces. Almost half (48.5%) of the nurses indicated that they are unfamiliar with EBP. Of those who are familiar, over 20% said there are no EBP policies in place and another 23% state they did not know whether there were policies in place.

Barriers

From the literature review, the most common barriers or constraints, personal and organizational, to using research were identified and investigated. Respondents were asked to rank the top three perceived organizational barriers and then their top three personal barriers (aside from time). The three primary organizational constraints that have the potential to effect research utilization in practice settings were identified as: (a.) the presence of other goals of higher priority (chosen #1 by 366 respondents [40%]); (b.) difficulty recruiting and retaining nursing staff (208 [23%]); and (c.) organizational budget for acquisition of information resources (177 [19%]).

Similarly, participants ranked and prioritized barriers to personal research utilization. Respondents selected a lack of understanding of organization or structure of electronic databases most often as either their first, second or third ranked personal barrier. Second ranked was their difficulty accessing research materials, and third was a lack of skills to critique and/or synthesize the literature. Other specific skills frequently identified first, second, or third by the nurses as personal barriers to research use included lack of search skills and the lack of computer skills. Other knowledge deficits they reported as barriers were difficulty understanding research articles and a lack of knowledge about research. Two access issues named by respondents were the lack of library access and the lack of access to a computer.

The single most frequently selected primary personal barrier by the respondents was a lack of value for research in practice (136 [15%]) followed by a lack of understanding of the organization or structure of electronic databases (130 [14%]), and difficulty accessing research materials (112 [13%]). The lack of computer access was ranked as the primary barrier by 77 (8%) nurses and the lack of computer skills was selected as the primary barrier by 91 (10%) respondents.

Discussion

Five secondary research questions, each representing a step of information literacy, contribute to the understanding and description of nurses' information literacy knowledge and skills as a measure of readiness for implementing Evidence-Based Practice.

Research Question 1

Many nurses identify a frequent need for information, indicating a level of awareness. Yet, if they actually seek information, it is often from peers rather than from current, data-driven and peer-reviewed resources. However, it is concerning that more than one third report that they do not believe they need information regularly. Without recognizing the need for information, new nursing knowledge will not be readily identified and integrated into practice. This is further validated by the fact that over half of the nurses responding never use research in practice. So, though there is an awareness of a need for information among the majority of nurses, a large proportion is not seeking and using research or evidence to drive decisions.

Research Question 2

Most nurses seek information from peers or colleagues, not by searching electronic databases for current information resources. They search the Internet for information more often than bibliographic databases indexing nursing information. They seldom read research studies and rely more often on textbooks or journals for information. They seldom visit a library or seek assistance from a librarian.

Research Question 3

Information access requires the presence of information resources and the knowledge and skills to utilize the resources effectively. Two factors describe information access in current nursing practice. Information resources in practice environments are inadequate and nurses lack the skills to identify and locate information in an electronic environment. Organizational constraints such as other higher priorities and budget affect decisions about providing information and easily accessible resources for nurses, particularly at the point-of-care. Similar reasons prohibit training for use of information resources, including electronic searching and research appraisal. Though many more nurses feel comfortable using a computer than when pilots for this study were done [14], most still feel their skills are less than average or average. Most nurses have received no instruction in the use of bibliographic databases and rate their skills for using these databases as poor or state that they do not search at all. Those who do search seek information using the Internet, but there is no measure of the quality of information retrieved. Evaluation skills are vital in that environment.

Some nurses still have a lack confidence using a computer. Most nurses report that they do not search bibliographic databases such as CINAHL and even more report that they have poor search skills that interfere with retrieval of information.

Research Question 4

Most nurses do not evaluate research. The findings of this study indicate that reading and evaluating research regularly are not habits of most nurses. Nurses also identify difficulty understanding research, a lack of knowledge about research, and a lack of skills to critique and synthesize research.

Research Question 5

Over half of the nurses responding to the survey indicated that they never use research and only 1 in 10 use research three or more times in a year. The lack of organizational priorities that support research utilization and the lack of budgetary commitment to information resources and training are primary barriers to evidence-based nursing practice.

Conclusions

An overarching conclusion from the results of this study is that the value of research among individual nurses and organizations must first be established in order to promote evidence-based practice. It is critical then that both nurses and organizations recognize the significance of research for decision-making that drives cost-effective delivery of services and quality outcomes. As long as nursing research evidence is undervalued, it will be underutilized. Data-driven informatics models developed to provide information and knowledge will be ineffective if nurses do not identify a need for the information, have the resources to access the information, demonstrate the knowledge and skills to retrieve and evaluate the information, and have the wisdom to integrate research findings to support positive change their practices.

Specific conclusions related to the secondary research questions must also be considered. The most profound research findings will have little impact on practice if nurses do not seek information from appropriate sources to answer their questions. Awareness is critical to the committed use of information to influence practice outcomes. The lack of organizational selection of evidence-based nursing practice as a priority impacts nurses' behaviors related to information seeking and utilization. Organizational priorities influence nurses' habits and expectations. If the organization does not promote evidence-based practice by providing electronic access to information, time to seek that information, and opportunities to develop the computer and search skills needed to find information, then nurses will not embrace evidence-based practice.

Information literacy skills have been established as competencies for the basic nurse [6] and are key behaviors to support evidence-based practice. Without efficient, effective information literacy skills nurses cannot implement evidence-based practice. This study identifies significant gaps in nurses' information literacy skills and their abilities to appraise research. Further gaps are identified related to their utilization of research. Most nurses are not ready for evidence-based practice. The implications of these findings are clear. Education must undergo a culture change to promote the value of research as a habit. As a measure of value of research for nursing practice, care organizations must provide resources, time, and training to enhance the knowledge and skills of practicing nurses. And finally, nurses must individually embrace the challenge to develop information literacy skills and advocate for changes in their workplaces that support evidence-based practice.

Acknowledgments

Interagency Council of Information Resources for Nursing, June Levy, MLS, President; Karen Dubois, MSN, RN, Immediate Past President;

References

- [1] Sackett D, Rosenberg W, Gray J, Haynes B, Richardson S. Evidence-based medicine: what it is and what it isn't. *BMJ* [serial online] 1996 Jan 13;312 (7023): 71-73. Available from: http://www.cebm.net/ebm_is_isnt.asp. Accessed September 14, 2003.
- [2] Committee on Quality of Health Care in America, Institute of Medicine. *Crossing the quality chasm: a new health system for the 21st century*. Washington D.C.: National Academy Press; 2001.
- [3] Clarke S, Aiken L. Failure to rescue: needless deaths are prime examples of the need for more nurses at the bedside. *Am J Nurs* 2003 Jan;103(1):42-47.
- [4] Bureau of Labor Statistics, U.S. Department of Labor. Occupational outlook handbook, 2002-03 ed. Registered Nurses [online]. Available from <http://www.bls.gov/oco/ocos083.htm>. Accessed 2003 September 11.
- [5] Sorrells-Jones J, Weaver D. Knowledge workers and knowledge-intensive organizations, Part 1: a promising framework for nursing and healthcare. *J Nurs Adm* 1999 July-August;29(7-8):12-18.
- [6] American Nurses Association. *Scope and standards of nursing informatics practice*. Washington, DC: American Nurses Publishing. 2001.
- [7] McNeil B, Elfrink V, Bickford C, Pierce S, Beyea S, Averill C, Klappenbach C. Nursing information technology knowledge, skills, and preparation of student nurses, nursing faculty, and clinicians: a U.S. survey. *J Nurs Educ* 2003;42(8): 341-59.
- [8] Brown SJ. *Knowledge for health care practice: a guide to using research evidence*. Philadelphia: W. B. Saunders Company; 1999.
- [9] Friedland D, Go A, Davoran J, Shlipak M, Bent S, Subak L, Mendelson T. *Evidence-based medicine: a framework for clinical practice*. Stamford, CN: Appleton & Lange; 1998.
- [10] American Library Association. Presidential committee on information literacy. final report [online] 1989. Available from: <http://www.ala.org/Content/NavigationMenu/ACRL/Publications/White Papers and Reports/Presidential Committee on Information Literacy.htm>. Accessed September 14, 2003.
- [11] Verhey M. Information literacy in an undergraduate nursing curriculum: development, implementation, and evaluation. *J Nurs Educ* 1999 Sept;38(6):252-259.
- [12] Pierce ST. Readiness for evidence-based practice: Information literacy needs of nursing faculty and students in a southern US state [dissertation]. Natchitoches (LA): Northwestern State Univ.; 2000.
- [13] Tanner AB. *Readiness for evidence-based practice: Information literacy needs of nurses in a southern US state* [dissertation]. Natchitoches (LA): Northwestern State Univ.; 2000.
- [14] Pravikoff DS, Pierce S, Tanner A. Nursing resources. Are nurses ready for evidence-based practice? A study suggests that greater support is needed. *Am J Nurs* 2003 May;103(5):95-6.
- [15] Pierce S, Pravikoff DS, Tanner A. Information literacy: instrument development to measure competencies and knowledge among nursing educators, nursing administrators, and nursing clinicians: a pilot study. [Poster] in: Proceedings of the American Medical Informatics Association 2003 Symposium; 2003 Nov 8-12; Washington, DC. In press.
- [16] Spratley E, Johnson A, Sochalski, J, Fritz M, Spencer W. The registered nurse population: findings from the 2000 national sample survey of registered nurses [online]. 2002 [cited 2002 Feb 2]; Available from: <http://bhpr.hrsa.gov/healthworkforce/reports/rnsurvey/>. Accessed September 14, 2003.
- [17] Dillman DA. *Mail and internet surveys: the tailored design method*. 2nd ed. New York: John Wiley & Sons, Inc. 2000.

Address for correspondence

Annelle B Tanner, EdD, RN
2710 Marye Street
Alexandria, LA 71301 USA
annelletanner@cox-internet.com