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RESEARCH AND PRACTICE ARTICLE

Evidence-Based Nursing Practice in Local Public Health

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ABSTRACT:

Purpose: The purpose of this study was to identify the extent to which public health nursing in Michigan local health departments (LHDs) has based services and programs on research and other evidence.

Method: The study was conducted using a descriptive survey design. The sample was composed of the 45 chief administrators of public health nursing services in each of the 45 Michigan LHDs. Data were analyzed using descriptive statistics. Narrative answers to open-ended items were examined to determine patterns.

Findings: Thirty-six (80%) of the chief nursing administrators of the LHDs responded to the survey. Of these nursing administrators, 28 (77.8%) reported using evidence. Two administrators provided a specific process for incorporating evidence into practice, and six administrators reported that a person(s) was responsible for ensuring evidence-based practice (EBP).

Conclusions: While a majority of chief nursing administrators in Michigan LHDs indicated that the agency used evidence to support at least some of the nursing services, and programs provided by the agency, the extent of EBP varied across health departments. Most LHDs appeared to be in Roger's (1995) first stage of implementing EBP, indicating that there is a need in Michigan LHDs to advance from abstract acknowledgment (knowledge) of innovation to incorporation of the innovation into action plans that guide practice. Suggestions for translating evidence into public health nursing practice are provided.

Key words: public health nursing, evidence-based practice, research utilization, diffusion of innovation, supervision



Evidence-based practice is defined as “practice in which nurses make clinical decisions using the best available research and evidence that is reflected in approved policies, procedures, and clinical guidelines in a particular health care agency” (Ervin, 2002, p. 12). The Institute of Medicine (2003) underscored the need for all health professionals to be educated in delivery of patient-centered care as members of interdisciplinary teams that emphasize evidence-based practice (EBP). Several nurse researchers have pointed out that practice based on evidence, especially research findings, was more likely to be effective, produce desired patient outcomes, and be cost-effective (Brown, 2008; Cullum, Ciliska, Haynes, & Marks, 2007; Goeppinger, Macnee, Anderson, Boutaugh, & Stewart, 1995; Hall, Karstens, Rakel, Swanson, & Davidson, 1995; Melnyk & Fineout-Overholt, 2004; Youngblut & Brooten, 2001).

Much of the research that has demonstrated the use of evidence in nursing practice has occurred in acute care inpatient settings (Heater, Becker, & Olson, 1988; Horsley, Crane, Crabtree, & Wood, 1983). The use of evidence to support initiatives in public health nursing, while relatively newer, is one of the Quad Council of Public Health Nursing Organizations’ public health nursing competency domains, i.e., researching innovative solutions (Quad Council of Public Health Nursing Organizations (Quad Council), 2003). The purpose of the Quad Council, composed of the American Nurses Association, the Association of Community Health Nursing Educators, the Association of State and Territorial Directors, and the Public Health Nursing Section of the American Public Health Association, is to promote collaboration among the member organizations about issues and activities of importance to public health nursing and the health of the public (American Public Health Association, n.d.). The Quad Council supports the use of evidence as the basis for nursing interventions.

Competencies covered in the domain of researching innovative solutions include identifying researchable questions and problems; identifying evidence-based public health interventions; conducting computer searches of the professional literature; conducting computer searches of government websites for innovative evidence-based programs; identifying government, private foundation, and other sources of research funding; and writing grant proposals to support public health programs (Issel, Baldwin, Lyons, & Madamala, 2006).

Several researchers have written that the ability to identify and to use current relevant scientific health information are important competencies, particularly of clinical nurse specialists, nursing administrators, program managers, and directors (Dobbins, Cockerill, & Barnsely, 2001; Ervin, 2007; Kalb et al., 2006). Newhouse (2007) also identified evidence-based decision-making, locating measurement tools for quality improvement, and developing projects that demonstrate innovative approaches to problems as residing within the purview of the nurse administrator. In addition to managerial support, another recent study found that policy revisions, auditing, role modeling, and valuing research are activities that influenced and facilitated nurses’ use of research (Gifford, Davies, Edwards, Griffin, & Lybanon, 2007; Shirey, 2006). Markham and Carney (2008) added to this list the importance of communication between public health nurses and their managers regarding delivery of evidence-based service.

For community and public health nursing, research over the past two decades has begun to contribute to the growing body of knowledge for evidence-based practice, focusing primarily on prevention of disease and injury and health promotion (Armstrong, Fraser, Dadds, & Morris,



1999; Brooten et al., 1995; Olds et al., 1997; Olds, Henderson, Chamberlin, & Tatelbaum, 1986; Olds, Henderson, Tatelbaum, & Chamberlin, 1986; Olds et al., 1998; Rice & Stead, 2008). To what extent the evidence from these research studies and others is systematically incorporated into public health nursing services, programs, and practices is not well documented. The purpose of this study was to identify the extent to which evidence was used in public health nursing services and programs as reported by chief nursing administrators in Michigan LHDs.

CONCEPTUAL FRAMEWORK:

Rogers' (1995) theory of diffusion of innovations guided this study. His five-stage model of the innovation-decision process describes the progression through which an individual or a unit passes from Stage 1) first knowledge of an innovation, Stage 2) to developing an attitude about the innovation, Stage 3) to deciding to adopt or reject the innovation, Stage 4) to implementing the new idea, and Stage 5) to confirming the decision. The first stage in the process, the knowledge stage, begins when a decision-making unit or person becomes aware of an innovation's existence and how it functions. This is the stage to which the study was directed. In order to examine evidence-based practice of public health nurses in Michigan, it was necessary to know the extent that administrators were aware of EBP and used it to support and establish practices and services in LHDs.

METHOD:

The design of the study was descriptive. A cross-sectional survey was used to obtain data about the use of evidence (research and other evidence) in practice, the models used to incorporate evidence into public health nursing practice, and nursing administrators' interest in using more evidence to direct public health nursing practice and services. Data were collected primarily through a self-administered survey. However, when the survey was not returned, the chief nursing administrator was contacted by telephone and interviewed after oral consent was obtained.

SAMPLE:

The sample for the study was the 45 public health nursing services chief administrators at Michigan's 45 LHDs. The 36 (80%) participants were from LHDs that employed between three and 175 public health nurses, with a mean of 21.5 nursing positions. The agencies represented by the participating chief nursing administrators served populations from 36,000 to almost 1.2 million people.

INSTRUMENT:

The investigators developed the survey instrument for the study using the knowledge stage of Rogers' (1995) innovation-decision process as the guiding framework. The instrument was tested by administering it to former public health nurse managers and administrators. Minor changes were made in the questions to increase readability and clarity.



The survey contained 17 questions, two of which had from two to five sub-sections. Completion of the survey required about 20 minutes. The first question was: “Does the agency currently use research or other evidence in public health nursing practice?” If the answer was “yes,” the participant was asked to describe the process by which evidence was incorporated into practice, what changes (if any) were made in the organizational structure in order to incorporate evidence into practice, whether there was a person responsible for that function in the LHD, and how much of that person’s time was devoted to the functions of EBP, e.g., 10-20%, 30-40%.

Survey question number three was: “How is research currently incorporated into public health nursing practice in this agency?” A list of options was provided, for example, policies based on research or other evidence and protocols based on research or other evidence. The next question asked the participant to indicate about what percent of practice was evidence-based. Questions about services and programs provided, resources supporting evidence-based practice, models used to implement evidence-based practice, and processes for dissemination of information and updating documents comprised the next part of the survey. Additional questions were focused on interest in learning more about evidence-based public health nursing practice, leading public health problems, and demographic information about the LHDs.

PROCEDURE:

The study was approved by the Wayne State University Human Investigation Committee before data collection began. One survey was mailed to each LHD to either the chief public health nursing administrator or health department director (if there was no identified chief public health nursing administrator). Information about LHDs and names of the contact person were obtained from the Michigan Association of Local Public Health website or by a telephone call to the LHD. A written consent form was included with the survey instrument.

If the survey was not returned within a month of the requested completion date, a reminder postcard was sent to the chief public health nursing administrator with an offer to send another survey if needed. A second reminder postcard was sent to each public health nursing administrator one month after the first reminder postcard if the survey was not returned. If a survey had not been returned within eight weeks of the second reminder, a telephone call was made to the chief public health nursing administrator. If the administrator agreed, the survey was completed during a scheduled telephone call or another copy of the survey was mailed or sent by fax to the individual.

DATA ANALYSIS:

No identifying information was connected with any data collected. A code number was used to identify each local health department. The data were analyzed using descriptive statistics. Nonparametric correlation coefficients were calculated between the size of agency (i.e., number of public health nursing positions) and the extent to which evidence was used in practice. Narrative answers to open-ended items were examined to determine patterns.



FINDINGS:

Thirty-six (80%) of the chief nursing administrators in the 45 Michigan LHDs completed the survey either by mail (29 participants) or through a telephone interview (7 participants). Of the 36 reporting administrators, 28 (77.8%) reported currently using research and other evidence to support public health nursing services. The correlation between size of LHD and use of evidence was non-significant. Among the eight administrators who reported that the LHD did not use research and other evidence, five reported that from four to eight of 12 public health services were evidence-based. This discrepancy is addressed later.

In response to the survey request to describe briefly the process by which evidence was incorporated into practice, only two participants described a process. Of the two responses, only one was structured enough to suggest that a process was actually in place: "Protocols and policies are written and updated yearly, and the research used is referenced in the manuals." Most responses were examples of sources of evidence (e.g., the CDC or the Michigan Department of Community Health) and descriptions of informal processes, for example, staff read or heard about new evidence. Two agencies indicated that quality assurance was part of the process for EBP.

Six administrators reported having one person or position assigned the responsibility for implementing evidence-based practice, and 11 participants reported between 10% and 90% of an individual's time was devoted to implementing evidence-based practice. One participant stated that no one individual was responsible, and this participant was unable to determine the amount of time used to implement EBP. Another participant reported that EBP was an ongoing process that started with the health officer, the medical director, and the nursing administrator.

In response to the question regarding how research was incorporated into public health nursing practice in the department, 78.6% (n=22) of 28 participants reported that policies were based on research and other evidence; 92.9% (n=26) reported that protocols were based on evidence; 60.7% (n=17) reported that nursing programs were developed around research findings; and 96.4% (n=27) reported that nursing services incorporated practice guidelines.

For the 28 participants who reported using evidence, three (10.7%) estimated that almost 100% of practice was based on evidence. For the remaining 25 participants, varying amounts of practice were reported to be based on evidence: four (14.3%) estimated that less than 10% of practice was based on evidence; four (14.3%) estimated between 11% and 20%; four (14.3%) estimated more than 20% but less than 50%; two (7.1%) estimated about 50%; six (21.4%) estimated more than 50% but less than 75%; and seven (25%) estimated that about 75% of practice was based on evidence.

On a list of 12 services or programs (see Figure 1), participants reported that their LHD provided a range of these services. Examples of the services were teen pregnancy prevention, immunizations for low-immunized populations, and directly observed therapy. One LHD provided none of the services, and one LHD provided all 12. Twenty participants reported that their LHD provided eight or more of the 12 services.



One survey question was designed to elicit the sources of evidence or research used in each agency. A total of 40 sources were listed by the participants. Among the sources identified were national, state, and local agencies, e.g., the Centers for Disease Control and Prevention (CDC), the Michigan Department of Community Health; professional organizations, e.g., American Nurses Association; and individuals including university faculty members, grant funded programs, and literature.

Ten administrators (35.7%) reported using a model to implement evidence-based practice. The model reported most often was the Minnesota Department of Health, Public Health Nursing Model. Twenty-five of the 36 administrators indicated an interest in learning more about EBP. Twelve participants ranked their first interest as continuing education programs about specific evidence-based interventions for public health nursing. The second highest ranked activity was development of a model for incorporating EBP into agency policies, procedures, protocols, and/or guidelines.

Nine participants stated that obesity was the leading public health problem in their communities. Smoking was indicated by eight administrators as the leading problem. Infant mortality was ranked by five participants as the leading public health problem. Since some participants indicated more than one problem, a total of 42 problems were listed (see Table 1).

DISCUSSION:

In order for individuals or entities to move past Roger's (1995) first stage of evidence-based practice, they must advance from the abstract acknowledgment (knowledge) of the innovation to the incorporation of the innovation into action plans to guide practice. The chief administrators of public health nursing services in Michigan LHDs reported a high level of evidence use in practice. Seventy-eight percent reported using evidence in practice, and 50% of the participants estimated that 50% or more of practice was based on research or other evidence. Eight administrators reported that they did not use evidence in practice, but later indicated that specific services were evidence-based. This discrepancy may be a result of ambiguity in the questions or confusion about what constitutes evidence-based practice and services. Some participants replied that they did not know if the guidelines, protocols, and procedures were based on research or other evidence. When a procedure was transmitted to a local health department from the state or a federal agency, participants pointed out that the evidence base of the procedure was usually not included in the written material.

In this exploratory study no specific definition of evidence was provided to the participants, except the statement: research or other evidence. Providing a hierarchy of levels of evidence may be appropriate in future studies, but could have distracted from obtaining usable data in this study. If participants did not know whether evidence was used or not in their agency to support practice, they likely would not have been able to identify the level of evidence used in policies, procedures, and clinical practice guidelines. To examine the level of evidence used in LHD public health nursing services and its appropriateness as a basis for practice decisions is a needed step in this area of research.



The large variety in the approaches that LHDs used to incorporate evidence into practice and services needs more exploration. It seemed clear that guidelines from other agencies, such as the CDC and the state health department, were used by most of the local health departments. However, the actual processes used to assure current nursing practice based on these guidelines and evidence were not clear. The fact that only two participants described an actual process could indicate that evidence was not being systematically incorporated into practice and services by almost 95% of the local health departments.

With only six administrators reporting that they have a person or position responsible for implementing evidence-based practice, it is unclear where the responsibility lies. If all staff members are responsible for reading and incorporating evidence into practice, as was indicated by some participants, no one person may be monitoring for consistency and relevance, or ensuring that policies, procedures, and guidelines are updated on a regular basis to incorporate new knowledge.

Leading problems identified by nurse administrator participants can be viewed as indicators of the issues faced by LHDs throughout the state of Michigan. Problems such as access to primary care, funding for services, and lack of transportation point to long-standing economic-related issues. Local health departments are continuously faced with problems that effect health but are not directly funded for public health delivery, such as providing transportation for clients to health facilities. Because of funding streams and limitations, LHDs may not be able to address leading health problems even though they are identified and documented. The struggle for LHDs to keep abreast of traditional public health services, such as communicable disease control, while trying to focus on prevention is an ever present burden. Evidence-based practice might assist public health nursing administrators to identify realistic priorities that fit within current and future funding streams.

The limitations of this study must be acknowledged. A procedure or method for evaluating the “evidence” was not specifically defined or provided to the participants as a frame of reference in answering the questions. Instead the introduction to the survey included the definition of EBP as cited in the first sentence of this paper. A general definition was given to participants because no research has been conducted that would suggest a commonly held understanding of “evidence” among public health nurses. It is common for state health departments to produce recommendations, guidelines, and standards for practice. These documents may be rarely, if ever, questioned from a scientific perspective by the LHD. Additionally, the guidelines may be modified due to local implementation and funding issues.

It is probable, therefore, that participants used more or less strict interpretations of what constituted evidence and the relative importance of evidence in changing or guiding practice. It was clear from the responses that the chief nursing administrators were familiar with the current evidence-based practice movement in nursing. However, the ability to conduct an in-depth literature review that included analysis of the level and strength of the evidence likely differed widely across participants.



RECOMMENDATIONS FOR FUTURE STUDY AND PRACTICE:

The need to use public health resources as judiciously as possible begs for the increased use of evidence in public health nursing and other professionals' practice. How this may be accomplished is not evident from the results of this descriptive study. Studies are needed to examine the models used by agencies to keep practices current and based on evidence. This is work that would assist investigators to design studies that test the effectiveness of various models of incorporating evidence into public health practice. The next step is to conduct studies that focus on the details of how models and processes are used to guide the implementation of evidence into practice. Another approach would be to review protocols and practice guidelines to determine if and how evidence is being used. Projects also are needed to examine the sources of evidence for policies, procedures, and guidelines being used in local health departments. The need for all guidelines to have documentation of the sources of the evidence was obvious from this survey of chief nursing administrators.

In the instances where LHDs assure services rather than provide them, it is important to ascertain what role nurse administrators could or should play to be confident that evidence-based services are being provided by others. For example, are private providers following CDC guidelines for treatment of pregnant women diagnosed with syphilis? Are primary care providers testing children for lead poisoning on the recommended schedule? If the guidelines are not being followed, what is the role of the LHD and the public health nursing administrator in facilitating the improvement of practices to achieve recommended standards?

In order to increase the dissemination of EBP in public health nursing, nursing administrators could attend workshops provided on the process of translating research into practice and bring the information back to their agencies. One part of the knowledge is how to efficiently search the literature. The administrators could also work with the state health agency to ensure that the level and strength of the evidence are included in each guideline, protocol, and procedure disseminated by the agency.

The need for positions to support translation of evidence to practice was clear in this study. Public health nursing administrators need to advocate for funding for such positions. Sharing one position among a few LHDs would ease the fiscal burden for small health departments. Some LHDs are already partnering with university faculty to assist with the tasks related to EBP. Expansion of such cooperative ventures could benefit both service and education.

The last group of recommendations for practice relates to dissemination of information about EBP. The lack of published review articles about EB interventions in public health nursing hinders the efforts of researchers and public health nurses. This is an area in which collaboration between education and practice could also advance the cause. Dissemination of evidence through the literature, presentations, and meetings could add momentum to efforts to reach all LHDs. Continuing education programs and inservice education sessions for staff are means available to most LHDs for disseminating new knowledge and skills to the public health nursing community. These should continue to be vehicles for increasing the use of evidence to promote quality public health nursing services for the citizens of Michigan.



CONCLUSION:

Evidence-based nursing practice holds the promise of improving the quality of care and reducing costs (Brooten et al., 1999; Heater, Becker, & Olson, 1988). Without information to direct the development and testing of models of evidence use in public health nursing, little progress may be made to reach the goal of basing nursing practice on evidence. Since the 1970s, nurse leaders have advocated for nursing practice based on research. With a growing shortage of registered nurses, evidence-based practice could provide one means for improving the deployment of a reduced public health nursing work force.

Expansion of evidence awareness in nursing has coincided with the development and widespread use of such World Wide Web innovations as Google, online searchable health care literature databases, and the Cochrane Database of Systematic Reviews, among other innovations that have streamlined access to evidence. However, the time lag from discovery of new knowledge to full application in practice is estimated to be as long as 17 years (Brooten et al., 1999). This time lag for incorporating evidence into public health nursing practice could mean years of unneeded client and population suffering and increased costs to society. There is some indication that innovation is diffusing at an increasing rate in public health nursing. Oppewal, Lamanna, and Glenn (2006) found that after only two years two-thirds of PHNs were aware of the *Core Competencies for Public Health Professionals* developed by leading national organizations in public health practice (Quad Council, 2003) and that 70% of the PHNs indicated that they used the competencies in their work. The current study of the use of EBP in public health nursing demonstrated a similar adoption pattern. For both innovations, nearly three-quarters of the PHNs surveyed stated that they not only were familiar with the innovation, but were at Rogers' Stage 4 (implementing the new idea). Further, research is necessary to confirm the extent of actual change in services, practices, and programs based on evidence.

If nursing is to decrease the time from knowledge discovery to application, realistic models of evidence-based practice need to be explored. Current nursing service organizations do not have funds to undertake large-scale additions of new resources or new positions dedicated to EBP. However, new models may provide information for innovative ways to use current or shrinking resources to meet the goals of evidence-based practice and, thereby, improve both the quality and quantity of public health nursing services.



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Figure I. Agencies Providing Public Health Service and Number Indicating the Service Is Evidence-Based

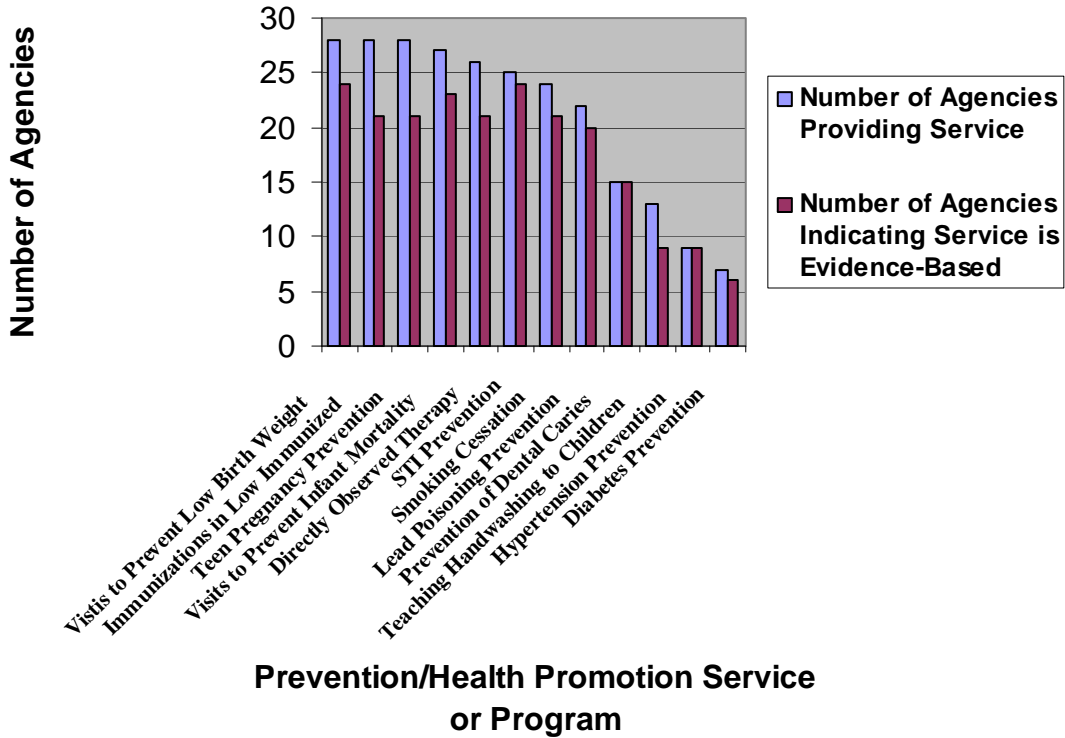


Table 1:*Public Health Problems Identified by Public Health Nursing Administrators*

Public Health Problem	Number of Administrators Identifying the Problem in their Communities
Obesity	9
Smoking	8
Infant mortality	5
Teenage pregnancy	3
Access to primary care	2
Primary prevention	1
Lack of oral preventive care for children	1
Sexually transmitted infections	1
Lack of adequate completion of immunizations	1
Detrimental lifestyle choices	1
Reducing health risks, e.g., infant mortality	1
Funding for services	1
Domestic violence	1
Alcohol abuse	1
Transportation	1
Substance abuse	1
Need for comprehensive school health programs	1
Lead poisoning	1
Hypertension	1
Renal disease	1
Total	42

