

RURAL NURSES' RESEARCH USE

Chad O'Lynn, PhD, RN¹
 Susan Luparell, PhD, CNS-BC, CNE²
 Charlene A. Winters, DNSc, CNS-BC³
 Jean Shreffler-Grant, PhD, RN⁴
 Helen J. Lee, PhD, RN⁵
 Lori Hendrickx, EdD, RN, CCRN⁶

¹Assistant Professor, [School of Nursing](#), University of Portland, olynn@up.edu

²Assistant Professor, [College of Nursing](#), Montana State University-Bozeman, luparell@montana.edu

³Associate Professor, [College of Nursing](#), Montana State University-Bozeman, winters@montana.edu

⁴Associate Professor, [College of Nursing](#), Montana State University-Bozeman, jeansh@montana.edu

⁵Professor Emeritus, [College of Nursing](#), Montana State University-Bozeman

⁶Associate Professor, [College of Nursing](#), South Dakota State University

ABSTRACT

This descriptive study explored the availability of research findings to rural nurses and how they use those findings in clinical practice. Surveys were completed by 200 registered nurses located in the rural northern United States. The results indicate that research findings were available to most participants. The majority (82.9%) of participants agreed that changing practice based on research was beneficial; however, less than 40% of the respondents indicated that they would change their practice based on research findings if those findings contradicted previously-held knowledge, beliefs, intuition, or common sense. This study identifies a need for greater emphasis in the practice setting and in generic nursing education programs on the value and implementation of evidence based-practice.

INTRODUCTION

It is widely acknowledged that nursing practice should be based on research and other appropriate evidence. New knowledge is generated with increasing frequency and the need to update or reinvent practice to maintain currency is a constant challenge for clinicians. Failure to update practice in light of new evidence suggestive of change may serve as a detriment to clients (Melnik & Fineout-Overholt, 2005). Compounding this challenge is the large time lapse between awareness of new knowledge and resulting changes in clinical practice. Balas and Boren (2000) noted that it may take up to 17 years to translate evidence into practice. Although a body of knowledge is developing about how nurses use research, very little is known specifically about how nurses in rural settings access and use evidence to influence their practice. This gap is significant because 21% of all Americans live in rural areas (United States Department of Agriculture [USDA], 2007). A solid understanding of the factors that influence rural nurses' use of research is needed if research utilization is to be facilitated in rural health care settings.

BACKGROUND

Seeking the most current evidence, appraising it for validity and relevance to the practice setting, and integrating evidence into practice are essential components of evidence-based

practice (Agency for Healthcare Research & Quality [AHRQ], 2003; Institute of Medicine [IOM], 2003; Melnyk & Fineout-Overholt, 2005; Van Mullem et al., 2001). Although various levels of evidence (such as experience, expert opinion, consensus panels, and qualitative studies) are necessary to fully inform practice (Hicks & Hennessy, 1997; Melnyk & Fineout-Overholt, 2005), rigorous quantitative studies and meta-analyses and reviews remain the strongest information on which to base most practice decisions. However, the ability to understand and evaluate research reports and ultimately incorporate evidence into daily practice is variable among nurses. General barriers to effective utilization or translation of research evidence into practice include the complexity associated with the process of changing practice, lack of authority to change practice, lack of administrative support and mentoring, insufficient time to access and evaluate evidence, lack of education on the research utilization process, lack of ability to understand research reports, lack of money, lack of resources/equipment needed to search for evidence, and lack of interest (Fink, Thompson, & Bonnes, 2005; Funk, Tornquist, & Champagne, 1995; Hutchinson & Johnston, 2004; Maljanian, 2000; McKenna, Ashton, & Keeney, 2004; Parahoo, 2000; Restas & Nolan, 1999.)

The realities of rural nursing may create additional obstacles in accessing and using research-based evidence in practice. Rural facilities must provide a wide-range of services with fewer clinicians than larger, non-rural facilities. Nurses in rural settings are required to be multi-skilled generalists with additional expertise in more than one traditional clinical specialty (MacLeod, Browne, & Leipert, 1998; O'Lynn, 2006; Scharff, 1998; Wellard & Bethune, 2000). This clinical role diffusion requires access to and familiarity with a larger number of clinical topics than is required for many non-rural nurses with more focused clinical specialties. Complicating this increased need for diverse information, many rural nurses experience professional isolation with fewer accessible colleagues, mentors, and educational opportunities in which to increase knowledge and skill sets (MacLeod et al., 1998; Newhouse, 2005; Olade, 2004; Shreffler, 1998). In addition, due to smaller economies of scale, rural health care facilities often are less able to provide accessible technology and finance resources to assist clinicians with accessing appropriate evidence databases and sources than are non-rural facilities, and also are often less able to employ adequate staff with research and literature searching skills to assist and mentor clinicians.

Few studies have examined the possible combined effect of general and rural specific research utilization barriers for evidence-based practice. Olade (2004) found only 20.8% (n = 22) of 106 rural nurses were involved with research utilization (defined as the "translation of research findings in practice" [p. 221]). In addition to the general barriers identified by non-rural nurse samples, participants in the Olade study noted that isolation from nurses involved in research and from nurses with experience in research utilization as primary reasons for not utilizing research findings. Newhouse (2005) noted that evidence-based practice was perceived by rural nurse executives to be at the "low end of the infusion curve" (p. 355). Ouzts (2005) reported that 90% of rural nurses in Wyoming did not have access to evidence-based information at the point of care, had limited access to nursing journals, and relied mostly upon colleagues for information. Winters et al. (2007) interviewed 29 rural nurses and reported that primary barriers in using research in practice were insufficient skills in accessing and interpreting research findings. Although these nurses reported that having supervisors who were supportive of activities associated with evidence-based practice was helpful, geographical isolation from educational opportunities and knowledgeable peers hampered the use of research in practice. In

addition, many of these nurses stated that little research was relevant to the unique characteristics of rural practice.

No study was located which comprehensively examined research utilization for evidence-based practice among rural nurses. A comprehensive understanding is necessary in designing appropriate interventions that will support and increase the use of evidence-based practice (Estabrooks, Floyd, Scott-Findlay, O'Leary, & Gushta, 2003; Funk, Tornquist, & Champagne, 1995). Issues in need of exploration include investigation of rural nurses' beliefs and attitudes regarding research, past experiences with research, professional characteristics and demographic factors, and structural constraints to accessing and implementing evidence into practice. Exploration of these factors provides the needed information in order to guide the adoption of evidence-based practice into the daily activities of rural nurses.

The specific aims of the study presented here were to broadly examine how rural nurses access and use research findings in their practice. Specific research questions were:

1. To what extent are research findings available to rural nurses?
2. What resources do rural nurses use to obtain research findings?
3. To what extent do rural nurses find research relevant to their practice?
4. How do rural nurses use research findings in their practice?

METHODS

Sample and Setting

After receiving approval from institutional review boards at the academic institutions affiliated with the authors, a descriptive, cross-sectional survey design was used to explore availability of research and its utilization with a sample of nurses practicing in rural settings in South Dakota, Montana, and Oregon. These states were selected for convenience. None of these states have current continuing education requirements for licensure renewal. Mailing lists of all registered nurses holding licenses in these three states were obtained from the respective Boards of Nursing. The lists were separated into rural and non-rural subsets based on county of residence using the county classification system developed by the Economic Research Service (ERS) of the United States Department of Agriculture (USDA, 2007). The ERS county classification system expands the often used three-tiered county classification system (metropolitan, and the non-metropolitan categories of micropolitan and non-core counties) of the Federal Office of Management and Budget into nine categories of counties (Codes 1-9). Counties meeting the criteria of ERS Continuum Codes 6-9 were identified as rural. As such, rural nurses were those living in non-metropolitan counties containing urban populations of less than 20,000 residents. From this population, 800 nurses were randomly selected: 300 from Oregon, 300 from Montana, and 200 from South Dakota. Sample size was determined by budget resources.

The desired study sample was nurses working in rural facilities. None of the mailing lists, however, indicated the employment location of the registered nurses. It was recognized that some nurses reside in rural areas and commute to employment settings in urban areas. In order to capture the desired population, the data for zip codes for residence and for primary place of employment were collected. With this information, it was possible to exclude registered nurses who commuted to urban settings from the data analysis. Surveys and return envelopes

were mailed to each of the 800 nurses, accompanied by cover letters that included an explanation of the study and measures to assure confidentiality.

Instrument

The survey tool, titled “Rural Nurses’ Access to and Use of Research in Practice”, was developed collaboratively by the research team and researchers from the University of Calgary. The survey was adapted with permission from tools created by other researchers (Estabrooks, 1996; Funk, Tornquist, & Champagne, 1995; McKenna, Ashton, & Keeney, 2004). The adapted tool served primarily as an accumulation of items from the previous tools with the addition of demographic information and more detailed exploration of information from the previous tools (for example, more detailed exploration of Internet connectivity). The adapted tool was pilot tested with 100 registered nurses from Eastern Montana, with a return rate of 52% (n = 52). The names of these 100 registered nurses were removed from the sample of the current study in order to prevent duplication of study participation. From the data of the pilot study, reliability of individual Likert-scale items ranged from a Cronbach’s alpha of 0.643 and 0.863.

The adapted tool was originally designed to be distributed to physicians, nurses and social workers; therefore, items not relevant to nurses (e.g. identification of self as a social worker) were removed for the current study in order to better accommodate a nursing sample. To provide common context for the study participants, research utilization was defined on the survey as the use of any kind of research, in any kind of way, in any aspect of work as a health practitioner. Even though clinical practices learned in school may be well-supported by research, participants were instructed not to consider information that was learned in their basic professional education as research because the aims of the study were to explore on-going post-education research utilization behaviors in the practice setting.

The tool contained a total of 115 items distributed among six sections: availability of resources, sources of information, Internet access and use, use of research findings, attitudes toward research-based practice, and demographics. These sections primarily contained research utilization variables attributable to the individual nurse, congruent with the aims of the current study. Nevertheless, effective research utilization is dependent upon individual variables as well as variables attributable to healthcare organizations and financial systems. Data from systemic/organizational variables were explored indirectly via the perspectives of individual nurses (for example, perceived availability of continuing education opportunities in the work setting). Each section on the survey contained multiple items using Likert-type or yes/no response questions. Respondents were also afforded the opportunity to provide qualitative comments.

Procedure and Data Analysis

School of nursing research office staff mailed surveys and return envelopes numerically coded to each of the 800 nurses, accompanied by cover letters that included an explanation of the study and measures to assure confidentiality. Participants returned surveys via mail to the research office. Office staff verified completed surveys and sent thank-you cards and certificates of participation to those who returned a completed survey. Surveys were separated from envelopes in order to maintain confidentiality of the participants. Data from completed surveys were entered into a database and displayed using the Statistical Package for Social Sciences (SPSS Version 15®) software and analyzed by the research team using descriptive statistics to

determine item frequencies and measures of central tendency. Content analysis (Patton, 2002) was used to discern themes in the qualitative data.

RESULTS

Sample

In total, 263 surveys were returned representing a return rate of 35.3%. Respondents who declined to participate by returning blank surveys were removed from the sample. Also, nurses working in urban counties (identified by zip code of place of employment) were removed from the sample, leaving 200 surveys for analysis. Overall response rates from the three states were similar. Demographic data are detailed in Table 1. No demographic data were available for non-responders. Of particular note is that the majority of the participants possess a baccalaureate degree or higher and work full-time in an acute care facility in a staff nurse position. Variability in the amount of time spent in rural practice is evident. Most participants reside close to their place of employment.

Availability of Research Findings

Fourteen items on the survey related to the availability of resources that would contain findings from research studies. Just over half, some 51.3% (n = 100 of 195 responses) of the respondents, reported that professional journals were accessible at their workplaces; 59.5% (n = 116) noted that the journals available were current and 61.8% (n = 121) noted that the journals were appropriate to the specific clinical setting. A number of respondents provided qualitative comments that further explained or clarified their responses. Some respondents noted that the journals available in the workplace were journals from their personal subscriptions that they had brought to the clinical setting from home. Whether at work or at home, 38.8% (n = 76 of 196 responses) of the respondents reported reading general nursing journals (such as *American Journal of Nursing*) less than five times per year; 71.9% (n = 141) reported reading specialty nursing journals less than five times per year; and 82% (n = 161) reported reading nursing research journals less than five times per year. A small majority of the nurses (57.7%, n = 194) indicated that published clinical guidelines were available to them. A minority of rural nurses (29.9%, n = 58) reported that libraries were present at their workplace. Over half (n = 120 of 193 responses) reported that regularly accessing the nearest library of any type, whether in their workplace or in their communities was difficult.

Educational opportunities were available to nurses through conferences and inservices. Although the content of these opportunities was not explored by the survey items, 66.3% (n = 130 of 196 responses) of the respondents reported that education was provided at the workplace and 58.7% (n = 115) of the respondents noted that education was provided regularly. Although 67.0% (n = 131) of the respondents stated that monies were available from their employers to attend educational conferences, some respondents indicated that these monies were limited to charge nurses or managers only.

The Internet has greatly expanded nurses' ability to obtain research findings from the literature. A large majority (86.6%, n = 168 of 194 responses) of respondents reported Internet availability in their workplace. Most of the nurses (n = 156) used the Internet at work. The Internet connection at work was reliable for 90.5% (n = 176) of the respondents, but only 54.4%

Table 1
Select Demographic Data of Study Respondents

1. Gender (n = 196)	
a. Female	91.8%
b. Male	8.2%
2. Age (n = 193)	
a. < 30 years	7.8%
b. 31-40 years	18.1%
c. 41-50 years	34.7%
d. 51-60 years	29.5%
e. > 60 years	9.8%
3. Level of Highest Educational Preparation (n = 194)	
a. Diploma	9.8%
b. Associate degree	32.5%
c. Baccalaureate degree	45.4%
d. Master's degree	12.4%
e. Doctorate	0.0%
4. Level of Employment (full/part) (n = 195)	
a. Full time	67.0%
b. Part time/ per diem	32.9%
c. Not currently employed	6.7%
5. Employment Setting (n = 162)	
a. Hospital	63.0%
b. Long-term care facility	9.9%
d. Public/ Community health	11.1%
e. other	16.0%
6. Primary Position (n = 169)	
a. Staff nurse	55.0%
b. Charge nurse	18.9%
c. Manager/ administrator	14.8%
d. Nurse practitioner	9.5%
e. Educator/ instructor	1.8%
7. Total Years of Nursing Practice (n = 198)	Mean = 20.5 years Range = 1-50 years SD = 11.8 years
8. Total Years of Rural Nursing Practice (n = 196)	Mean = 15.1 years Range = 1-46 years SD = 10.2 years
9. Location of Employment (n = 180)	
Works in same community as residence	75.6%
If not, one-way commuting distance (in miles)	Mean = 27.6 miles Range = 3-130 miles SD = 20.4 miles
If not, one-way commuting time (in minutes)	Mean = 34.2 minutes Range = 10-120 minutes SD = 21.6 minutes

(n = 106) noted that the computers were adequate for searching for research information. The few nurses who did not use the Internet cited a lack of time at work or that computers with Internet access were only available in the offices of managers as the reasons they did not use it. Nearly all of the respondents (94.6% n = 184) reported using the Internet at home. For those few nurses (n = 10) who reported never using the Internet, seven reported lacking computer skills and five reported not having time to use the computer.

Sources of Knowledge

Table 2 details the knowledge sources used always or frequently by the respondents. The majority of respondents reported frequent use of self-knowledge (experience, intuition, basic education) or knowledge sources internal to the organization (procedure manuals, co-workers) as primary knowledge sources for professional practice. Although 2/3 of the respondents reported frequent use of knowledge gained from inservices and conferences, other formal sources of knowledge external to the employment setting (post-education academic courses, clinical consultants from other settings) were used by a minority of the nurses.

Table 2
Sources of Knowledge Used Always or Frequently in Professional Practice

Knowledge Source	Respondents	
	n	%
Personal experience	197	89.3%
Content learned in school	197	72.1%
Inservices/ conferences	193	66.8%
Policy/ procedure manuals	196	58.7%
Intuition	195	56.4%
Consultations with co-workers	195	52.8%
Consultations with external experts	195	33.3%
General nursing journals	196	31.6%
Routine habit	192	28.6%
Nursing research journals	196	18.9%
General medical journals	196	13.3%
Drug representatives	196	11.7%
Lay literature/ media	195	5.6%

Relevance and Use of Research Findings

Although 82.9% (n = 161 of 194 responses) of the nurses “agreed” or “strongly agreed” that changing practice based on research was beneficial and 73.7% (n = 143) of the nurses “agreed” or “strongly agreed” that implementing research-based practice would benefit their personal professional development, only 39.2% (n = 76) reported confidence that research findings were relevant to their rural practices and only 26.7% (n = 53) believed the results of research studies that they read. Additionally, 15.4% (n = 30) of the nurses reported that the research specific to their clinical areas was of poor quality. In addition to the lack of perceived relevance of research to rural nursing, a number of additional barriers to using research in

Table 3
 “Agreeing/ Strongly Agreeing” That Barrier to Using Research in Practice is Present

Barrier	Respondents	
	n	%
Research literature reports conflicting results	194	79.9%
Lack of time to implement research effectively	194	61.9%
Lack of incentives to develop research skills for use in practice	195	59.0%
Amount of research is overwhelming	194	54.1%
Difficulty to influence change in the workplace	195	50.3%
Research articles not easily understood	195	49.2%
Isolated from knowledgeable colleagues	194	48.5%
Research findings not easily transferred to practice	194	44.8%
Lack of management support for using research in practice	195	29.3%
Lack of support from colleagues for using research in practice	194	23.7%
Lack of confidence in ability to evaluate quality of research	194	19.1%
Lack of knowledge of how to search research-based information	195	15.4%
Lack of confidence in personal skills with computers	195	14.4%

practice were identified (see Table 3). Most of these barriers are consistent with those identified by previous researchers.

In terms of actual use of research findings in practice, 27.1% (n = 54 of 199 responses) of the respondents reported using research “often” or “very often” in the past year; whereas 30.0% (n = 60) reported using research “rarely” or “never” in the past year. While the structural and educational barriers identified by the respondents may have limited the use of research in practice, attitudes and values regarding research may have affected the use of research as well. Only 37.0% (n = 73) of the respondents would be willing to adopt research findings if those findings contradicted the information they had learned in the workplace. Furthermore, only 34.8% (n = 68) of the respondents would be willing to adopt findings that contradicted the information they had learned in their basic nursing preparation and only 22.8% (n = 44) of the respondents would be willing to use research findings if the results contradicted their intuition or common sense. Interestingly, 63.4% (n = 123) of the respondents stated that they would be more comfortable using research if a research-experienced individual was available to supply them information and 37.0% (n = 66) of the nurses felt that they should take a course to help them use research more effectively. Finally, respondents were asked to estimate the percentage of their practice that was based on research. Responses ranged from 0-100% with a mean score of 35.1% of practice that was perceived as research-based.

DISCUSSION

The results of this study provide useful insights about research utilization in rural nursing practice that are both encouraging and discouraging. For example, this rural nurse sample reported Internet availability that exceeded previous reports in the literature (Estabrooks, O’Leary, Ricker, & Humphrey, 2003). Additionally, the vast majority of the respondents

indicated that changing practice based on research would be beneficial. Less encouraging, however, is that only about one in four nurses actually reported using research routinely in practice. There also appears to be a general lack of skill in interpreting research in a meaningful way based on the self-report of the participants.

The results reveal some seemingly contradictory findings. For example, about half of the participants reported difficulty in understanding research articles, yet the majority of participants denied a lack of confidence in evaluating the quality of the research. Although this study did not explore participant ability to understand specific components of a research article, some possible explanations for this contradiction could be considered. It is possible that participants had trouble understanding the methodology and data analysis aspects of research articles. Yet if the discussion of the research findings were perceived to be too abstract or non-applicable to rural practice, participants may have judged these articles to be of poor quality. In other words, it is possible that the quality of a research article may have been determined by the applicability of its findings by some of the participants. Such an explanation should be considered since nearly 40% of the participants felt that research findings were relevant to rural nursing and nearly 45% of the participants felt that research findings were poorly transferred to practice.

Another contradiction is that despite the general agreement among the nurses that incorporating research into practice is beneficial, few nurses in this study indicated that they would change their practice if the evidence contradicted pre-existing knowledge or beliefs. On the one hand, blind acceptance of research findings is not the goal of evidence-based practice. Nonetheless, this disconnect between recognizing the possible benefits of evidence based practice and actual changes in practice needs to be addressed. Perhaps more emphasis and support is needed in the practice setting and generic nursing education on the value and implementation of evidence based practice.

Nurses in this study reported reliance on general nursing journals more than nursing research journals and more so than non-nursing professional journals. This finding should not be surprising based on the generalist focus of most nurses in rural practice. Given the extent to which general nursing journals are utilized, they could be useful vehicles for the dissemination of evidence. Editors of these journals should consider incorporating more multidisciplinary content as well as manuscripts focusing on user-ready syntheses of current evidence. In addition, rural health care organizations should consider increasing nurses' access to rural-focused health journals. Access to these journals would facilitate availability of research articles that nurses would find relevant to rural practice.

The nurses in this study from South Dakota, Montana, and Oregon were consistent with their Wyoming counterparts (Ouzts, 2005) in acknowledging reliance on information from colleagues to inform their practice. However, it is unknown if or how information from colleagues is validated. These considerations suggest that there are essential personnel in rural agencies for whom it would be incumbent to send to continuing education venues to keep current in practice. Given the barriers associated with geographic isolation from knowledgeable peers (MacLeod et al, 1998; Newhouse, 2005; Olade, 2004; Shreffler, 1998; Winters et al., 2007), the importance of professional practice networks for rural nurses is paramount. This sample also acknowledged that continuing education programs at the worksite are valuable in terms of dissemination of current information, making it imperative that administrators continue to allocate funds for such opportunities.

The findings from this study suggest that rural nurses need much assistance interpreting research findings. Given that the sample is likely more educated than the nurses in many rural

settings, with almost 58% of this sample educated at the baccalaureate or master's level, the relative self-reported lack of skill in using research is troubling. Although some of these nurses may have attended school at a time when research utilization was a rare topic in nursing curricula, the perceived lack of skill among the participants may be more indicative of a lack of database searching skills, as noted by the majority of participants who stated that a research mentor would be beneficial. If the culture of nursing is truly shifting to evidence-based practice, nursing programs need to shift their curricula accordingly, adding much more attention to critique of evidence as a fundamental competency of generic nursing education at all levels. Specifically, education programs need to have a stronger focus on nursing informatics and evidence-based practice, actively helping students develop the skills to locate evidence in databases, interpret evidence, and perhaps more importantly, instilling the values and expectations that practice is ever dynamic and should always be changing to reflect the most current evidence. These goals could be realized by student assignments in which practices seen in the clinical setting are critiqued using evidence obtained from databases, analysis of quality improvement efforts, or the use of case studies to illustrate improved client outcomes resulting from changes in practice consistent with new evidence from research.

Opportunities exist for creativity in planning interventions to bolster the skills of rural nurses in critiquing evidence. For example, with the burgeoning of online academic programs, it may be possible for rural health agencies to partner with academic institutions to help their nurses obtain skills for accessing and critiquing evidence. Other possibilities exist for the development of online learning modules that could be completed by rural nurses onsite or at home. Such possibilities require organization support and collaboration among rural facilities, health networks, and academic institutions.

Finally, these results further suggest that rural health care agencies are ripe for clinical nurse specialists (CNS) and clinical nurse leaders (CNL) who are specially prepared to identify practice questions, seek out pertinent evidence, and critique it for relevance to practice. Clinical nurse specialists are well known for their ability to "influence care outcomes by providing expert consultation for nursing staffs and by implementing improvements in health care delivery systems" (National Association of Clinical Nurse Specialists, 2007). The CNL "puts evidence-based practice into action to ensure that patients benefit from the latest innovations in care delivery" (AACN, 2005). Given the general lack of resources at many rural agencies, a CNS or CNL shared among several facilities would potentially provide for significant economic impact in terms of improved patient outcomes as a result of increased use of evidence-based practice. Use of telecommunications for CNS/ CNL consultations could overcome collaboration barriers related to geographical distance. Further research will be needed to evaluate the efficacy of shared CNS/ CNL personnel in improving the implementation of evidence-based practice in rural facilities.

Although the findings provide helpful insights into rural nurses' access to and use of research to inform practice, the findings cannot be generalized to all rural nurses and rural health facilities. The small sample size does not afford the ability for inferential or predictive conclusions. In addition, financial, technology, and personnel resources are highly variable among rural facilities. Rural areas distant from the geographical setting in this study may present with different sociocultural, educational, and industry networking variables which could yield different findings. Also, this study did not evaluate whether or not nurses possessed specialty certification. Requirements for maintaining certification may affect continuing education efforts of individual nurses. Further research is needed exploring relationships among demographic

variables and attitudes, knowledge, and skills accessing research findings and implementing evidence into clinical practice. Importantly, further research exploring how rural nurses resolve dissonance between new evidence and previously held clinical knowledge and beliefs is essential as clinical mentors, educators, and administrators develop strategies designed to increase the implementation of evidence based practice in rural health facilities.

CONCLUSION

The findings from this study provide useful insights about the role of research in rural nursing practice. While a large majority of nurses considered it beneficial to incorporate research into practice, relatively few nurses actually routinely incorporated research into practice. Reasons for this are likely due to a combination of individual and systemic barriers. Additionally, nurses were inconsistent in their sources of knowledge, most often relying on self-knowledge or professional colleagues. Although access to the Internet, nursing journals, and other library resources was available, self-reported lack of skill in interpreting research as well as inconsistencies regarding the value of research appeared to be significant barriers to evidence-based practice in rural settings.

REFERENCES

- Agency for Healthcare Research & Quality [AHRQ]. (n.d.). Retrieved on September 30, 2003, from <http://www.ahrq.gov> .
- American Association of Colleges of Nursing (AACN). (2005). CNL frequently asked questions. Retrieved on January 17, 2008, from <http://www.aacn.nche.edu/CNL/faq.htm>
- Balas, E.A., & Boren S.A. (2000). Managing clinical knowledge for healthcare improvements (pp. 65-70). Stuttgart: Schattauer Publishing Company.
- Estabrooks, C. (1996). Research utilization in nursing: Factors influencing the utilization and non-utilization of research by nurses. Edmonton: University of Alberta.
- Estabrooks, C.A., Floyd, J.A., Scott-Findlay, S., O'Leary, K.A., & Gushta, M. (2003). Individual determinants of research utilization: a systemic review. *Journal of Advanced Nursing*, 43(5), 506-520. [[MEDLINE](#)]
- Estabrooks, C.A., O'Leary, K.A., Ricker, K.L., & Humphrey, C.K. (2003). The Internet and access to evidence: How are nurses positioned? *Journal of Advanced Nursing*, 42(1), 73-81. [[MEDLINE](#)]
- Fink, R., Thompson, C.J., & Barnes, D. (2005). Overcoming barriers and promoting the use of research in practice. *Journal of Nursing Administration*, 35(3), 121-129. [[MEDLINE](#)]
- Funk, S.G., Tornquist, E.M., & Champagne, M.T. (1995). Barriers and facilitators of research utilization. *Nursing Clinics of North America*, 30(3), 395-407. [[MEDLINE](#)]
- Hicks, C., & Hennessy, D. (1997). Mixed messages in nursing research: Their contribution to the persisting hiatus between evidence and practice. *Journal of Advanced Nursing*, 25, 595-601. [[MEDLINE](#)]
- Hutchinson, A.M., & Johnston, L. (2004). Bridging the divide: A survey of nurses' opinions regarding barriers to, and facilitators of, research utilization in the practice setting. *Journal of Clinical Nursing*, 13, 304-315. [[MEDLINE](#)]
- Institute of Medicine [IOM]. (n.d.). Retrieved on September 30, 2003, from <http://www.iom.edu>

- MacLeod, M., Browne, A.J., & Leipert, B. (1998). Issues for nurses in rural and remote Canada. *Australian Journal of Rural Health*, 6, 72-78. [MEDLINE]
- Maljanian, R. (2000). Supporting nurses in their quest for evidence-based practice: Research utilization and conduct. *Outcomes Management for Nursing Practice*, 4(4), 155-158. [MEDLINE]
- McKenna, H.P., Ashton, S., & Keeney, S. (2004). Barriers to evidence-based practice in primary care. *Journal of Advanced Nursing*, 45(2), 178-189. [MEDLINE]
- Melnyk, B.M., & Fineout-Overholt, E. (2005). Making the case for evidence-based practice. In B. M. Melnyk & E. Fineout-Overholt (Eds.) *Evidence-based practice in nursing and healthcare: A guide to best practice* (pp. 3-24). Philadelphia: Lippincott, Williams, & Wilkins.
- National Association of Clinical Nurse Specialists (NACNS). (2007). FAQs: What is a clinical nurse specialist? Retrieved on January 17, 2008, from <http://www.nacns.org/faqs.shtml>
- Newhouse, R.P. (2005). Exploring nursing issues in rural hospitals. *Journal of Nursing Administration*, 35(7/8), 350-358. [MEDLINE]
- Olade, R.A. (2004). Evidence-based practice and research utilization activities among rural nurses. *Journal of Nursing Scholarship*, 36(3), 220-225. [MEDLINE]
- O'Lynn, C. (2006). Men working as rural nurses: land of opportunity. In H.J. Lee & C.A. Winters (Eds.) *Rural nursing: concepts, theory, and practice* (2nd ed., pp. 232-247). New York: Springer.
- Ouzts, K. (2005). Evidence-based practice and information literacy skills in rural nurses. [Abstract] *Communicating Nursing Research*, 38(13), 287.
- Parahoo, K. (2000). Barriers to, and facilitators of, research utilization among nurses in Northern Ireland. *Journal of Advanced Nursing*, 31(1), 89-98. [MEDLINE]
- Patton, M.Q. (2002). *Qualitative research & evaluation methods*. Thousand Oaks, CA: Sage.
- Restas, A., & Nolan, M. (1999). Barriers to nurses' use of research: An Australian hospital study. *International Journal of Nursing Studies*, 36, 335-343.
- Scharff, J. (1998). The distinctive nature and scope of rural nursing: Philosophical bases. In H.J. Lee (Ed.) *Conceptual basis for rural nursing* (pp. 19-38). New York: Springer.
- Shreffler, M.J. (1998). Professional isolation: A concept analysis. In H.J. Lee (Ed.) *Conceptual basis for rural nursing* (pp. 420-432). New York: Springer.
- US Department of Agriculture [USDA], Economic Research Service. (2007). Measuring rurality: What is rural? Retrieved on October 8, 2007, from <http://www.ers.usda.gov/Briefing/Rurality/WhatisRural> .
- Van Mullem, C., Burke, L.J., Dohmeyer, K., Farrell, M., Harvey, S., et al. (2001) Integrating research into practice. *American Journal of Nursing*, 101(4), 24A-24H.
- Wellard, S., & Bethune, E. (2000). Learning issues for nurses in renal satellite centres. *Australian Journal of Rural Health*, 8(6), 322-326. [MEDLINE]
- Winters, C.A., Lee, H.J., Besel, J., Strand, A., Echeverri, R., Jorgenson, K.P., & Dea, J.E. (2007). Access to and use of research by rural nurses. *Rural and Remote Health* (Online), 7(758). [MEDLINE]