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A Cross-sectional Study on Evidence-Based Nursing Practice in the Contemporary Hospital Setting

CE 1.0 ANCC Contact Hour

Implications for Nurses in Professional Development

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Evidence indicates that nurses inconsistently engage in evidence-based practice (EBP). This cross-sectional study of 402 nurses at a medical-surgical hospital identifies strategies for augmenting EBP. Nurses' EBP beliefs scores were higher than their EBP implementation scores. Those with baccalaureate/postgraduate degrees had higher EBP beliefs and implementation scores than those with associate degrees or diplomas. Bedside or direct care nurses were less likely to have baccalaureate/higher degrees and had lower EBP beliefs and implementation scores than did those nurses not serving in direct care roles.

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The term evidence-based practice (EBP) was first introduced in 1992 (Evidence-Based Medicine Working Group, 1992). EBP requires clinical nurses to interpret the best evidence from literature and integrate this with their expertise and patients' values, concerns, and preferences in providing patient care. Nursing professional development (NPD) practitioners help interpret and integrate evidence into clinical nursing practice by providing education and support to direct caregivers. EBP is particularly important in the acute care hospital setting, because patients' conditions may be critical secondary to injury, surgery, or acute and chronic illnesses, and the care they receive may directly affect their morbidity and mortality.

Over the past two decades, clinicians and educators alike have appreciated that EBP leads to better clinical decisions and patient outcomes (American Association of Colleges of Nursing, 1998; Flodgren, Rojas-Reyes, Cole & Foxcroft, 2012). Nursing education was consequently expanded to incorporate EBP. Nurses graduating prior to the emphasis on EBP may lack understanding and skills, and the more recent graduates come from programs that vary in EBP content and experiences. Registered nurses (RNs) graduate from diverse entry-level programs (i.e., baccalaureate degree, associate degree, and diploma) that cover varied proportions of EBP content. RNs graduating from programs that provide insufficient education about

EBP may lack enthusiasm and develop negative attitudes about its use, which then impedes the application of EBP principles (Siedlecki, 2008).

Practicing evidence-based nursing in real time is challenging, as such practice requires efficient searching and appraisal of the evidence in the literature. The latter includes evaluating the quality of the evidence, the magnitude and precision of the effect, any harms or benefits, financial cost, and relevance to the clinical setting (Straus, Glasziou, Richardson, & Haynes, 2011). Time constraints could also preclude nurses from incorporating EBP into clinical decision-making. Hence, the extent to which nurses believed in EBP and were able to implement it in the study's hospital was unknown. Therefore, the purpose of this study was to obtain a baseline assessment of EBP beliefs and implementation by nurses of diverse educational backgrounds and various levels of experience in order to design a supportive infrastructure and implement effective strategies for improving or expanding EBP.

METHODS

This cross-sectional study used a convenience sample of 402 nurses at a 383-bed, private, not-for-profit hospital, located in the northeastern region of the United States. The hospital had over 295,000 patient visits annually. The population included 746 RNs who were direct care providers (bedside nurses). Nurses completed a Web-based survey anonymously. Data were collected in the fall of 2014, after approval to conduct the study was obtained from the hospital's institutional review board. The authors of the instruments used for data collection in the study, the EBP Beliefs Scale and the EBP Implementation Scale, had granted permission for their use (Melnyk, Fineout-Overholt, & Mays, 2008).

Participants

RNs practicing in all areas of the hospital were invited to participate in the study via an e-mail link to an online survey site. Consent was implied by voluntary completion of the survey. Licensed practical nurses and temporarily employed agency RNs were excluded from participation.

Instruments

The survey consisted of a demographic form and two 5-point Likert scale sections. The 16-item Beliefs Scale measured participants' beliefs about the value of EBP and their ability to implement it. Item ratings ranged from 1 (*strongly disagree*) to 5 (*strongly agree*)—for a total score ranging from 16 to 80. The 18-item EBP implementation scale measured participants' self-reported implementation of EBP. Item ratings ranged from 0 (*0 time*) to 4 (*≥8 times*)—for a total score ranging from 0 to 72; but in the statistical analyses, these items were scored from 1 (*0 time*) to 5 (*≥8 times*)—for a total score ranging from 18 to 90. Construct and criterion validity of the scales are reported elsewhere (Melnyk et al., 2008). Cronbach's alpha has consistently shown values greater than .90 for both scales (Melnyk et al., 2008; Wallen et al., 2010).

Data Analysis

The sample was described using frequencies and measures of central tendency and dispersion. A total score was calculated for each scale. Bivariate analyses were performed using independent *t* tests, chi-square tests, and Pearson correlation (*r*). All tests of statistical significance were two-tailed. An alpha level of .05 was the criterion for statistical significance. Statistical analyses were performed using SPSS (Version 23).

RESULTS

The characteristics of participants (response rate, 46%) are presented in Table 1. Nurses' overall EBP scale scores are displayed in Table 2. EBP beliefs scores were correlated positively with implementation scores ($r = .35$, $p < .001$, $n = 351$). Their mean belief score indicated that most of the nurses believed in EBP. In addition, their mean implementation score indicated that, on average, nurses were engaged in one to two EBP activities during the 8 weeks prior to the study.

TABLE 1 Participants' Characteristics (*N* = 402[a])

Demographics	*n*	% of Respondents
Female	359	90.8
Caucasian (Non-Hispanic)	308	77.6
Hispanic ethnicity	20	5.0
Bedside nurses	310	77.5
Education		
BSN	137	34.6
Associate degree	91	22.9
Diploma	113	28.5
Master's degree	39	9.6
Certifications	141	36.1
	Mean (*SD*)	**Range**
Age (years)	43.4 (12.7)	21–73
Years as RN	15.5 (13.2)	<1–56

[a]*Not all participants answered each demographic item.*

TABLE 2 Evidence-Based Practice Scales: Total Scores

	Mean	*SD*	Range
Evidence-based beliefs	61.3	8.26	27–80
Evidence-based implementation	34.5	15.3	18–90

Mean item scores in the EBP beliefs scale ranged from 3.46 to 4.24. The three lowest mean EBP beliefs item scores, which are presented in Table 3, indicated that many nurses lacked sufficient knowledge of EBP and perceived that EBP was difficult and time-consuming. Direct care nurses had significantly lower beliefs scores than non-direct care nurses (60.1 vs. 65.7; $p < .001$, t test) and were also significantly less likely than their non-direct care peers to have a baccalaureate degree or higher (32% vs. 82%; $p < .001$, chi-square test). Nurses with a baccalaureate or postgraduate degree had higher beliefs scores than did those with an associate degree or a diploma (63.6 vs. 59.2; $p < .001$, t test). We found no significant associations between beliefs and age ($r = -.048$, $p = .380$, $n = 337$), years in practice as an RN ($r = .072$, $p = .164$, $n = 377$), and having national certifications (133 vs. 238; $p = .655$, t test).

Mean item scores in the implementation scale ranged from 1.45 to 2.71. The three lowest mean EBP implementation item scores, which are presented in Table 4, indicated that accessing and using guidelines and systematic reviews and writing population, intervention, comparison, outcome (PICO) questions were the most challenging aspects of EBP implementation. Nurses with a baccalaureate or postgraduate degree had significantly higher implementation scores than those with an associate degree or a diploma (38.2 vs. 31.3; $p < .001$, t test). Similarly, nurses who had national certifications had significantly higher implementation scores than those who did not (37.2 vs. 33.1; $p = .03$, t test). Bedside nurses had significantly lower implementation scores than non-bedside nurses (32.4 vs. 41.3; $p < .001$, t test). Years in practice as an RN was not significantly correlated with EBP implementation ($r = -.095$, $p = .074$, $n = 353$). Age was inversely correlated with implementation ($r = -.113$, $p = .045$, $n = 313$).

TABLE 3 Lowest Scoring Evidence-Based Beliefs Scale Items (*N* = 355)

Items	Mean (*SD*)
I know how to implement EBP sufficiently enough to make practice changes.	3.46 (0.87)
I believe EBP is difficult.[a]	3.56 (0.80)
I believe that EBP takes too much time.[a]	3.59 (0.81)

[a]*These two items are reverse-scored on the Evidence-Based Beliefs Scale*

TABLE 4 Lowest Scoring Evidence-Based Implementation Scale Items (*N* = 355)

Items	Mean (*SD*)
Accessed the National Guidelines Clearinghouse	1.45 (1.01)
Used an EBP guideline or systematic review to change clinical practice	1.52 (0.88)
Generated PICO questions	1.59 (1.01)

Note. EBP = evidence-based practice; PICO = population, intervention, comparison, outcome.

DISCUSSION

This study's results are analogous to other research findings indicating that higher levels of education and leadership roles were associated with greater EBP beliefs and implementation (Melnyk et al., 2008; Underhill, Roper, Siefert, Boucher, & Berry, 2015; Warren et al., 2016). Similar to other studies, although nurses valued EBP, they did not consistently engage in or implement it (Cadmus et al., 2008; Hart et al., 2008; Underhill et al., 2015). However, this variability in EBP beliefs versus EBP implementation has also been observed among physicians who typically complete a higher level of formal educational training for licensure than do nurses, suggesting that higher levels of education may not necessarily lead to greater EBP (Sekimoto, Imanaka, Kitano, Ishizaki, & Takahashi, 2006; Young et al., 2002). Conversely, higher levels of education within nursing may correspond to more preparation in EBP.

On the basis of the findings of this study, nurses may need support in pursuing specialty certifications and further education. NPD practitioners' initial target group for education might be nurses who possess associate degrees and nursing diplomas as their highest level of education, as well as non-certified direct care nurses. Nurses with baccalaureate and higher degrees and certified nurses might be well positioned or empowered to become EBP leaders amongst bedside clinicians.

The findings of this study indicated that nurses' EBP implementation was generally low. The items with the lowest EBP implementation scores (see Table 4) may represent the most challenging aspects of nurses' EBP implementation. Addressing these items may be the optimal starting point for strengthening a culture of EBP implementation. A variety of strategies may be essential for catalyzing EBP implementation (Fineout-Overholt, Levin, & Melnyk, 2004). Of note, our search revealed a paucity of well-designed studies and, consequently, a shortage of

systematic reviews generating evidence on the effectiveness of EBP implementation strategies.

Providing mentorship in accessing and using guidelines and systematic reviews and education on generating PICO questions may be one way to improve EBP implementation (Wallen et al., 2010; Warren et al., 2016). On the basis of these study findings, the hospital has added an EBP mentorship program for new hires and new graduates. In addition, classes that specifically focus on generating and implementing EBP have been offered by the hospital librarian and EBP leaders. This course is offered on a quarterly basis, and staff are encouraged to attend and share the knowledge gained through this course with other clinicians.

The implementation of EBP in the hospital setting may be most effective when NPD practitioners consult with other healthcare providers. A collaborative approach to EBP surpasses an individualistic or single disciplinary approach (Satterfield et al., 2009) and aligns with the interdisciplinary delivery of health care in the hospital setting. Furthermore, NPD practitioners may lack autonomy to implement EBP owing to factors such as real or perceived medical dominance and clinicians' resistance to change (Patelarou et al., 2013). Moreover, many clinical questions are best addressed through group or interdisciplinary effort. In the collaborative approach, healthcare decision-making about organizational factors, adaptation of clinical practice guidelines or protocols, and assessment of the implementation potential of the evidence are shared among other healthcare practitioners and affected stakeholders, including patients and their families. Collaborative partnerships for EBP could also be sought from colleagues in academia who may have greater research expertise, which is especially important in evaluating evidence.

In their role of providing education and support, NPD practitioners are especially positioned to assist in identifying practice problems and generating meaningful PICO questions that may provide the basis of literature reviews or even further exploration into full research or quality improvement projects (Siedlecki, 2008). Capturing these questions while they are relevant and before they are erased from memory is essential. NPD practitioners can promote practical means for capturing and saving PICO questions for later retrieval, such as placing receptacles for written questions on nursing units (Straus et al., 2011). The hospital used as this study's site is currently introducing an electronic Web-based tool for nurses to create PICO questions. This tool may be accessed in real time by other nurses and later explored at nursing councils, journal clubs, and other forums. Promoting the involvement of nurses in this manner may stimulate greater interest in their application of research findings. Nurses are also more likely to accept practice changes when they are actively involved in the resolution of issues arising from their care of patients.

The clinical ladder program instituted in the 1970s for promotion of bedside nurses may be a great tool for recognizing the additional effort expended in EBP (Burket et al., 2010; Riley, Rolband, James, & Norton, 2009). The study hospital is currently in the process of incorporating EBP activities (e.g., completing EBP classes or participating in a journal club) as criteria for promotion up the clinical ladder, which carries a resultant increase in salary. Participation in EBP activities is also being considered as a component of nurses' work performance evaluation, meriting salary increases if accomplished.

Journal clubs are being instituted at the hospital on a unit-by-unit basis as a strategy to address nurses' learning needs in accessing, appraising, and implementing evidence into clinical practice. Journal clubs provide a safe and supportive environment for bedside nurses to critically evaluate research findings. They are also used to stimulate positive reactions to clinical questions and to encourage direct care nurses to view their own practice through an EBP lens. Journal clubs have been promoted as a strategy to strengthen skills in accessing, appraising and using research (Profetto-McGrath, 2005; Straus et al., 2011). Ideally, the choice of topics should be driven by the type of evidence nurses value most, such as patient care issues and building EBP skills (Straus et al., 2011).

Journal clubs are also being augmented by access to EBP resources, including evidence-based guidelines and systematic reviews. Similar to other research findings, accessing and using guidelines and systematic reviews earned a low mean score on the EBP implementation scale (Melnyk et al., 2008; Warren et al., 2016). These sources of evidence are appraised by teams of experts who use explicit and rigorous methods to find and assess the validity of existing literature. Clinical guidelines emerged with the development of the evidence-based medicine movement (Sekimoto et al., 2006) and typically contain recommendations by experts to optimize patient care. Systematic reviews are literature reviews in which scientific methodology is employed in identifying, appraising, synthesizing, and summarizing study findings about a specific question. Clinical guidelines and systematic reviews are therefore among the best sources of evidence and can be the quickest way to obtain an answer to a clinical question (Straus et al., 2011). Nurses' inability to access these evidence-based resources could negatively affect their ability to implement EBP. The hospital provides institutional access to these preappraised sources of evidence as well as online evidence services (e.g., UptoDate), as an integral part of the infrastructure for supporting EBP in real time.

Although educational classes are currently provided at the hospital in the typical classroom setting, online courses are also being considered for addressing knowledge barriers to EBP. Computer-based education has been shown to be a successful strategy in improving nursing knowledge,

providing convenience, flexibility, and potential for engaging large numbers of nurses (Hart et al., 2008).

This study site recognizes the importance of encouraging and promoting the EBP contributions that direct care clinicians make. There is a yearly "Nursing Research Day" that showcases the work that nurses engage in and produce. Providing a platform for nurses to present their PICO questions and findings helps to facilitate professional development while disseminating information across hospital departments.

Skillful communication of EBP and policies can boost the implementation of EBP. Mass mailing a printed bulletin that summarizes evidence encourages EBP when the message is clear, the change is relatively easy to accomplish, and awareness that a change is necessary exists (Murthy et al., 2012). In addition, creating a dedicated electronic reference folder for placing brief and easy-to-read information related to EBP may increase nurse access to and usage of evidence (Diedrick, Schaffer, & Sandau, 2011). The hospital is currently examining these communication strategies as methods of boosting EBP.

LIMITATIONS

A limitation of this study is the use of a convenience sample. The study findings are therefore subject to volunteer bias, and these results may not necessarily reflect the perspective of all nurses employed at the hospital. This was a single-center study, which could limit the generalizability of study findings.

CONCLUSIONS AND IMPLICATIONS

The findings of this study generate many implications for further research, education, and policy development. An encouraging finding was that nurses valued and understood the importance of EBP, and there was a positive correlation between nurses' EBP beliefs and implementation. This correlation may be strengthened by facilitating pursuit of advanced education. Educational programs that address nurses' research knowledge deficits (e.g., accessing EBP guidelines, generating PICO questions, and conducting online database searches) may be tailored to fit nurses' learning needs. EBP knowledge differentials between nurses with baccalaureate or postgraduate degree versus those with an associate degree or a diploma might be a consideration in designing and promoting appropriate educational environments for supporting EBP.

The authors hypothesize that the low EBP implementation scores compared to belief scores in the study findings may be a reflection of a work environment that is not conducive to EBP. In the hospital setting, many nurses often work long, grueling shifts, and it may be essential to allow them protected time for participating in EBP activities.

The strategies highlighted from this study may help to guide NPD educators and other nurse leaders in creating a hospital-wide EBP infrastructure for engaging nurses in the use of EBP. Further studies are needed to evaluate the effectiveness of these strategies and the extent to which patient outcomes are affected.

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