EVIDENCE-BASED PRACTICE IN NURSING

by

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Abstract

Evidenced-based practice (EBP) as defined by the Institute of Medicine(IOM) is the integration of "best research with clinical expertise and patient values for optimum care"(IOM, 2003, p.45-46). Evidence-based practice (EBP) is considered a standard for safe and quality care (Carlson & Plonczynski, 2008). Healthcare leaders recognize EBP as an integral part of achieving quality outcomes and attaining high reliability. The Institute of Medicine (IOM) has established a goal that 90% of healthcare decisions in the United States be evidenced based by the year 2020 (IOM, 2009). Despite the fact that EBP has been promoted for many years, inconsistencies in implementation and adoption have been noted. Barriers to the implementation of EBP need to be understood. Assessing organizational culture has been identified as a necessary first step in to overcoming common barriers (Carlson & Plonczynski, 2008; Frasure, 2008). The purpose of this study was to assess the practice, attitudes and knowledge of EBP in registered nurses using the Evidence-Based Practice Questionnaire (EBPQ). The study used a descriptive design with convenience sampling. All staff registered nurses (RNs), Clinical Managers (CMs) and Assistant Clinical Managers (ACMs) on inpatient units within a large medical center in the Northeast were invited to participate in this survey. Study results are similar to those found in literature previously cited: a positive attitude towards EBP with a lower perception of knowledge or practice (Melnyk et al., 2004) and belief that more knowledge is needed (Alspach, 2006; Melnyk et al., 2004; Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012). This assessment indicates a degree of environmental readiness and provides relative estimation of educational needs.

Table of Contents

Evidence-Based Practice in Nursing

Background and Statement of the Problem

"Evidence-based practice (EBP) is a problem solving approach to clinical decision making that incorporates a search for the best and latest evidence, clinical expertise and assessment, and patient preferences and values within the context of caring" (Melnyk, 2003, p.149). The Institute of Medicine (IOM) defined EBP as the integration of "best research with clinical expertise and patient values for optimum care" (IOM, 2003, p.45-46). The concept of evidence-based medicine (EBM) was introduced by David Sackett and colleagues in the 1990's. It involves a systematic approach of synthesizing and evaluating available evidence (Sackett, Richardson, Rosenberg, & Haynes, 1998). The goal of EBP is to provide consistent, high quality care where healthcare decisions are made based on a critique of the best evidence instead relying on traditional treatments (Upton, Upton & Scurlock-Evans, 2014).

The terms EBP and research utilization (RU) are sometimes used inter-changeably, but they are not the same. Research utilization is the application of scientific research to practice and practice changes may be based on just one study. Evidence-based practice is much broader. It sets out to answer a clinical question by exploring all available research evidence, and then incorporates the clinician's expertise and the patients' preferences and values before recommending a practice change (Godshall, 2010).

Evidence-based practice is considered essential to providing safe, quality care and it leads to improved patient outcomes (Carlson & Plonczynski, 2008). Research supports the association between the implementation of EBP with higher quality of care, decreased variability and decreased costs (Melnyk, Fineout-Overholt, Gallagher-Ford & Kaplan, 2012). It has been established that best outcomes for

patients and families are achieved when care is based on sound evidence rather that tradition or past experience (Melnyk, Fineout-Overholt, Stone & Ackerman, 2000).

Healthcare leaders recognize EBP as an integral part of achieving quality outcomes and attaining high reliability. For organizations pursuing Magnet designation, the American Nurses Credentialing Center (ANCC) requires demonstration of specific examples where clinical nurses use EBP to implement practices new to the organization, as well as, to revise existing practices. Evidence-based practice is regarded as an important aspect of quality care and therefore an essential requirement for Magnet designation (ANCC, 2013).

Evidence-based practice is a key component in many Institute of Medicine (IOM) publications. In the 2001 *Crossing the Quality Chasm* report, the authors list EBP decision-making as one of the 10 rules for the redesign of healthcare. In order to provide patients with the best care possible, the IOM has called for clinical care decisions to be based on the best available scientific knowledge. Evidence-based decisions decrease variability amongst clinicians and take into account the individual patient's preferences (IOM, 2001). The IOM has also identified EBP as a core competency for healthcare providers. In a 2003 summit on Health Professions Education, EBP was selected as one of five core competencies along with providing patient centered care, applying quality improvement principles, working in interprofessional teams, and use of health information technologies (IOM, 2003). Further validating the critical role of EBP in improving quality of care, participants of the IOM Roundtable on Evidence-Based Medicine established the goal 90% of healthcare decisions in United States be evidence-based by the year 2020 (IOM, 2009).

Despite the emphasis on EBP, there is often a delay between the publication of a new research findings and subsequent application to clinical care. This prolonged delay in implementing evidence at the bedside has been noted and studied for many

years (Carlson & Plonczynski, 2008). Some report that it can take 17 years for information from a randomized control trial (RCT) to be integrated into care at the bedside (IOM, 2001). Nurses continue to perform practices that are not supported by evidence and also fail to implement those with ample research evidence (Makic, VonRueden, Rauen & Chadwick, 2011). For example, practices such as using saline for endotracheal suctioning and using an air bolus to confirm placement of a nasogastric tube (NGT) are perpetuated even though there is a large body of research showing these practices are "not helpful and may even be harmful" (Makic et al., p.38). The healthcare environment is changing rapidly, creating the need for healthcare providers to continually search, assess, and evaluate evidence as it becomes available. Medicine and technology are advancing so quickly that our healthcare system has not been able to keep up with translating, nor applying new knowledge effectively and appropriately (IOM, 2001).

Recognizing that EBP is essential to quality care, Rhode Island Hospital/Hasbro Children's Hospital (RIH/HCH) wanted to promote a culture where EBP is the standard practice. Without a formal assessment of nurses' knowledge, practice or attitudes toward EBP, it is difficult to determine the degree to which EBP provides a foundation for clinical practice. A survey of nurses' current knowledge of EBP, as well as, nurses' attitudes and practices related to EBP can provide a baseline assessment to plan specific strategies to aid EBP implementation. The purpose of this study was to assess the practice, attitudes and knowledge of EBP in nurses using the Evidence Based Practice Questionnaire (EBPQ).

Next, the review of the literature will be presented and critiqued.

Literature Review

A review of the literature was conducted using PubMed, and CINAHL databases. Keywords used included evidence-based practice, evidence based nursing, evidence-based implementation, and research utilization. Articles written in non-English languages were excluded.

The EBP Process

The foundation of EBP is an inquisitive approach to clinical care. Evidence-based practice starts with a clinical question and seeks to know the evidence that supports the care delivered. Evidence-based practice involves a process that can be described in a number of steps as outlined below (Melnyk, Fineout-Overholt & Williamson, 2010).

- Step 0: Cultivate a spirit of inquiry.

  EBP begins by cultivating a spirit of inquiry. Clinical inquiry becomes a routine part of practice and ongoing curiosity is fostered.

- Step 1: Ask the PICOT question.

Good clinical questions are formulated in the PICOT format to encompass all necessary aspects of a problem. PICOT stands for (P) patient population of interest, (I) intervention or area of interest, (C) comparison intervention or group, (O) outcome, and (T) time.

- Step 2: Search for the best evidence.

The PICOT framework guides the search for relevant evidence to answer the clinical question. Database searches using key words or phrases help identify articles to inform practice on the topic of interest.

- Step 3: Critically appraise the evidence.

This step involves a systematic evaluation of the articles retrieved in the search. Study results are analyzed for validity and reliability, as well as applicability to other clinical settings. Information is synthesized to determine if there is sufficient evidence to support current practice or if there is a recommendation for practice change.

- Step 4: Integrate the evidence with clinical expertise and patient preferences and values. Research evidence is considered along with patient assessments, clinical expertise and data; patients' preferences and values are also taken into account.

- Step 5: Evaluate the outcomes of the EBP practice change.

After implementing an EBP change, outcomes are evaluated to determine the effect(s) of the intervention.

- Step 6: Disseminate the outcomes.

Lessons learned should be shared with colleagues.

(Melnyk et al., 2010).

Barriers and Facilitators of EBP

Years of research have identified and documented common barriers to research utilization and/or EBP. Barriers to EBP implementation exist at the organizational and individual level (Melnyk et al., 2102). Common barriers include: inadequate knowledge and skills in EBP; lack of time; competing priorities; lack of value or misperceptions about EBP/research; organizational culture; insufficient EBP mentors; and insufficient accessibility of resource (Carlson & Plonczynski, 2008; McSherry, Artley & Holloran, 2006; Melnyk et al., 2012; Pravikoff, Tanner & Pierce, 2005; Retsas, 2000). Sadly, implementation barriers identified have remained consistent over 15 years of research (Carlson & Plonczynski, 2008). Many factors however, can facilitate use of EBP implementation including adequate time, education, access to information, organizational support, mentors, resources, increased awareness of and a positive attitude towards EBP (Davidson & Brown, 2014; Melnyk et al., 2012; Retsas, 2000). Creating a supportive organizational culture is key to promoting and sustaining EBP (Melnyk et al., 2012).

The following studies highlight some key facilitating factors of EBP implementation, including positive attitude, mentors, resources and education.

EBP Practices of United States (US) Nurses

Many studies have explored attitudes, beliefs, and knowledge as they relate to implementation of research and/or evidence based practice that have provided a window to the practices of registered nurses (RNs) in the US relating to evidence-based care. A study of nurses in 2003 sought to determine the relationship between knowledge, beliefs of EBP, and application to practice. Nurses attending EBP conferences in the Eastern US were surveyed before attending workshops. Of the 160 nurses surveyed, most answered positively that they believed that EBP improves clinical care, yet their knowledge of EBP was not rated highly. Respondents revealed that only 46% of their current practices were based on evidence. Those that reported greater use of EBP held strong beliefs about the importance of EBP and had more

knowledge of EBP than those who reported less use of EBP in current practice. The presence of a research mentor and use of Cochrane Database also correlated positively with increased application of evidence to practice (Melnyk et al., 2004).

In 2005, a survey of 1097 randomly sampled RNs assessed nurses' perceptions of their ability to implement EBP, as well as, their perception of resource availability. The focus of the study was on 760 of those nurses who worked in clinical settings. Results of this study showed that 46% were not familiar with the term EBP, 83% (n=612) "rarely" or "never" took advantage of a librarian's assistance, and 77% had never been taught to use electronic resources. The most frequent source of information amongst those surveyed was a peer or colleague instead of journals, databases or other reference texts (Pravikoff et al., 2005).

A study exploring EBP conducted by Sigma Theta Tau International in 2006 surveyed 565 RNs in the US. The author found that while 90% of subjects reported using EBP with the need to seek clinical information at least once a week; only 69% indicated that they had a low to moderate level of EBP understanding. These participants also identified the appraisal and analysis step of the process as the most daunting (Alspach, 2006).

A survey of American Nurses Association (ANA) members was conducted in 2012 involving 1015 nurses to measure the perception of EBP. Over half 53.6 % (n=544) stated that EBP was consistently implemented in their institution and 46.4% (n = 471) reported that research studies were implemented on a regular basis. Yet, over three quarters of respondents 76.2% (n = 773) responded that they needed more education and skills in EBP (Melnyk et al., 2012).

It is important to consider the knowledge, skill, and attitudes necessary to apply evidence to practice, which will be presented next.

EBP Competencies

While competence in evidence based practice is considered a vital component of quality care, it is difficult to measure. Reliable instruments are needed to accurately assess competence (Leung, Trevana, & Waters, 2014). Without established competencies, nurses and advanced practice nurses (APNs) lack clear expectations about EB practices. The development of defined competencies should assist healthcare organizations in achieving a desired level of performance in EB practices, and will provide nurses with concrete objectives (Melnyk, Gallagher-Ford, Long & Fineout-Overholt, 2014).

Beginning in 2005, the Quality and Safety Education for Nurses (QSEN) Project, funded by the Robert Wood Johnson Foundation, set goals to prepare nurses with the knowledge, skills and attitudes (KSAs) necessary to improve healthcare. This project helped to define competencies based on the IOM standards, which included patient centered care, teamwork and collaboration, evidence-based practice, quality improvement, informatics, and safety. Using pilot programs, competencies were incorporated into nursing educational programs. The third phase of the project involved developing faculty expertise to teach competencies and building them into licensing, accreditation, and certification standards. Initiatives of the project were focused towards both undergraduate and graduate level students (QSEN, 2012).

An initial set of competencies for practicing RNs and APNs has recently been developed. A group of seven national EBP experts teamed up to delineate the necessary components of EBP that demonstrate proficiency. A set of 24 EBP competencies was defined: 13 for RNs and 11 competencies for APN's. Clear expectations create a supportive environment where EBP can be enculturated. Competencies can be used as a tool to support high quality care and can be built into a number of processes, such as performance appraisals, clinical ladders or other structures to aid in EBP implementation (Melnyk et al., 2014). The next section will discuss organizational culture in relation to EBP implementation.

Assessing Organizational Culture

It has been noted that survey research on barriers to research utilization has reached a saturation point. Thus research efforts should now be directed towards finding ways to overcome barriers (Carlson & Plonczynski, 2008; Frasure, 2008). Strategies to overcome barriers and to promote an environment where EBP thrives will improve the quality of care (Melnyk et al., 2012). This includes assessing the culture of an organization.

Assessing organizational culture has been noted as a necessary first step in developing educational programs designed to overcome common barriers. Systematic evaluation provides understanding to an organization's unique strengths and challenges. Performing an assessment prior to EBP implementation will provide information on the healthcare environment and whether or not adequate knowledge, skills, and resources are in place (Smith & Donze, 2010; Upton et al., 2014). Obtaining a baseline assessment can help determine the culture of readiness or preparedness to implement EBP. This process can also help an organization create specific strategies to overcome identified barriers (Toole, Stichler, Ecoff, & Kath, 2013).

Nurses are not passive participants in the process of EBP implementation. Their current attitudes and practices should be considered when establishing a culture to enhance EBP within an organization. Leaders and staff will benefit from an assessment that provides insight into specific areas where education or training can be directed (Newhouse, 2007). Assessment is foundational to nursing practice and EBP implementation is no exception. An assessment can be used to guide the strategic plan for organizational implementation (Newhouse, 2010).

The theoretical framework that guided the study methods will be presented next.

Theoretical Framework

The theoretical framework chosen to guide this study is Roger's Diffusion of Innovation (Rogers, 2003). An innovation is an idea that is *perceived* as new by an individual, so while the concept of EBP is not new, it can still be considered an innovation. Roger's model describes five stages involved in the innovation-decision process. These stages are important to consider when planning implementation strategies for EBP. When making a decision of whether or not to implement an innovation, an individual progresses through a process over time that involves these five stages: knowledge, persuasion, decision, implementation, and confirmation (Rogers, 2003).

The first step is knowledge, an awareness of the innovation and adequate knowledge of how it works. The next step, persuasion, builds on this mental understanding. The individual interacts with knowledge gained and forms an attitude that is either for or against adopting the innovation. After an attitude is formed, the individual begins to act in ways that lead up to a decision. The formal decision is made just before implementation; typically an individual will try out an idea before

fully implementing it. In the final stage, a person will seek confirmation of his/her decision through action (Rogers, 2003).

This model demonstrates that adoption of an innovation is a process with several stages. Before an individual will adopt EBP practices, a formal decision must be made to implement EBP and knowledge and attitudes must precede the implementation. Research supports the significant role that awareness and attitudes play in the decision process of implementing EBP. A study by McSherry et al. (2006) linked a positive attitude, confidence and understanding with achieving success in EBP. The innovation decision process of Roger's model also provides a rationale for this study, as it is crucial to explore the knowledge and attitudes of nurses at RIH/HCH to determine their willingness to adopt EBP. A measure of nurses' implementation of EBP will be an indication of the degree to which survey participants have already reached the knowledge and persuasion stages since these precede decision and implementation. The study methods will be discussed in the next section.

Method

Purpose

The purpose of this study was to assess the practice, attitudes, and knowledge of EBP in nurses using the Evidence Based Practice Questionnaire (EBPQ).

Design

This study used a descriptive survey design and was granted exempt status from both the Lifespan and Rhode Island College Institutional Review Board (IRB). The study was conducted at Rhode Island Hospital/Hasbro Children's Hospital. A survey was offered to all staff RNs, Clinical Managers (CMs) and Assistant Clinical Managers (ACMs) on inpatient units for a three-week period of time.

Sample

Convenience sampling was used to obtain a sample from a total of 920 registered nurses invited to participate in the survey.

Measurement

Demographic data collected included: years of experience as an RN, highest degree, current position, and specialty/department (Appendix A).

The EBPQ was used to measure factors influencing EBP implementation and to identify EBP barriers (Appendix B). Upton and Upton (2006) developed the EBPQ as a self-report instrument. The authors were contacted and permission was granted to use the EBPQ tool in this study**.** The EBPQ consists of 24 questions within three subscales: practice (use), attitude (attitude toward EBP), and knowledge (knowledge and skill in EBP). Each item is rated from 1-7, indicating "never" to "frequently" in the practice subscale and "poor to "best" in the knowledge subscale. There are six questions on practice, four questions on attitudes, and 14 questions on knowledge

(Upton, & Upton, 2006). In addition to the 24 questions from the EBPQ, four forced choice demographics questions were asked and one rating question on the ease of use of the EBPQ was also utilized.

The EBPQ has demonstrated construct validity and high internal reliability. It has been reported as "quick and easy to complete". The measure of reliability using Cronbach's alpha was .87 for the questionnaire as a whole. Alpha scores for the three subscales were measured as .85 for practice, .79 for attitude and .91 for attitude (Upton & Upton, 2006). The EBPQ was originally developed in the United Kingdom (UK) and has been already been translated into five languages. Although research on EBPQ is in its beginning stages, several researchers have found the tool helpful and informative. The authors recognize further research is needed to evaluate content validity, criterion validity, agreement, and interpretability (Upton et al., 2014).

Systematic review of 24 EBP instruments by Leung et al (2014) reported that the EBPQ has good content validity and internal consistency but, that is was difficult to assess construct and discriminant validity due to the self-report format. Overall, the EBPQ has the highest validity and is most practical of the instruments reviewed (Leung, Trevana & Waters, 2014).

Procedures

The 24 survey questions from the EBPQ and the five demographic questions were built into the electronic survey. The five additional survey questions included four demographic forced choice questions: years of experience as an RN, highest degree, current position, and specialty/department, and one (yes/no) question on the ease of use of the EBPQ.

The Human Resource Department at Rhode Island Hospital was consulted and granted approval for obtaining a list of RN names and emails providing that the CNO send out email with survey invitation. RIH/HCH inpatient unit cost centers list was provided to Lifespan Human Resources Information Services (HRIS) in order to

produce a list of names all RNs, CMs, ACMs employed on impatient units. The electronic mail (e-mail) addresses of RNs on this list formed the distribution list for the survey.

In the weeks preceding the study various recruitment methods were used. An IRB approved announcement (Appendix C) was posted on the Lifespan intranet page that explained the purpose of the study and offered an incentive for participation. An approved email was sent to CMs and ACMs of all inpatient units with an IRB approved informational flyer (Appendix D) to post on individual units.

The survey was administered through Research Electronic Data Capture (REDcap) via a public survey link. REDcap is a secure web-based application designed to support data capture for research studies (Harris et al., 2009). To initiate the survey, the RIH/HCH Chief Nursing Officer (CNO) emailed the invitation from the student investigator to recipients. The approved email invitation was sent to 920 individual staff RNs, CMs, and ACMs and included the survey link with IRB approved informational letter (Appendix E). The informational letter included purpose of study, description of subject's participation, risks and benefits, voluntary consent process, description of data confidentiality, contact information of research investigator, and gift card study incentive. Two $50 gift cards funded by the student investigator were offered as a survey incentive to those who completed survey and provided contact information. The winners of the gift cards were determined by raffle selection out of total pool of names provided. The names were not connected to survey responses in any way. Participation in the survey was voluntary as the survey implied consent as described in Informational letter. No identifying information was collected. Survey results were kept anonymous and data was stored confidentially. There were no diversity implications or exclusions to the study. An email reminder was sent out 2-weeks after the initial email invitation notifying potential participants of the survey ending date which included survey link and informational letter. Study

data were collected and managed using REDcap electronic data capture tools hosted at Lifespan's Department of Information Services.

Statistical Methods

Demographic data was analyzed using descriptive statistics. The EBPQ survey data was analyzed using binomial generalized linear modeling to test the hypotheses regarding nurse responses. Each question on the EBPQ ranges on a scale from 1-7. Scores were modeled as their binomial proportion of that range by subtracting 1 from each score (treated as number of successes) and designating 6 as the denominator (number of trials). This constrained the anticipated distribution within the true range and more appropriately modeled how the shape of the distribution becomes perturbed as the mean departs from the center of the range. Classical sandwich estimation was used to adjust for further model misspecification. Following analysis, the means and 95% Confidence Intervals were back-transformed to the original scale of 1-7 for presentation. Where necessary, alpha was maintained at 0.05 across multiple comparisons using the Holm procedure.

Results

Out of 920 nurses who received the survey link, 99 opened the survey and 82 nurses completed it. Seventeen nurses opened but, did not complete the survey. Eleven provided partial responses and six provided no response at all. A total of 93 responses were included in data analysis which did include all partial responses.

Demographic Data

The sample was comprised of 84% (n=68) staff nurses and 16% (n= 13) managers. Figure 1 illustrates the nurses' years of experience as an RN in terms of percentage. Nurses' years of experience were distributed across the five categories ranging from 0-5 years through greater than 30 years.
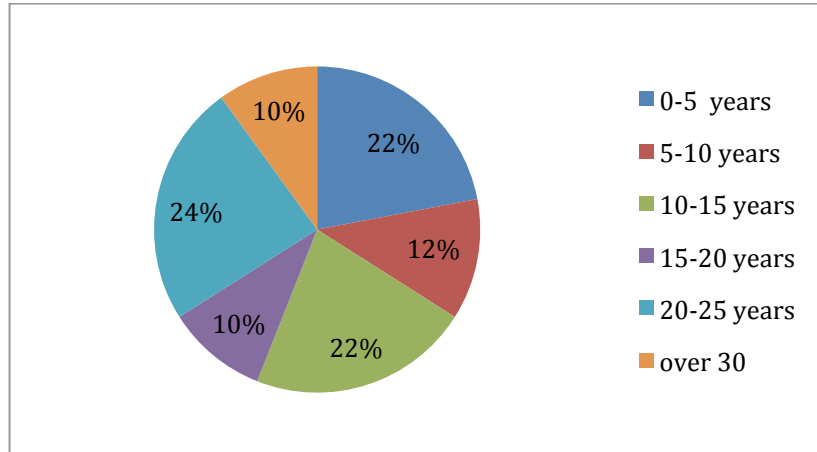
Figure 1. Number of years of experience as an RN

Figure 2 illustrates nurses' highest educational degree. The majority of respondents, 61%, had a bachelor's degree or higher in nursing.
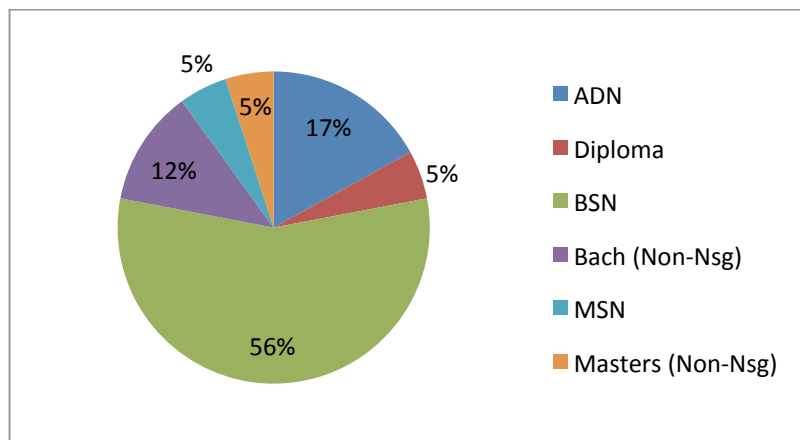

Figure 2. Nurses' highest degree in formal education

Figure 3 illustrates the practice specialty or department where nurses worked. The majority of nurses, 79%, represented adult settings while the remaining 21% worked

in pediatrics. Sixty-five % were from medical/surgical specialties and 35% worked in critical care. The distribution of survey respondents was representative of the actual number of nurses within the adult and pediatric practice areas.
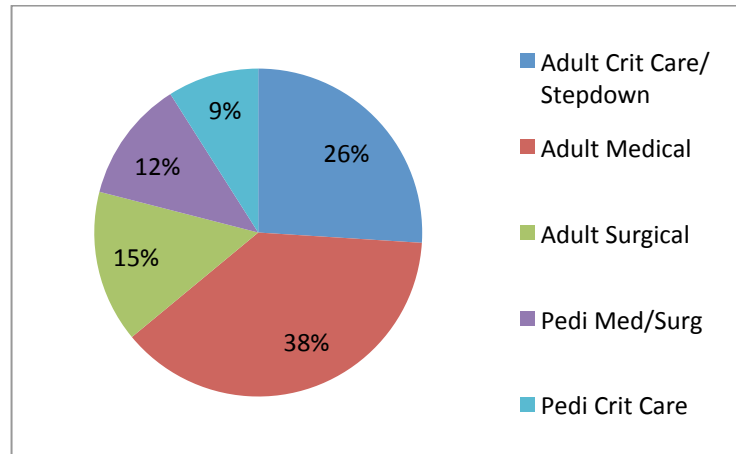
Figure 3. Distribution of nurses according to practice specialty/department

In response to a query about whether the EBPQ survey was easy to understand; 83% (n= 66) responded "yes" and 17% (n=14) responded "no".

EBPQ Survey Results

Survey results were analyzed according to the three EBPQ subscales: practice (use), attitude (attitude toward EBP), and knowledge (knowledge and skill in EBP)**.** Figure 4 illustrates the mean scores of the individual EBPQ questions according to survey domain: practice, attitude and knowledge.

Figure 4. Summary of responses to EBPQ questions by survey domain
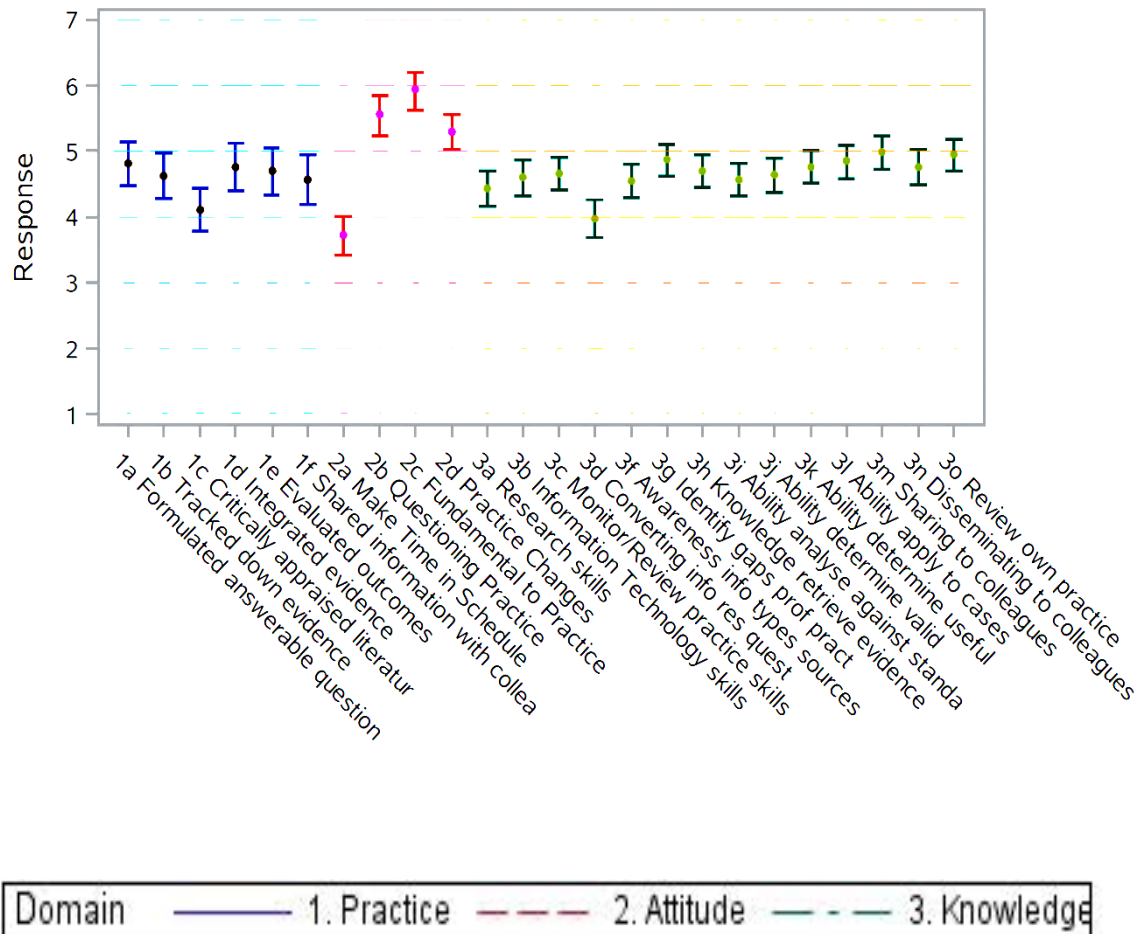
Practice

For the practice domain, respondents were asked to reflect on their own practice over the past year, and rate their use of EBP using a 7 point scale ranging from 1 indicating "never" to 7 indicating "frequently". The six questions in the practice subscale coincide with the six steps of EBP process previously outlined: 1) formulating question, 2) tracking down relevant evidence, 3) critically appraising evidence against set criteria, 4) integrating evidence with personal expertise, 5) evaluating outcomes and 6) sharing information with colleagues. The mean scores of questions in the practice category ranged from 4.1 to 4.8. The high score of 4.8

correlated with frequency of "How often have you formulated a clearly answerable question" to fill a gap in knowledge. The lowest mean score of 4.1 was found with frequency of practice of "critically appraising literature against set criteria".

Attitude

In the attitude domain, respondents were presented with four paired statements and asked to place themselves on a 1-7 scale somewhere between the responses. The mean scores ranged from 3.7-5.9. The attitude subscale had the three highest scores of the survey indicating a positive attitude towards EBP. Survey respondents' scored 5.9 in favor of the statement, "Evidence based practice is fundamental to professional practice", 5.5 in favor of "I welcome questions in my practice", and 5.3 in agreement with "My practice has changed because of evidence". The lowest attitude score related to workload and time: "My workload is too great for me to keep up to date with all the new evidence." This statement elicited the lowest score of the survey with a mean score of 3.7.

Knowledge

In the knowledge domain, respondents were asked to provide a rating of knowledge, awareness, skills or abilities related to EBP on a 1-7 scale with 7 being the highest. The mean scores of questions in this category ranged from 3.9-4.9. The highest scores of 4.9 were for "sharing ideas and information with colleagues" and "ability to review own practice". The lowest score of 3.9 was for "converting information needs into a research question. Next, summary and conclusions will be discussed.

Summary and Conclusions

Evidence-based practice is considered foundational to quality care and has been shown to reduce costs and variability in care (Carlson & Plonczynski, 2008). Healthcare leaders recognize EBP as an integral part of achieving quality outcomes and attaining high reliability. The Institute of Medicine (IOM) has established a goal that 90% of healthcare decisions in the United States be evidenced based by the year 2020 (IOM, 2009). Despite the emphasis on EBP, there is often a delay between research and implementation at the bedside. Barriers to research utilization and EBP adoption have been identified over the years. Assessing organizational culture has been identified as a necessary first step in to overcoming common barriers (Carlson & Plonczynski, 2008; Frasure, 2008).

The purpose of this study was to assess the practice, attitudes, and knowledge of EBP in registered nurses using the Evidence-Based Practice Questionnaire (EBPQ). The study used a descriptive design with convenience sampling. Nurses were recruited through intranet announcement, flyers posted on units (by managers), and direct email invitation. All staff registered nurses (RNs), Clinical Managers (CMs) and Assistant Clinical Managers (ACMs) on inpatient units were invited to

participate in this survey. The survey was administered via Research Electronic Data Capture (REDcap).

This organizational assessment provides helpful insight into the state of readiness for EBP implementation. High scores in the attitude subscale of the EBPQ demonstrate positive attitudes and beliefs toward EBP. Since persuasion precedes decision in Roger's Innovation-Decision process, study results reflect positively that in many cases persuasion has been achieved. Implementation typically comes right after the decision to adopt an innovation. Results in the practice subscale provide evidence that many respondents have reached the decision stage in Rogers's model and are in various stages of implementation (Rogers, 2003). Results highlight opportunities to improve in the area of knowledge of converting information needs into a research question and in practice of critically appraising the literature. Responses also demonstrate a perceived barrier of time available to implement EBP as evidenced in the attitude portion.

Limitations of the study include that the survey was offered only to nurses on inpatient units and the response rate was 10.1 % (n = 93). Eleven of the surveys provided only partial responses. There is no way to know the effect of the missing data from the 11 incomplete surveys or to take into account the fact that 17% of respondents did not find the survey easy to understand. The EBPQ is subject to user perception and not an objective measure.

Study results are similar to those found in literature previously cited: a positive attitude towards EBP with a lower perception of knowledge or practice (Melnyk et al., 2004) and belief that more knowledge is needed (Alspach, 2006; Melnyk et al., 2004; Melnyk et al., 2012). Despite the relatively small sample, this assessment indicates a degree of environmental readiness and provides relative estimation of educational needs.

Next, implications for advance nursing practice will be discussed.

Recommendations and Implications for Advanced Nursing Practice

Clinical nurse specialists (CNSs) apply clinical expertise to achieve measurable improvements in three spheres of influence: the patient, the nurse, and the organization. Contributions to quality improvement are achieved through leadership, multidisciplinary collaboration, and evidence-based initiatives (Muller, Hujcs, Dubendorf & Harrington, 2010).

In partnering with patients and families, CNSs need to be knowledgeable of the best available evidence to provide patients with the information they need to make informed decisions about their care (Fulton, Lyon & Goudreau, 2014). Since EBP is defined as the integration of "best research with clinical expertise and patient values for optimum care" (IOM, 2003, p.45-46), patient's values are inherently part of EBP process. Therefore preferences, values, needs, and desires should be integrated with scientific evidence. These preferences are the connection between patient centered care and evidence-based practice (Burman, Robinson, & Hart, 2013). The science of evidence-based practice when incorporated with a patient's individual needs contributes to a culture of caring. Taking time to consider past history, experience, culture, personality, faith all demonstrate that the individual is valued and recognized (Melnyk & Fineout-Overholt, 2015). To help patients and their families take an active role in making decisions about their health, CNSs can encourage the use of technological supports, and help patient's access reliable resources that will provide evidence-based information regarding their disease or condition (Barton, 2014).

Ethical principles should provide for the protection and well-being of patients, as well as, nurses involved in evidence based projects. Doing good and preventing harm is of primary importance. Protecting patient privacy, ensuring autonomy, and distributing resources as fairly are also key ethical considerations (Melnyk & Fineout-

Overholt, 2015). While it is important that ethical principles are used to guide quality projects, it is also the ethical responsibility of healthcare team members to ensure that these projects move forward and that practice changes are implemented when there is sufficient evidence to support (Fulton et al., 2014).

Clinical nurse specialists help to transform care by assuring that practice is evidence-based and that staff nurses have adequate mentors along with consultants to support their practice (Walker, Urden & Moody, 2009). Specific knowledge and skills are required to search and appraise the available evidence to determine when evidence supports the need for a practice change. Providing nurses with the time to develop these skills and ensuring support through mentors is crucial to implementation (Linton & Prasun, 2013). Required skills include navigating databases and accessing and critiquing Clinical Practice Guidelines and literature. Engaging and mentoring staff throughout the steps of EBP will empower clinical staff while promoting independence (Melnyk et al., 2014).

Advance practice nurses are called to lead transdisciplinary teams in the initiation of evidence informed practice change. Evidence based practice competencies for the Advanced Practice Registered Nurse (APRN) extend to policy and procedure development, outcome measurement, communication, and mentoring (Melnyk et al., 2014). Clinical nurse specialists as clinical experts work to transform practice environments through collaborative teams and a system-wide focus (Walker et al., 2009). Initiatives span the continuum of care and improve the health of defined populations through teamwork and evidence based initiatives. Evidence-based decisions become paramount as healthcare increasingly focuses on outcomes (Beglinger, 2014). The CNS serves as a facilitator and change agent by supporting and promoting the innovation decision process in implementing evidence- based practices (Rogers, 2003).

Clinical nurse specialists as leaders in the profession play a role in shaping the laws and policies for healthcare practice (Goudreau, 2015). Policy can include formal laws and regulations as well as guidelines within an organization. Supportive evidence in the form of quantitative and qualitative data is necessary for policy makers to make informed decisions (Brownson, Chriqui, & Stamatakis, 2009). Clinical nurse specialists can influence policy through the use of systematic reviews and policy briefs. The evidence of systematic reviews is synthesized and analyzed and therefore provides a solid source of evidence (Houde, 2009). Policy briefs created with integrated evidence can be used to support a recommended policy or change. (Melnyk & Fineout-Overholt, 2015).

Great opportunity exists to continually advance the science of nursing. Effective communication of new knowledge contributes to improved clinical practice and patient outcomes. Disseminating evidence through presentations, panel discussions, grand rounds and journal clubs promotes the adoption of research into practice (Melnyk & Fineout-Overholt, 2015). Yet, dissemination alone does not ensure practice change; acting on evidence must follow (Melnyk & Gallagher-Ford, 2015). The recent development of EBP competencies for practicing RNs and APRNs provide clear expectations and concrete objectives for EB practices and have potential to improve healthcare outcomes (Melnyk et al., 2014). These research-based competencies now need to be integrated into clinical and academic settings. Further research is needed to develop assessment tools to measure these competencies and also to measure the outcomes of EBP implementation (Melnyk & Gallagher-Ford, 2015). According to Sigma Theta Tau International (STTI), the worldwide nursing research agenda should also include "utilization of nursing research in practice", and "developing and evaluating models of care for nursing practice" (STTI, 2005, pp.2-3) to ensure practice based on evidence. Implementation of evidence-based practice is

essential to improving healthcare outcomes. Moving forward in establishing EB care requires an unwavering commitment to the highest quality of care possible for patients.

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Appendix A
Demographic Data Collection Sheet

<u>Years of experience as an RN</u>
- ○ 0-5
- ○ 5-10
- ○ 10-15
- ○ 15-20
- ○ 25-30
- ○ over 30

<u>Highest degree</u>
- ○ ADN

- Diploma
- BSN
- Bachelors (Non-Nursing)
- MSN
- Masters (Non Nursing)
- PhD
- DNP

<u>Current position</u>
- Staff nurse
- Management

<u>Specialty/department</u>
- Adult Critical Care/Stepdown
- Adult Medical
- Adult Surgical
- Pediatric Medical/ Surgical
- Pediatric Critical Care

Did you find this survey (Evidence Based Practice Questionnaire) easy to understand?
- Yes
- No

Appendix B
Evidence-Based Practice Questionnaire (EBPQ)
© D.R Upton & P.M. Upton, 2005

This questionnaire is designed to gather information and opinions on the use of evidence based practice amongst health professionals. There are no right or wrong answers for we are interested in *your* opinions and *your* own use of evidence in *your* practice.

1. Considering your practice in relation to an individual patient's care over the *past* year, how often have you done the following in response to a gap in your knowledge (please √ or X):

Formulated a clearly answerable question as the beginning of the process towards filling this gap:

Never ○ ○ ○ ○ ○ ○ ○ **Frequently**

Tracked down the relevant evidence once you have formulated the question:
Never ○ ○ ○ ○ ○ ○ ○ **Frequently**

Critically appraised, against set criteria, any literature you have discovered:
Never ○ ○ ○ ○ ○ ○ ○ **Frequently**

Integrated the evidence you have found with your expertise:
Never ○ ○ ○ ○ ○ ○ ○ **Frequently**

Evaluated the outcomes of your practice:
Never ○ ○ ○ ○ ○ ○ ○ **Frequently**

Shared this information with colleagues:
Never ○ ○ ○ ○ ○ ○ ○ **Frequently**

2. Please indicate (by √ or X) where on the scale you would place yourself for each of the following pairs of statements

My workload is too great for me to keep up to date with all the new evidence	○ ○ ○ ○ ○ ○ ○	New evidence is so important that I make the time in my work schedule
I resent having my clinical practice questioned	○ ○ ○ ○ ○ ○ ○	I welcome questions on my practice
Evidence based practice is a waste of time	○ ○ ○ ○ ○ ○ ○	Evidence based practice is fundamental to professional practice
I stick to tried and trusted methods rather than changing to anything new	○ ○ ○ ○ ○ ○ ○	My practice has changed because of evidence I have found

3. On a scale of 1 to 7 (with 7 being the best) how would you rate your:

Please circle one number for each statement							
	Poor						Best
Research skills	1	2	3	4	5	6	7
IT skills	1	2	3	4	5	6	7
Monitoring and reviewing of practice skills	1	2	3	4	5	6	7
Converting your information needs into a research question	1	2	3	4	5	6	7
Awareness of major information types and sources	1	2	3	4	5	6	7
Ability to identify gaps in your professional practice	1	2	3	4	5	6	7
Knowledge of how to retrieve evidence	1	2	3	4	5	6	7

Ability to analyse critically evidence against set standards	1	2	3	4	5	6	7
Ability to determine how valid (close to the truth) the material is	1	2	3	4	5	6	7
Ability to determine how useful (clinically applicable) the material is	1	2	3	4	5	6	7
Ability to apply information to individual cases	1	2	3	4	5	6	7
Sharing of ideas and information with colleagues	1	2	3	4	5	6	7
Dissemination of new ideas about care to colleagues	1	2	3	4	5	6	7
Ability to review your own practice	1	2	3	4	5	6	7

Appendix C
Intranet Announcement

RIH/HCH Nurses! We need your feedback!
Short Survey: Evidence-Based Practice

All nurses on inpatient units are being invited to participate in a short online survey as part of a research study. The purpose of this research is to measure nurse's practice, attitudes and knowledge of evidence-based practice using the "Evidence-Based Practice Questionnaire". Information will be used in planning future programs.

This voluntary survey should take only 5-10 minutes to complete. The survey will be available online until (include ending date). An email invitation will be sent to inpatient RNs with link to the survey and informational letter. No identifiable information will be collected. Survey results will be anonymous and confidential.

Survey respondents may enter for a chance to win one of two $50 gift cards!

This survey is being conducted as part of a requirement for MSN program at Rhode Island College. For questions about this research study, please contact Sandy Linde, BSN, RN at 444-4771 or slinde@lifespan.org.

Appendix D
Informational Flyer

Informational Survey for
RIH/HCH Nurses

All staff RNs, Clinical Managers and Assistant Clinical Managers on inpatient units

All registered Nurses on inpatient units are invited to complete a

short online survey as part of a research study.

The purpose of this research is to measure nurses' practice, attitudes and knowledge of evidence-based practice using the "Evidence-Based Practice Questionnaire"(EBPQ) Information will be used to plan future programs.

Complete this voluntary survey and enter for a chance to win one of two $50 gift cards!

The survey should take 5-10 minutes to complete.
*Look for link in your hospital email (starting date) to access. Survey will be available online until (ending date).

No identifiable information will be collected and data will be stored confidentially.

"Evidence-Based Practice in Nursing"

For questions, contact:
Sandy Linde, RN
Magnet Coordinator,
Rhode Island Hospital/
Hasbro Children's Hospital
slinde@lifespan.org
444-4771 (office)

This research is being conducted as part of a requirement for MSN program at Rhode Island College

We need your feedback!
Take this survey and enter for a chance to win $50 gift card!

This research has been approved by the Lifespan IRB.

Appendix E
Informational Letter

Nurse Colleagues,

I would like to invite you to take part in a research study on Evidence-Based Practice (EBP) by completing a survey. The survey will measure practice, attitudes and knowledge of EBP using the "Evidence-Based Practice Questionnaire (EBPQ)". This research is being done as part of a requirement for the MSN program at Rhode Island College.

This online survey should only take about 5-10 minutes of your time.
All nurses on inpatient units are being invited to participate, including staff registered nurses (RNs), Clinical Managers (CMs) and Assistant Clinical Managers (ACMs).

Leaders in healthcare recognize that best outcomes for patients and families are achieved when care is based on sound evidence rather than tradition and past experience. Evidence-Based Practice as defined by the Institute of Medicine (IOM) is the integration of "best research with clinical expertise and patient values for optimum care."

There are 24 questions from the EBPQ tool, four demographic questions, and one question on the questionnaire itself. The survey may not benefit you personally. We are hoping the completed surveys will provide information that will be helpful in planning future programs to support the use of EBP in nursing.

Taking part in this survey is completely voluntary. There are no questions that should cause you discomfort. Completion of this survey implies your consent. Your responses are confidential and none of the information you provide will identify you personally.

If you have any questions about this questionnaire or the research study itself please feel free to contact Sandra Linde, RN at 401-444-4771 or Cynthia Padula, RN the Principal Investigator at 401-793-3617. If you have any questions about your rights as a research subject please feel free to call our Office of Research administration manager, Janice Muratori at 401-444-2099.

The survey will be available online until (ending date).
Survey respondents may enter a drawing to win one of two $50 gift cards!

Thank you! Your feedback is very valuable.

Sandra M. Linde BSN, RN
Magnet Program Coordinator
Rhode Island Hospital/Hasbro Children's Hospital

Reference: Institute of Medicine (IOM). (2003) Health Professions Education: A Bridge to Quality.