Knowledge and Competency of Nursing Faculty Regarding Evidence-Based Practice

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abstract

The Institute of Medicine recommended that 90% of clinical decisions should be evidenced based by 2020. Both the IOM and the American Association of Critical-Care Nurses identified evidenced-based practice (EBP) as a core competency for practice. EBP can reduce costs, improve patient outcomes, and ensure optimal nursing interventions. Because nursing faculty may have deficits in knowledge, attitudes, and competencies to teach EBP, few nursing students conduct EBP reviews. The purpose of this study was to develop EBP educational resources to increase nursing faculty knowledge and competency of EBP in a southeastern college with both a multicultural faculty and student body. A pre- and postsurvey design using Stevens’ ACE Star Model of Knowledge Transformation and Evidence Based Practice Readiness Inventory (ACE-ERI) determined the effectiveness of the educational intervention. Results indicated that faculty’s self-confidence about their competency in EBP increased significantly from presurvey to postsurvey, t(17) = -2.04, p = .028, but there was no significant change from pretest to posttest, t(17) = -0.576, p = .572, for the EBP knowledge component of ACE-ERI. The results of the study suggest that educational programs for RN-to-BSN faculty are vital in increasing participant’s readiness for EBP.

and to develop resources for educational programs for faculty in EBP methodology.

BACKGROUND

To successfully practice safe and effective professional nursing, a vital skill is the attainment of EBP competencies. EBP is a process that integrates the best available research evidence with information about patient preferences, clinical expertise, and available resources to formulate sound interventions as best practice. EBP is essential because of its potential to reduce costs, improve patient outcomes, and ensure the use of the best nursing interventions (Scott & McSherry, 2009). However, the study by Melnyk et al. (2016) revealed that implementation of EBP in the practice of chief nurse executives (CNEs) was relatively low. More than one third of the hospitals were not meeting National Database of Nursing Quality Indicators™ (NDNQI) performance metrics, with almost one third of the hospitals exceeding national core measures, such as falls and pressure ulcers. The purpose of EBP is to analyze all available evidence and then apply best practices (Rauen, Makic, & Bridges, 2009). EBP involves making sound clinical decisions, applying the best possible empirical evidence while integrating clinical expertise, and weighing the risks and benefits of alternative treatments, patient’s values, or preferences (DiCenso, Cullum, & Ciliska, 1998). Heye and Stevens (2009) reported that new resources—including national health care improvement priorities, evidence rating systems, and a model of knowledge transformation for EBP—increased nursing students’ competencies. Studies indicate that EBP leads to the highest quality care, optimal best patient outcomes, and increased patient safety (Considine & McGillivray, 2010; Hyrkas & Rhudy, 2013; Revello & Gallo, 2013; Ross & Crumpler, 2007). The American Association of Colleges of Nursing (AACN) and the IOM (2011) identified EBP as a core competency for nursing practice (Winters & Echeverri, 2012). In addition, EBP reduces health care costs and geographic variation in the delivery of care (McGinty & Anderson, 2008). Heater, Becker, and Olson (1988) completed a meta-analysis of 84 nursing research studies with 4,146 patients over an 8-year period. They concluded that patients who received research-based nursing care could expect better outcomes than 72% of the patients in the comparison groups who just received quality nursing care. Roe and Whyte-Marshall (2012) indicated that 30% to 40% of patients did not receive care based on the current best evidence.

Despite the known data that support the benefits of EBP, nursing faculty have a deficit in the knowledge, attitudes, and competencies to teach EBP (Stichler, Fields, Kim, & Brown, 2011). This deficit may be the result of practice-related barriers and a lack of understanding factors that interfere with learning EBP (Gerard, Griffin, & Fitzpatrick, 2010). With the IOM’s mandate, nurses in academia face the significant challenge of incorporating EBP in the curricula (Johansson, Fogelberg-Dahm, & Wadensten, 2010). The Essentials of Baccalaureate Nursing Education for Professional Nursing Practice (AACN, 2008) calls for the adoption of EBP as a competency for nursing practice.

A review of the literature determined that although most faculty are supportive of teaching EBP, they may not be integrating EBP into their teaching due to high job demands or lack the skills, knowledge, or management of time to integrate EBP (Gutierrez, Candela, & Carver 2012; Stichler et al., 2011). It was noted that the present practice in nursing education remains focused on the teaching of research methods, rather than facilitating graduates to connect knowledge to practice as demanded by national agencies (IOM, 2011; Joint Commission, 2012; Levin & Feldman, 2012). Similarly, Melnyk, Fineout-Overholt, Feinstein, Sadler, and Green-Hernandez (2008) found that in the baccalaureate- and master’s-level programs, nursing faculty teach how to conduct research instead of how to process the translation of evidence to practice. Furthermore, what is most troublesome is that the literature suggests that the emphasis on research has hindered efforts to prepare college graduates to become implementers of research. Ciliska (2006) noted that many of the nursing programs have isolated stand-alone courses in EBP with no expectations or requirements that reflect the knowledge and skills acquired will be used in clinical practice. Canada (2016) asserted that it is the responsibility of each nurse, as well as the organization in which they work, to foster a culture in which EBP is the standard and not the exception. Although oncology nurse participants valued EBP, they did not report full engagement or preparation for the process of EBP before or after an educational initiative (Underhill, Roper, Seifert, Boucher, & Berry, 2015). In a national online study, Kalb, O’Conner-Von, Brockway, Rierson, and Sendelbach (2015) reported that respondents were familiar with EBP but were not aware of evidence-based teaching practice, which required sustained institutional, administrative, and collegial support to promote faculty effectiveness and student learning.

Nursing students struggle to see how evidence contributes to practice and the relevance of research findings to EBP. Students need to learn how knowledge transfer is related to clinical problems with learning situations that should be prioritized when teaching EBP (Aglen, 2015). In nursing education, one major barrier to using EBP
The initiation of the EBP process requires nursing faculty to start asking clinically relevant questions (Stillwell, Fineout-Overholt, Melnyk, & Williamson, 2010) and to locate and evaluate research studies that include systematic reviews. Lachance (2014) demonstrated that conducting nursing research clubs was an effective teaching strategy that improved skills in reading and critically appraising research, as well as incorporating EBP into patient care. Nursing faculty, especially RN-to-BSN faculty, need to identify gaps between current practice and best practice and develop the skills to address these gaps and make appropriate changes in their teaching (Conner & Thielemann, 2013; Odell & Barta, 2011).

CONCEPTUAL FRAMEWORK
The conceptual foundation was derived from Rogers’ (2003) theory of diffusion of innovation. Rogers’ model explains how individuals proceed through the innovation–decision process when considering the adoption of an innovation. The model is based on the idea that diffusion is “the process in which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 2003, p. 5). According to Cronje and Moch (2010), Rogers’ channels or social networks are significant contributors to the diffusion of EBP competencies in a learning–teaching environment. Nursing faculty have utilized Rogers’ theory to adopt innovative teaching strategies (Doran et al., 2010; Phillips & Vinten, 2010). Roger’s innovation–decision process includes five stages that consist of knowledge, persuasion, decision, implementation, and confirmation. In applying this model to the faculty knowledge of EBP, the first step involves obtaining baseline information about the faculty’s current EBP knowledge and their competencies. This initial phase assesses the readiness of faculty by measuring their knowledge and competencies to move to the second phase persuasion, motivating the faculty to adopt an EBP framework. The next phase addresses specific deficiencies through a Web-based intervention.

PURPOSE
The purpose of the study was to determine whether an EBP educational intervention in the form of an online tutorial and online resource center would increase nursing faculty’s knowledge and their competency to use EBP methodology. The authors expected that RN-to-BSN faculty would increase their knowledge of EBP and would also increase their competencies of EBP if they were exposed to an EBP online educational tutorial including a resource center.

METHOD
This was a descriptive study of an online tutorial and resource center titled “Introduction to Evidence Based Practice: Focusing on the Must Know.” This study used a one-group design to determine the effects of the educational intervention. A convenience sample of RN-to-BSN nursing faculty was elicited to evaluate their competency after using the educational resources to teach EBP.
The presurvey and postsurvey were in the form of Stevens’ (2007) self-administered online survey using the Academic Center for Evidence-Based Practice Inventory (ACE-ERI). The presurvey was administered prior to the educational intervention via the Web, with the postsurvey administered following the 2-hour training. Institutional review board (IRB) approval was obtained, along with Steven’s permission to use the ACE-ERI.

**Operational Definitions**

EBP knowledge was operationally defined as self-reported EBP knowledge. Perception of EBP knowledge was measured using the ACE-EBP Knowledge Test (Stevens, 2007). EBP readiness was operationally defined as the individual’s perception of having the competencies to implement EBP. EBP competencies were measured using the ACE-ERI (Stevens, 2012, 2007).

**Intervention**

The intervention consisted of a Web-based tutorial and resource center. Web-based education provides a solution for delivering standardized, cost-effective educational programs for large organizations. This Web-based educational activity has the potential to reduce costs associated with in-house training, increase self-directed learning, and increased EBP awareness. Doran et al. (2010) suggested that supporting the use of EBP with information technology should reduce lack of access and utilization by nurses. The tutorial provided participants with an online repository that could be easily categorized or individually searched as needed. The online resources contained links and references to similar topics or items of interest, along with brief explanations about the subject content. The online EBP resource center provided faculty with a user-friendly guide to identify, critically appraise, and search EBP topics to resolve clinical problems effectively with nursing students. The ACE Star Model five stages of knowledge provided a framework for systematically positioning EBP processes into operation. The Star Model depicts various forms of knowledge in a relative sequence, as research evidence is combined with other knowledge and integrated into practice. The model includes five major stages of knowledge transformation: (a) discovery research, (b) evidence summary, (c) translation to guidelines, (d) practice integration, and (e) process outcome evaluation (Stevens, 2012, 2009).

The 2-hour tutorial presented basic concepts of information literacy and EBP connecting the participants to available resources with different teaching methods based on these ideas. In addition, a free educational online tutorial using renowned EBP sources was offered to faculty, with easily accessible EBP resources. The interactive five-part tutorial consisted of the definition and importance of EBP in nursing practice, EBP models, and EBP best practices. Clinically significant questions using the Population, Intervention, Comparison, and Outcomes (PICO) format were developed. Literature search strategies, levels of evidence, and critical appraisal resources were included. Furthermore, several embedded activities, such as quizzes, videos, guides, and examples of EBP best practices, were provided throughout the tutorials.

**Sample**

A convenience sample of 20 RN-to-BSN faculty members participated in the study. Inclusion criteria were RN-to-BSN faculty with a MSN or doctorate degree who taught didactic or clinical courses in the RN-to-BSN program. Demographic data were collected using the ACE-ERI (Stevens, 2007), with modified questions specifically designed to address the sample and project setting. The ACE-ERI demographic questionnaire collected subject information, including years of nursing experience, level of nursing education, age, race or ethnicity, and gender. The modified demographic questions included information on college rank, hours per week spent in the clinical setting with students, hours working outside the college in a hospital, and the year the participant started working at the college.

**Sampling Procedures**

The investigators made the initial contact with the participants and recruited RN-to-BSN faculty for the study at faculty meetings by handing out recruitment flyers and cards with general information about the study and sending e-mail invitations and e-mail reminders. A letter of recruitment was sent to potential participants stating that survey completion would be voluntary and confidential and that all results would be kept in a locked environment.

**Evidence-Based Practice Inventory (ACE-ERI)**

Self-rating of knowledge was collected using the ACE Star Model of Knowledge Transformation. The ACE-ERI uses the Star Model of Knowledge Transformation (Stevens, 2012, 2009) to understand the cycles, nature, and characteristics of knowledge that are utilized in various aspects of EBP. Stevens’ (2007) ACE-ERI was used with permission. The ACE-ERI is available online and measures self-reported knowledge in EBP. Knowledge of EBP was assessed using the 15-question EBP Knowledge Test. For this study, the 20-item ACE-ERI basic 6-point scale was used to measure RN-to-BSN faculty self-confidence of their competencies in EBP. Using self-efficacy as a basis, the ACE-ERI presents EBP compe-
tency statements and asks participants to rate their level of competency on a Likert scale from 1 (low level of competency) to 6 (high level of competency). Face and content validity were demonstrated by agreement by experts on competency statements. Psychometric evaluation of the ACE-ERI reported an internal consistency reliability coefficient alpha ≥ .90 (Stevens, 2007).

Data Collection

The data collection procedures consisted of the ACE-ERI EBP Knowledge pretest and posttest and the ACE-ERI Competency presurvey and postsurvey administered via an electronic format through the University of Texas Health Science Center (UTHSC) ACE testing center. The testing center assigned numbers to the participants to link the EBP Knowledge pretest to the posttest and the ACE-ERI Competency presurvey to postsurvey. Fan’s and Yan’s (2010) systematic review found that Web-based surveys have unique advantages and disadvantages when collecting survey responses. For example, data from Web-based surveys are easily available and can be quickly downloaded for immediate analysis. On the other hand, one major disadvantage of Web-based surveys is the lower response rates. To minimize this, reminders and e-mails were sent to participants in an attempt to increase the overall response rate.

Data were collected on two separate occasions. First, the pretest and presurvey was administered, which aimed to explore RN-to-BSN nursing faculty’s base knowledge of and competency related to EBP prior to the administration of the intervention. Two weeks after the pretest and presurvey, a 2-hour Web-based assisted session was conducted with the participants. The posttest and postsurvey were administered following the educational intervention session.

Analysis of Results

The dataset was reviewed and the file was uploaded into the IBM SPSS® version 21 software via the UTHSC ACE testing center. The number and distribution of missing data were evaluated with the usable dataset inspected for accuracy. Data analysis was accomplished using descriptive statistics. Frequency and percentages of correct answers on the knowledge pretest and posttest were calculated. The means of the presurvey and postsurvey competency scores were calculated for individual items and compared. We used $t$ tests on the matched preintervention and postintervention knowledge and competency surveys.

RESULTS

Twenty participants completed the pretest and presurvey; however, only 18 participants completed the posttest and postsurvey; therefore, two participants were eliminated and 18 participants were used for analysis.

Demographic Information

Participants targeted in the survey were RN-to-BSN nursing faculty. The final sample consisted of 18 RN-to-BSN faculty. Ethnicity of the sample included eight African American individuals, six Hispanic individuals, three Caucasian individuals, and one Asian individual. Of the respondents, 15 (83%) were women and three were men (17%). Participants’ ages ranged from 26 to >60 years, with three (17%) not reporting their age. There were three (17%) in the 26 to 35 year group, five (28%) in the 36 to 50 year group, five (28%) in 61 to 60 year group, and two (10%) were in the >60 years group. Years of experience included 6 to 10 (22%), 11 to 15 (6%), 16 to 20 (11%), and 21 or more (61%). The number of RN-to-BSN faculty members who held doctoral degrees was equal to faculty holding a master’s degree, with several enrolled in Doctor of Nursing Practice or PhD of Nursing programs.

ACE-ERI EBP Knowledge Test and Participants’ Experience

Prior to taking the pretest and presurvey, faculty rated their self-knowledge and experience of EBP. Faculty reported their level of experience with EBP prior to the intervention as beginning level (44%, $n=8$), intermediate level (33%, $n=6$), and advanced level (17%, $n=3$); one (6%) reported no response. Faculty reported their knowledge of the ACE Star Model of Knowledge Transformation as none (22%, $n=4$), beginning (61%, $n=11$), or intermediate (17%, $n=3$).

ACE-ERI EBP Knowledge Test

The 15-item, multiple-choice ACE-ERI EBP knowledge test was used to measure the faculty’s knowledge of EBP (Table 1). No significant change was found from pretest to posttest EBP knowledge, $t(17) = -0.576$, $p = .572$ with the pretest mean of 52.22% ($SD = .24$), whereas the posttest mean was 55.9% ($SD = .21$). However, a positive trend was noted in most of the questions with specific responses in the pretest and posttest. Most of the faculty considered “EBP as the strongest basis for clinical decision making” from pretest (77.8%) to posttest (88.9%) (item 1). The score for item 7, “Which form of knowledge is most useful in the clinician’s practice setting?” increased from 38.9% pretest to 66.7% posttest. In several questions, faculty knowledge of EBP did not significantly increase. For example, regarding the lowest item (item 8), “Patient preferences as the source of individualized care for EBP is limited,” correct responses on
the pretest were 27.8% but slightly increased posttest to 33.3%. Similarly, for the EPB skill of critical appraisal (item 6), 33.3% of correct responses in the pretest increased only to 50% on the posttest. There was also one item in the knowledge test (item 10), “Testing the knowledge of EBP barriers,” in which the faculty’s knowledge actually decreased from 38.9% pretest to 22.2% posttest.

ACE-ERI Competency of EBP

The 20-item ACE-ERI basic version 6-point scale was used to measure RN-to-BSN faculty’s self-confidence about their competency in EBP (Table 2). The increase in scores from presurvey to postsurvey in EBP competency was significant, \( t(17) = -2.04, p = .028 \). The postsurvey mean of 4.96 (\( SD = 0.84 \)) was significantly higher than the presurvey mean of 4.52. Thus, faculty’s competency in EBP increased following the educational intervention. There were significant differences from presurvey to postsurvey in EBP items 3, 5, 16, and 18 (Table 2). Item 3, “Use of preconstructed expert search strategies (hedges) to locate primary research in major bibliographic databases,” showed a change from the presurvey mean of 4.67 to 5.22 after the intervention. Similarly, item 5, “Classify clinical knowledge as primary research evidence, evidence summary, or evidence-based guideline,” showed an increase from the presurvey mean of 4.18 to 5.06 postsurvey. Item 16, “Deliver care using evidence-based clinical practice guidelines,” also showed that a presurvey mean of 4.82 increased to a postsurvey mean of 5.47 at postintervention. On item 18, “Assist in integrating practice change based on evidence-based clinical practice guidelines” the presurvey mean of 4.61 increased to 5.06 after the intervention. Only item 14, “Describe ethical principles related to variation in prac-

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**TABLE 1**

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest % Correct (n)</th>
<th>Posttest % Correct (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In evidence-based practice (EBP), which of the following is considered the strongest basis for clinical decision making? (Summary of research-generated knowledge)</td>
<td>77.8 (14)</td>
<td>88.9 (16)</td>
</tr>
<tr>
<td>2. Systematic reviews are the result of: (Synthesis of all research)</td>
<td>61.1 (11)</td>
<td>61.1 (11)</td>
</tr>
<tr>
<td>3. The stronger level of evidence indicates: (Greater confidence that the intervention is effective)</td>
<td>61.1 (11)</td>
<td>66.7 (12)</td>
</tr>
<tr>
<td>4. Recognize ratings of strength of evidence when reading literature, including Web resources.</td>
<td>55.6 (10)</td>
<td>61.1 (11)</td>
</tr>
<tr>
<td>5. The most rigorous systematic review on congestive heart failure would be found in: (The Cochrane Library)</td>
<td>44.4 (8)</td>
<td>61.1 (11)</td>
</tr>
<tr>
<td>6. The EPB skill of critical appraisal involves: (Classifying strength of evidence)</td>
<td>33.3 (6)</td>
<td>50.0 (9)</td>
</tr>
<tr>
<td>7. Which form of knowledge is most useful in the clinician’s practice setting? (Evidence-based clinical practice guidelines [CPGs])</td>
<td>38.9 (7)</td>
<td>66.7 (12)</td>
</tr>
<tr>
<td>8. Which source of knowledge individualizes care during an evidence-based intervention? (Patient preferences)</td>
<td>27.8 (5)</td>
<td>33.3 (6)</td>
</tr>
<tr>
<td>9. EBP is defined as: (Best research evidence with clinical expertise and patient values)</td>
<td>61.1 (11)</td>
<td>61.1 (11)</td>
</tr>
<tr>
<td>10. In addition to overcoming barriers posed by large volumes of research, EBP also overcomes the second barrier of: (Forms of knowledge unsuitable in care)</td>
<td>38.9 (7)</td>
<td>22.2 (4)</td>
</tr>
<tr>
<td>11. According to the ACE Star Model, what is the order of the five stages of knowledge transformation? (Discovery, Summary, Translation, Integration, and Evaluation)</td>
<td>22.2 (4)</td>
<td>44.4 (8)</td>
</tr>
<tr>
<td>12. The most efficient database for locating CPGs on hand washing is: (National Guideline Clearinghouse)</td>
<td>38.9 (7)</td>
<td>38.9 (7)</td>
</tr>
<tr>
<td>13. Translating evidence summaries into CPGs may require: (Incorporating expert opinion when research is absent)</td>
<td>50.0 (9)</td>
<td>50.0 (9)</td>
</tr>
<tr>
<td>14. Evaluation of impact of evidence-based quality improvement will be resisted</td>
<td>77.8 (14)</td>
<td>77.8 (14)</td>
</tr>
<tr>
<td>15. When an evidence-based CPG is introduced to the nursing unit, the following can be expected: (Improvement will be resisted)</td>
<td>77.8 (14)</td>
<td>55.6 (10)</td>
</tr>
</tbody>
</table>

\*There was no significant change from pretest to posttest in the EBP knowledge component of the ACE tool, \( t(17) = -0.576, p = .572 \). The pretest mean score was 52.22% (\( SD = .24 \)), and the posttest mean score was 55.9% (\( SD = .21 \)).

The correct response is provided in parentheses after each item.
practice and EBP,” showed a decrease from a presurvey mean of 5.06 to a postsurvey mean of 4.88, although this was not significant.

**DISCUSSION**

**ACE-ERI EBP Knowledge Test**

The nurse educators who completed the ACE Knowledge pretest correctly answered 59% of the items in the knowledge test but answered only 51% correctly on the posttest. A possible explanation for this finding is that there was insufficient time to validate the EBP knowledge. In addition, on the day of testing, mandatory college meetings occurred, which took longer than expected and therefore limited the time available to take the posttest and postsurvey. In nursing education, teaching the research process is emphasized over translating the evidence to improve practice (Stichler et al., 2011). EBP is an essential skill for any nurse educator, especially for faculty teaching in an RN-to-BSN program (Conner & Thielemann, 2013). Nurse educators must examine their knowledge and competencies related to EBP to successfully implement it into their teaching (Fineout-Overholt et al., 2010).

According to Levin and Feldman (2012), the first step in implementing EBP projects is to assess faculty knowledge and ability to implement EBP strategies in

**TABLE 2**

**FACULTY PRESURVEY AND POSTSURVEY RESPONSES TO THE ACADEMIC CENTER FOR EVIDENCE-BASED PRACTICE INVENTORY (ACE-ERI) CONFIDENCE ITEMS (N = 18)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Presurvey Mean (SD)</th>
<th>Postsurvey Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Define evidence-based practice (EBP) in terms of evidence, expertise, and patient values.</td>
<td>4.89 (.90)</td>
<td>5.22 (.73)</td>
</tr>
<tr>
<td>2. Critically appraise original research reports for practice implications in context of EBP with assistance and existing standards.</td>
<td>4.78 (.88)</td>
<td>5.11 (.83)</td>
</tr>
<tr>
<td>3. Use preconstructed expert search strategies (hedges) to locate primary research in major bibliographic databases.</td>
<td>4.67 (1.3)</td>
<td>5.22 (1.1)</td>
</tr>
<tr>
<td>4. Recognize ratings of strength of evidence when reading literature, including Web resources.</td>
<td>4.67 (1.09)</td>
<td>5.17 (1.04)</td>
</tr>
<tr>
<td>5. Classify clinical knowledge as primary research evidence, evidence summary, or evidence-based guideline.</td>
<td>4.18 (1.2)</td>
<td>5.06 (1.02)</td>
</tr>
<tr>
<td>6. Locate systematic reviews and evidence summaries on clinical topics from specific evidence summary databases (e.g., Cochrane Database of Systematic Reviews).</td>
<td>4.50 (1.3)</td>
<td>4.83 (1.5)</td>
</tr>
<tr>
<td>7. Identify key criteria in well-developed evidence summary reports using existing critical appraisal checklists.</td>
<td>4.29 (1.2)</td>
<td>4.82 (1.24)</td>
</tr>
<tr>
<td>8. List advantages of systematic reviews as strong evidential foundation for clinical decision making.</td>
<td>4.41 (1.23)</td>
<td>4.94 (1.25)</td>
</tr>
<tr>
<td>9. Identify examples of statistics commonly reported in evidence summaries.</td>
<td>4.28 (1.4)</td>
<td>4.78 (1.23)</td>
</tr>
<tr>
<td>10. Identify the major facets to be critically appraised in clinical practice guidelines (CPGs) with assistance and existing criteria checklists.</td>
<td>4.17(1.25)</td>
<td>4.61 (1.2)</td>
</tr>
<tr>
<td>11. Access CPGs on various clinical topics using specified databases.</td>
<td>4.61 (1.24)</td>
<td>4.94 (1.16)</td>
</tr>
<tr>
<td>12. Participate on a team to develop agency-specific evidence-based CPGs.</td>
<td>4.29 (1.16)</td>
<td>4.88 (1.36)</td>
</tr>
<tr>
<td>13. Identify the major facets to be critically appraised in CPGs with assistance and existing criteria checklists.</td>
<td>4.29 (1.26)</td>
<td>4.76 (1.35)</td>
</tr>
<tr>
<td>14. Describe ethical principles related to variation in practice and EBP.</td>
<td>5.06 (.97)</td>
<td>4.88 (1.05)</td>
</tr>
<tr>
<td>15. Participate in the organizational culture of evidence-based quality improvement in care.</td>
<td>4.61 (1.2)</td>
<td>5.06 (.87)</td>
</tr>
<tr>
<td>16. Deliver care using evidence-based CPGs.</td>
<td>4.82 (1.07)</td>
<td>5.47 (0.62)</td>
</tr>
<tr>
<td>17. Utilize agency-adopted CPGs while individualizing care to client preferences and needs.</td>
<td>4.61 (5.7)</td>
<td>5.06 (1.21)</td>
</tr>
<tr>
<td>18. Assist in integrating practice change based on evidence-based CPGs.</td>
<td>4.61 (5.7)</td>
<td>5.06 (1.21)</td>
</tr>
<tr>
<td>19. Choose evidence-based approaches over routine as base for own clinical decision making.</td>
<td>4.83 (1.04)</td>
<td>5.17 (1.23)</td>
</tr>
<tr>
<td>20. Participate in evidence-based quality improvement processes to evaluate outcomes of practice changes.</td>
<td>4.78 (1.11)</td>
<td>5.00 (1.41)</td>
</tr>
</tbody>
</table>

* *p < .05. The increase in score from presurvey to postsurvey in the confidence component of the ACE tool was significant, t(17) = –2.04, p = .028. The postsurvey mean score of 4.96 (SD = 0.84) was significantly higher than the presurvey mean score of 4.52 (SD = 0.94).
their teaching. A comparison with the national sample scores for the Knowledge ACE-ERI administered by the Star Center by the ACE Center for Advancing Clinical Excellence reveals that this faculty group was at the beginning level of EBP knowledge, similar to that of undergraduate nursing students.

Because the same faculty completed the EBP-ERI knowledge pretest and ACE-ERI presurvey, underwent the intervention, and then completed the EBP-ERI knowledge posttest and the ACE-ERI postsurvey within a month, there may not have been sufficient time for them to increase their knowledge in all the items. The fact that only five faculty members utilized the resource center was probably due to the time constraints of meeting all the academic deadlines at the end of the semester. However, for faculty to become knowledgeable in EBP, they need to realize that taking the time to utilize the resources must become a priority for their teaching and serving as role models for the students. Setting a time during the week or after the workday to devote to EBP is one solution for enhancing faculty’s knowledge. It is acknowledged that there should have been more educational programs on EBP and reminders for faculty to utilize the resources. These findings may be attributed to faculty’s limited time devoted to resources, multiple organizational demands, and inconsistent basic knowledge of EBP and interruptions while completing the survey (Stichler et al., 2011).

ACE-ERI Competency of EBP

Faculty increased their self-confidence in their competency related to EBP after the intervention according to the differences in ACE-ERI Readiness Survey scores from presurvey to postsurvey. They indicated that they were able to critically appraise the literature, recognize the rating of the strength of the evidence, and locate systematic reviews and evidence summaries, as well as list the advantages of systematic reviews while identifying key criteria for EBP, the statistical application for EBP, and facets for critical appraisal and accessing clinical guidelines. RN-to BSN faculty members were able to participate in the development of EBP clinical practice guidelines and compare their own practice, while individualizing care. In addition, they were able to implement various EBP approaches as a basis for clinical decision making addressing quality improvement processes to evaluate outcomes. These findings are consistent with other EBP educational program and define the need to repeat more programs that attempt to improve EBP competencies among RN-to-BSN college faculty.

Faculty indicated an above-average level of self-confidence of their competency in EBP by scoring higher than the reported student sample. The national sample of scores from the ACE-ERI basic survey of a sample of 438 nursing undergraduate prelicensure students provided by the tool’s developer had a mean of 3.70 (F. Puga, personal communication, July 15, 2013). This is consistent with previous research studies (McInerney & Suleman, 2010; Stichler et al., 2011). After the intervention, respondents reported an increased ability to discover, summarize, translate, practice, and evaluate EBP. However, their knowledge of EBP concepts was similar to Koehn’s and Lehman’s study (2008) that reported faculty’s lack of knowledge in EBP.

Results from this study might indicate a complacent faculty being reluctant to change and not having enough motivation in readiness to engage in EBP as suggested by Yoder-Wise (2013). Barriers encountered in implementing this intervention were similar to those cited in the literature (Stichler et al., 2011). Characteristics of the organization, such as faculty and administrative support, lack of resources, and time constraints were also observed during the implementation of this project. Similar findings suggest that although faculty demonstrated a positive view of EBP, they lacked the time, organizational support, or resources to implement EBP in their teaching (McInerney & Suleman, 2010). Other factors may affect faculty willingness to structure meetings and educational sessions, as was experienced with a lower-than-expected turnout for the educational program. Although some faculty completed the tutorials, they did not answer either the presurvey or postsurvey. Overload, high job demands, and the potential for faculty fatigue may be a predictor of stress, which is a major cause of burnout among college faculty (Gutierrez et al., 2012).

In addition, organizational challenges present a consistent barrier to nurses. These competing demands (e.g., committee meetings, lectures, clinical laboratories, office hours, family responsibilities, illness, and other activities) of this particular sample may have contributed to allotting inadequate time to implement or learn about EBP (Brown et al., 2009). Although ethics is integrated into the RN-to-BSN curriculum, it was not evident that all faculty present the subject matter throughout their courses. When relating nursing ethics to EBP, faculty may not consider that ethical issues could arise from failure to implement EBP in the clinical setting. Nurses generally think of ethical practices with patients and families and the importance of maintaining compassion and respect for dignity and unique attributes of every person and do not consider approaching nursing practice from an ethical approach. The question was, “Describe ethical principles related to variation in practice and EBP.” Due to the cultural diversity and educational
mentors and colleagues who use EBP, supportive nurse-based teaching practice, including the availability of mentorship that influenced their ability to engage in evidence-based practice. A limitation to this study included exposure to EBP language and concepts during the presurvey, intervention, and postsurvey having an impact on faculty’s knowledge of EBP. The small sample limits the generalizability of this study. Another factor included the timing of the data collection. Postsurvey collection was conducted during the final week of instruction for most courses. Faculty may have been preoccupied with testing and may not have devoted the time to participate in the activity. Another limitation of this project was the use of a convenience sample. Faculty who participated may have been supportive of the investigators, whereas those who refused may have been threatened that their lack of knowledge would be exposed to a colleague. Furthermore, this project does not provide any information about how much knowledge was retained in the long term.

CONCLUSION
This educational intervention increased competency of nursing faculty in an RN-to-BSN program. Positive change was observed in their knowledge from presurvey to postsurvey, although it was not statistically significant. However, it is important to note that the data presented in Table 1 showed a significant increase (16.7%) for question 5, related to finding the most rigorous systematic reviews in The Cochrane Library, and (27.8% increase) for question 7, related to evidence-based clinical practice guidelines being the most useful form of knowledge in the clinician’s practice setting. This increased knowledge awareness is integral to RN-to-BSN faculty knowledge of EBP.

Fineout-Overholt, Williamson, Kent, and Hutchinson (2010) found that strong leadership is critical in supporting organizational success with EBP, thus preventing barriers. For the current study, institutional support allowed the investigators to implement the intervention; however, there could have been more resources and additional support for EBP and research. Kalb et al. (2015) addressed the factors in their academic environment that influenced their ability to engage in evidence-based teaching practice, including the availability of mentors and colleagues who use EBP, supportive nurse administrators, librarians, and resources. Other barriers manifested were the shortage of academic role models implementing EBP. The results of the study suggest that education played an important role in faculty’s competency for EBP. Opportunities for EBP mentorship and faculty continuing education initiatives on EBP should be required (Stevens, 2013). When faculty are aware of the importance of EBP, it will then be likely that institutions will mandate EBP programs as part of faculty professional development initiatives.

This study contributed to bringing awareness of EBP to RN-to-BSN faculty, which is a significant population that is rarely evaluated for EBP competencies. One recommendation is that this intervention be replicated using a larger sample to increase representativeness and generalizability of findings.

Perhaps the most important reason to replicate this study is the potential for informing administrators and faculty of the need for consistent use of EBP. Hopefully, this study will inspire faculty and academic administrators to consistently integrate EBP throughout the nursing curriculum. EBP has become imperative for nursing education programs (Conner & Thielemann, 2013; Fineout-Overholt et al., 2010; Johansson et al., 2010).

IMPLICATIONS FOR PRACTICE
Incorporating EBP into the curriculum and making it part of RN-to-BSN programs is tantamount to graduating nurses who are prepared and confident to upgrade their knowledge and skills needed to use evidence to support their practice. In addition to using a scientific base to support practice, the ethical implications of using EBP must be considered. EBP is becoming an expectation in practice, and graduating nurses need to have this core knowledge. Nurse educators in higher education bear full accountability when preparing competent and knowledgeable students. The students are then able to engage in the EBP process (Cordiner & Davis, 2010). Faculty should significantly stimulate the EBP learning process in its scholarly approach when advancing nursing knowledge and promoting EBP awareness and subject matter proficiency (Emerson & Records, 2008).

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