The ACE-ERI: An Instrument to Benchmark EBP Readiness in Student and Clinician Populations

1Kathleen R. Stevens, RN, EdD, ANEF, FAAN, 1Frank Puga, PhD, and 2Vivian Low, MPH BSN RN-BC
1Academic Center for Evidence-Based Practice, University of Texas Health Science Center San Antonio
2Cardiac & Pulmonary Wellness Center, Heart & Vascular Institute, El Camino Hospital

Background

- The rapid emergence of evidence-based practice (EBP) as a new paradigm in healthcare quality improvement has created a need for an evaluation of EBP readiness in students and clinicians.
- EBP is a key component of healthcare quality improvement:
  - Health Professions Education: health professionals employ evidence-based practice (ION, 2003).
- Thus, there is a need to track progress in EBP readiness, preparedness, and competencies.
- Valid and reliable methods are needed to assess individual learner readiness to employ EBP.
- The established national consensus on competencies for EBP (Stevens, 2009) provided a credible guide for the preparation of present and future workforce in EBP and development of an instrument to assess current readiness to employ evidence-based quality improvement in nursing.

Objectives

- The objectives of this study were to:
  - Estimate the psychometric properties (reliability, validity, sensitivity) of the ACE Evidence-Based Practice Readiness Inventory (ACE-ERI) in both nursing student and clinician populations.
  - Conduct exploratory investigation of factors related to EBP readiness.

Methodology

- The ACE-ERI was administered online using a web-based survey software, Survey Tracker, and consisted of 20 questions related to EBP competencies, a 15 question knowledge test, and a 10 question demographic sheet.
- The instrument was administered online to nursing students and clinicians (N=2380):
  - Hospitals: 6 sites (N=1887)
  - Students: 3 institutions (N=493)
- A sub-sample of clinicians (N=111) was used for sensitivity measures to calculate changes pre- and post- EBP intervention.

Instrument Development and Framework

- The ACE-ERI utilizes the ACE Star Model of Knowledge Transformation (Stevens, 2004).
- The Star Model provides a framework with which to organize EBP processes and approaches (Figure 1).
- Using the Star Model, national competencies for EBP were established (Stevens, 2009).

Results

- The ACE-ERI was developed to measure the ability to perform essential nursing competencies in EBP.
- Using self-efficacy as a basis, the competencies are presented in a Likert-type scale.
- The instrument is scored as a sum rated scale, yielding interval-level data.
- Five versions of the ACE-ERI were created and include basic (UG) or intermediate (Masters) levels for (a) clinicians or (b) students and an advanced level for students.

Measure of Validity:

- Significant, weak, direct (r) relation between confidence and knowledge scores (r = .20).
- Discriminate analysis revealed 1 significant function separating those reporting No EBP Knowledge from those reporting Intermediate/Advanced EBP Knowledge in the student population (Wilks’s λ = .646, X² (10) = 391.72, p<0.05).

Table 1: Composite attitude scores and reliability categorized by points on the ACE Star Model

<table>
<thead>
<tr>
<th>Basic Competencies</th>
<th>Range</th>
<th>Mean</th>
<th>SD</th>
<th>Normally Distributed</th>
<th>Cronbach’s Alpha (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 2,380)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Primary Research</td>
<td>4 – 24</td>
<td>13.44</td>
<td>4.94</td>
<td>✓</td>
<td>.94</td>
</tr>
<tr>
<td>Evidence Summary</td>
<td>4 – 24</td>
<td>12.75</td>
<td>5.09</td>
<td>✓</td>
<td>.94</td>
</tr>
<tr>
<td>Translation</td>
<td>3 – 18</td>
<td>9.68</td>
<td>3.87</td>
<td>✓</td>
<td>.91</td>
</tr>
<tr>
<td>Total Score</td>
<td>20 – 120</td>
<td>68.97</td>
<td>24.04</td>
<td>✓</td>
<td>.98</td>
</tr>
</tbody>
</table>

Measure of Sensitivity:

- ACE-ERI sensitivity measured in a clinical population. Data collected pre (2008) and post (2010) EBP intervention (2010). There was a significant increase in self-reported total confidence from 2008 to 2010 (N = 111, t(99) = 3.91).

Conclusions

- Reliability and validity of the instrument far exceeded expectations of a new research instrument.
- Reliability and validity levels suggest that users can be confident in the instrument scores.
- ACE-ERI scores are significantly correlated with scores on EBP knowledge and implementation instruments.
- Use in pre- post- research designs with clinicians show the ACE-ERI is sensitive enough to detect differences across a two-year intervention period.
- Results from this study demonstrated the that the ACE-ERI can be used in clinical and student populations to measure self-efficacy on detailed levels of EBP competencies across time.
- Results from this study demonstrated that the ACE-ERI can be used in student populations and clinical populations to measure self-efficacy on detailed levels of EBP competencies across time.
- Analysis of the ACE-ERI’s sensitivity to detect changes in a student population is currently in progress.
- Local undergraduate nursing courses are being evaluated at the beginning and end of each semester.
- The survey instrument is available to other investigators through the Improvement Science Research Network as an online survey.

References


Acknowledgments

- Images from the Delphi Project’s multiple guides for nurses’ thinking
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