Educational Intervention Effects on Nurses’ Perceived Ability to Implement Evidence-based Practice

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Disclosure and Objectives

- No relevant financial or nonfinancial relationship to disclose.
- No conflicts of interest to report.

After completion of the learning session, the participants are able to:

- Identify the barriers to implementation of evidence-based practice
- Understand the effects of an educational intervention on nurses’ knowledge of EBP, their beliefs about and attitudes toward EBP, and nurses’ perceived ability to implement EBP
- Realize the correlations between nurses’ knowledge of, beliefs about, and attitudes toward EBP and their perception of their ability to implement EBP after implementation of the intervention
- Adopt a written EBP curriculum to promote adoption and sustainability of EBP
Problem Statement

- An effective evidence-based practice (EBP) educational intervention has not been identified in the clinical settings (Black, Balneaves, Garossino, Puyat, & Qian, 2015; Underhill, Roper, Siefest, Boucher, & Berry, 2015))

- Lack of effective EBP educational interventions may delay the promotion of EBP in nursing (Khammamia, Mahsa, Amani, Rezaeian, & Setoodehzadeh, 2015; Majid et al., 2011)

- Effective EBP educational training and strategies are needed to improve nurses’ knowledge and skills of EBP, their beliefs about and attitudes toward EBP, and their perceived ability to implement EBP (Melynk & Fineout-Overholt, 2008, 2015)
Background of the Problem

Barriers to Implementation of EBP:

1. Lack of EBP knowledge and skills (Melnyk & Fineout-Overholt, 2015)
2. Negative beliefs about EBP (Melnyk & Fineout-Overholt, 2015)
3. Perceived inability to implement EBP (Melnyk & Fineout-Overholt, 2015)
4. Lack of time and administrative support (Melnyk & Fineout-Overholt, 2015)
Purposes of the Study

1st purpose

Examining the effects of an educational intervention on nurses’ knowledge of EBP, their beliefs about and attitudes toward EBP, and nurses’ perceived ability to implement EBP.

2nd purpose

Examining the correlations between nurses’ knowledge of, beliefs about, and attitudes toward EBP and their perception of their ability to implement EBP after implementation of the intervention.
Nature of the Study

- Quantitative
- Quasi-experimental study
- Longitudinal pretest and posttest design
- Purposive sampling in a county hospital in California
- Random assignment of participants to the experimental group and the control group
- Between subject and within subject design for data analysis
Research Questions & Hypotheses

- **Research Question 1**
  What are the effects of an EBP educational intervention on nurses’ knowledge and skills of EBP, beliefs about and attitudes toward EBP, and their perception of their ability to implement EBP?

- **HO1**
  There is no difference in nurses’ knowledge and skills of EBP, beliefs about and attitudes toward EBP, and their perception of their ability to implement EBP before and after an EBP educational intervention.

- **HA1**
  There is an increase in nurses’ knowledge and skills of EBP, beliefs about and attitudes toward EBP, and their perception of their ability to implement EBP after an EBP educational intervention.
Research Questions & Hypotheses

- **Research Question 2**
  What is the relationship between nurses’ knowledge of EBP, beliefs about and attitudes toward EBP, and their perception of their ability to implement EBP following implementation of the intervention?

- **HO 2**
  There is no relationship between nurses’ knowledge of EBP, beliefs about and attitudes toward EBP, and their perception of their ability to implement EBP following implementation of the intervention.

- **HA 2**
  There is a positive relationship between nurses’ knowledge of EBP, beliefs about and attitudes toward EBP, and their perception of their ability to implement EBP following implementation of the intervention.
Theoretical Framework

The Promoting Action on Research Implementation in Health Services (PARiHS) Model

Intervention

- A face-to-face evidence-based practice program

- The curriculum covers:
  - The concepts of the PARiHS model
  - PICOT concept
  - Literature search and appraisal
  - Strategies of implementation of evidence-based practice
Research Method and Design

- Sample size: 9 participants in the experimental group and 9 participants in the control group

- Instruments:
  - The knowledge and attitudes of the Evidence Based Practice Questionnaire (Upton and Upton, 2006)
  - The Evidence Based Beliefs Scale (Melnyk et al., 2008)
  - The Evidence Based Practice Implementation Scale (Melnyk et al., 2008)

- Data analysis tests:
  - Descriptive statistics - demographic data included gender, age, work unit, position, the highest degree of education in nursing, the years of experiences in nursing
  - Wilcoxon’s signed-rank test was used in Research Question 1 for the between and within subject comparison
  - Pearson correlation coefficient was used in Research Question 2 to evaluate the strength of the bivariate relationship
Results - Research Question 1

**Between Subject Comparison**

The null hypothesis was accepted

Test Statistics of Pretest and Posttest Scores on Nurses’ Knowledge and Skills of EBP Between the Experimental Group and Control Group

<table>
<thead>
<tr>
<th></th>
<th>Knowledge of EBP (Pretest between experimental and control groups)</th>
<th>Knowledge of EBP (Posttest between experimental and control group)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wilcoxon W</strong></td>
<td>84.500</td>
<td>73.500</td>
</tr>
<tr>
<td><strong>Z</strong></td>
<td>-.095</td>
<td>-1.190</td>
</tr>
<tr>
<td><strong>Exact Sig. (1-tailed)</strong></td>
<td>.474</td>
<td>.163</td>
</tr>
</tbody>
</table>

*Note: W was the value of the Wilcoxon signed-rank test. Z was the corresponding z-score. Exact sig. (1-tailed) represented the significance value of the test (one-tailed).*
Results - Research Question 1

- **Between Subject Comparison**
- **The null hypothesis was accepted**

Test Statistics of Pretest and Posttest Scores on Nurses’ Beliefs About EBP Between the Experimental Group and Control Group

<table>
<thead>
<tr>
<th></th>
<th>Beliefs about EBP (Pretest between experimental and control groups)</th>
<th>Beliefs about EBP (Posttest between experimental and control groups)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilcoxon W</td>
<td>66.000</td>
<td>77.500</td>
</tr>
<tr>
<td>Z</td>
<td>-2.188</td>
<td>-.972</td>
</tr>
<tr>
<td>Exact Sig. (1-tailed)</td>
<td>.035</td>
<td>.318</td>
</tr>
</tbody>
</table>

*Note: W was the value of the Wilcoxon signed-rank test. Z was the corresponding z-score. Exact sig. (1-tailed) represented the significance value of the test (one-tailed).*
Results - Research Question 1

- **Between Subject Comparison**
- **The null hypothesis was accepted**

Test Statistics of Pretest and Posttest Scores on Nurses’ Attitude Toward EBP Between the Experimental Group and Control Group

<table>
<thead>
<tr>
<th></th>
<th>Attitude toward EBP (Pretest between experimental and control groups)</th>
<th>Attitude toward EBP (Posttest between experimental and control groups)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilcoxon W</td>
<td>75.500</td>
<td>79.000</td>
</tr>
<tr>
<td>Z</td>
<td>-.908</td>
<td>-.598</td>
</tr>
<tr>
<td>Exact Sig. (1-tailed)</td>
<td>.186</td>
<td>.305</td>
</tr>
</tbody>
</table>

*Note: W was the value of the Wilcoxon signed-rank test. Z was the corresponding z-score. Exact sig. (1-tailed) represented the significance value of the test (one-tailed).*
Results - Research Question 1

- **Between Subject Comparison**
- **The null hypothesis was accepted**

Test Statistics of Pretest and Posttest Scores on Nurses’ Perceived Ability to Implement EBP Between the Experimental Group and Control Group

<table>
<thead>
<tr>
<th></th>
<th>Perceived ability to implement EBP (Pretest between experimental and control groups)</th>
<th>Perceived ability to implement EBP (Posttest between experimental and control groups)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilcoxon W</td>
<td>71.000</td>
<td>82.000</td>
</tr>
<tr>
<td>Z</td>
<td>-1.351</td>
<td>-.335</td>
</tr>
<tr>
<td>Exact Sig. (1-tailed)</td>
<td>.107</td>
<td>.422</td>
</tr>
</tbody>
</table>

*Note: W was the value of the Wilcoxon signed-rank test. Z was the corresponding z-score. Exact sig. (1-tailed) represented the significance value of the test (one-tailed).*
Results - Research Question 1

- **Within Subject Comparison**

- **Null hypothesis was rejected and the alternate hypothesis was accepted**

Comparison of Knowledge and Skills EBP Scale Scores Before and Immediately After the Intervention Within the Experimental Group and the Control Group

<table>
<thead>
<tr>
<th>Knowledge and skills of EBP Scale Scores</th>
<th>Experimental group (N = 9)</th>
<th>Control group (N = 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>Mean Rank</td>
<td>Mean Rank</td>
<td>Mean Rank</td>
</tr>
<tr>
<td></td>
<td>9.39</td>
<td>10.83</td>
</tr>
</tbody>
</table>
Results - Research Question 1

- **Within Subject Comparison**

- **Null hypothesis was rejected and the alternate hypothesis was accepted**

Comparison of EBP Beliefs Scale Scores Before and Immediately After the Intervention Within the Experimental Group and the Control Group

<table>
<thead>
<tr>
<th></th>
<th>Experimental group (N = 9)</th>
<th>Control group (N = 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EBP Beliefs Scale Scores</strong></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>Mean Rank</td>
<td>7.33</td>
<td>10.39</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.
Results - Research Question 1

- **Within Subject Comparison**
- **Null hypothesis was accepted.**

Comparison of Attitudes Toward EBP Scale Scores Before and Immediately After the Intervention Within the Experimental Group and the Control Group

<table>
<thead>
<tr>
<th>Attitudes toward EBP Scale Scores</th>
<th>Experimental group (N = 9)</th>
<th>Control group (N = 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>Mean Rank</td>
<td>Mean Rank</td>
<td>Mean Rank</td>
</tr>
<tr>
<td>8.39</td>
<td>8.78</td>
<td>.096</td>
</tr>
</tbody>
</table>
Results - Research Question 1

- **Within Subject Comparison**

- **Null hypothesis was rejected and the alternate hypothesis was accepted**

Comparison of EBP Implementation Scale Scores Before and Immediately After the Intervention Within the Experimental Group and the Control Group

<table>
<thead>
<tr>
<th>Perceived ability to implement EBP Scale Scores</th>
<th>Experimental group (N = 9)</th>
<th>Control group (N = 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>Post-test</td>
<td>p</td>
</tr>
<tr>
<td>Mean Rank</td>
<td>Mean Rank</td>
<td>Mean Rank</td>
</tr>
<tr>
<td>7.89</td>
<td>9.89</td>
<td>.025*</td>
</tr>
</tbody>
</table>
Results - Research Question 2

- Pearson correlation coefficient, $r$, is used
- Null hypothesis was not rejected

<table>
<thead>
<tr>
<th></th>
<th>EBPB-post</th>
<th>Attitude-post</th>
<th>Knowledge-post</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EBPI-post</strong></td>
<td>$r$</td>
<td>.184</td>
<td>.095</td>
</tr>
<tr>
<td></td>
<td>$p$</td>
<td>.318</td>
<td>.404</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

Pearson correlation coefficient (one-tailed), $r$, is used to examine the relationship between nurses’ beliefs about EBP (EBPB), attitude toward EBP, knowledge and skills of EBP, and nurses’ perceived ability to implement EBP after intervention. $N$ = total number of participants, $r = $ Pearson correlation coefficient. *$p < .05$. 
**Implications**

**Leadership**
- Promote organizational culture for EBP (Dogherty et al., 2013; Hauck et al., 2012; Melnyk et al., 2016)
- Develop infrastructure to support EBP (Rycroft-Malone, 2004; Rycroft-Malone & Bucknall, 2010)

**Health policy**
- These findings suggested that a face-to-face educational program would be an effective strategy to improve nurses’ knowledge and skills of EBP. Improving nurses’ ability to implement EBP and organizational readiness for EBP implementation would increase the likelihood to meet the goals of Institute of Medicine (2011) by 2020.

**Nursing**
- This study might provide nurse educators and nurse leaders a written EBP curriculum to promote adoption and sustainability of EBP in an organization.
Potential Study Limitations

- Small sample size
- Purposive sampling
- High attribution rate
- Maturation and history effects
Conclusions: Significance of the Study

- Education alone cannot improve nurses’ beliefs about EBP, their EBP knowledge and skills, attitudes toward EBP, and their perceived ability to implement EBP.

- Organizational culture and readiness for EBP and support from leadership have been identified to improve nurses’ beliefs about EBP and attitudes toward EBP.

- Availability of EBP mentors, adequate infrastructure and resources are considered as successful strategies to promote nurses engage in implementing EBP in their daily practice.
Conclusions: Recommendations for Future Research

- Additional quasi-experimental pretest and posttest research design with random assignment to examine effects of different modalities of EBP educational interventions
- Further research with a larger sample size and random sampling in multiple sites
References


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