THE JOURNEY TO TARGETED ASSESSMENT AND REMEDIATION IN TEXAS: A PILOT STUDY APPRAISAL

Lisa N. Mason DNP, MBA, MHA, RN, NEA-BC
Knowledge, Skills, Training, Assessment and Research (KSTAR) Pilot Project 2014

- What?
- When?
- Why?
Problem

• Errors in the workplace
• Recidivism and the factors that contribute
• Lack of comprehensive and effective education
PICOT Question

For registered nurses in the state of Texas who have board orders for remediation, opt for and complete the KSTAR program, is there a relationship between specific individual characteristics and no recidivism at 1-year post-completion?
Purpose

▪ To gain knowledge in the arena of high-fidelity simulation, coupled with customized self-paced education.

▪ To provide foundational research that supports the use of the KSTAR format for discipline purposes in Texas and other boards of nursing.
Literary Synthesis

- Learners have positive perceptions of the experience (Martin, et. al, 2016)
- Learners experience increased confidence (Ahn et al., 2015; Hooper et al., 2015)
- Learners demonstrate effective translation (Hall, 2015; Hooper et al., 2015; Kirkman, 2013; Lee et al., 2015)
- Sample sizes are consistently small (Aqel et al., 2014; Bultas et al., 2014; Dunn et al., 2014; Kirkman, 2013)
- HFS is time consuming (Hayden, et al, 2014)
- HFS is extremely costly (Hayden, et al, 2014)
- Research linking success to patient outcomes is absent (Martin, et. al, 2016)
Ethical Considerations

- Request for engagement
- Public data
- Expedited IRB
- No potential risks to participants
- Follow up to a previously exempted study

(Emanuel, Wendler and Grady 2000)
Guiding Framework – Donabedian Model of Outcomes

**Structure**
- Error
- TBON Order

**Process**
- HFS Assessment
- Online, self-paced education

**Outcomes**
- Lower cost
- Successful Completion
- Re-Entry to Practice

Who are these people? What makes them successful?
Design - Quantitative Research Study

- Quasi-experimental, non-randomized control group design

- Subjects
  - Experimental group
  - Control group
  - Oct 2014 – March 2017
Methods

- Recoding of raw data file
  - SPSS conversion

- Retrospective analysis
  - 1 year recidivism and characteristics
  - KSTAR participants and control group
**Subject Profile – Traditional vs. KSTAR**

- **N = 133**
- **Warnings with stipulations (or lower)**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>0 TRADITIONAL</td>
<td>91</td>
<td>68.4</td>
<td>68.4</td>
</tr>
<tr>
<td></td>
<td>1 KSTAR</td>
<td>42</td>
<td>31.6</td>
<td>31.6</td>
</tr>
<tr>
<td>Total</td>
<td>133</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Subject Profile – Nursing Practice Location

PERCENT BY REMEDIATION GROUP

TRADITIONAL
KSTAR

Harris  Dallas  Tarrant  Lubbock  Bexar  Travis  Taylor  Collin

16.5  19.05  7.7  6.6  5.5  11.90  4.4  2.38  3.3  9.52

0  5  10  15  20  25
Subject Profile – Years in Practice
Subject Profile – Practice Error Type

- Larger Font = More Frequent Use of word
  - Failure
  - Med Error
  - Assess/Intervene/Notify
  - Documentation

- NVIVO 11 Windows v 11.4.1
Subject Profile – Practice Error Type (narrative descriptions, n 133)

NVIVO 11 Windows v 11.4.1

Failure to assess

Failure to adequately med error
without checking VS.

Med error / Warning with stipulations. Failed

Failure to document, med errors
Failure to intervene

/ Intervene

/ Document

Document, evaluate
Report, document
Supervise, assign

Notify MD

Error, documentation

Inaccurate documentation

Falsification of documentation

Appropriately intervene

Document

Intervene, documentation

Failure to notify

Laboring patient

or intervene when pt unresponsive

prior to administering Morphine.

the PICC insertion site when

urinary status of a pt.
Subject Profile – Practice Setting/Education vs Remediation Group

- School Nursing
- Outpatient
- Nursing Home
- Inpatient Hospital
- Home Health
- Correctional Care
- Community Health
Fisher’s Exact Results – One Year Recidivism

Conclusion:
Clinically significant: Measurable difference
... not yet statistically significant....
Data Analysis Plan

- Initial plan for Binary Logistic Regression (BLR) of one-year recidivism was unsuccessful – (small sample)
  - Nursing practice location, Years of nursing practice, Practice error type, Practice setting, Highest nursing education, Gender

- Alternative BLR of KSTAR vs. Traditional was used
  - BSN and Female Gender were significant (95%, p<0.05) predictors of KSTAR versus Traditional.
## Results – Do Individual Characteristics Matter?

### Binary Logistic Regression
What predicts likelihood (odds of) KSTAR Candidacy?

- Female Gender (400% More Likely)
- BSN (340% More Likely)

### Case Processing Summary

<table>
<thead>
<tr>
<th>Case Type</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unweighted Cases</td>
<td>133</td>
<td>100.0</td>
</tr>
<tr>
<td>Selected Cases</td>
<td>133</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing Cases</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>Total</td>
<td>133</td>
<td>100.0</td>
</tr>
</tbody>
</table>

3. If weight is in effect, see classification table for the total number of cases.

### Dependent Variable Encoding

<table>
<thead>
<tr>
<th>Original Value</th>
<th>Internal Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRADITIONAL</td>
<td>0</td>
</tr>
<tr>
<td>KSTAR</td>
<td>1</td>
</tr>
</tbody>
</table>

### Omnibus Tests of Model Coefficients

<table>
<thead>
<tr>
<th>Step</th>
<th>Chi-square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>16,277</td>
<td>2</td>
<td>.000</td>
</tr>
<tr>
<td>Block</td>
<td>16,277</td>
<td>2</td>
<td>.000</td>
</tr>
<tr>
<td>Model</td>
<td>16,277</td>
<td>2</td>
<td>.000</td>
</tr>
</tbody>
</table>

### Variables in the Equation

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Variable</th>
<th>B</th>
<th>S.E</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% C.I for EXP(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FEMALE_GENDER</td>
<td>1.400</td>
<td>.063</td>
<td>4.455</td>
<td>1</td>
<td>.035</td>
<td>4.053</td>
<td>1.105, 14.805</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-2.520</td>
<td>.664</td>
<td>14.409</td>
<td>1</td>
<td>.000</td>
<td>.080</td>
<td></td>
</tr>
</tbody>
</table>

a. Variable(s) entered on step 1: FEMALE_GENDER, BSN.

### Model Summary

<table>
<thead>
<tr>
<th>Step</th>
<th>-2 Log likelihood</th>
<th>Cox &amp; Snell R Square</th>
<th>Nagelkerke R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>149.618</td>
<td>.115</td>
<td>.162</td>
</tr>
</tbody>
</table>

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than 0.001.
Results – Do Individual Characteristics Matter?

How good is the model?

AUROC Curve: 0.700 ➔ Weak, but Significant model

Area Under the Curve

Test Result Variable(s): Predicted probability

<table>
<thead>
<tr>
<th>Area</th>
<th>Std. Error a</th>
<th>Asymptotic Sig. b</th>
<th>Asymptotic 95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>.700</td>
<td>.049</td>
<td>.000</td>
<td>.604 ➔ .796</td>
</tr>
</tbody>
</table>

The test result variable(s): Predicted probability has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.

a. Under the nonparametric assumption
b. Null hypothesis: true area = 0.5
Data Analysis Plan

• Chi-square Automatic Interaction Detection (CHAID)
  • Alternative statistic for small and underpowered sample sizes
  • Demonstrates interactive relationships
  • Nurse characteristics that explain 1-Year Recidivism
What explains 100% (n 7) of One Year Recidivism?

- **Practice Setting**: Community Health, Correctional, Care, or Nursing Home (n 3)
- **Education Type**: ADN or Diploma (n 4)
Results – Do Individual Characteristics Matter?

What explains most One Year Non-recidivism?

- **Practice Setting:**
  - Is not Correctional Care
  - Is not in Travis County
  - Is Inpatient Hospital
Results – Do Individual Characteristics Matter?

One-Year Recidivism
- Traditional Remediation (100%)
- Female (86%)
- Associate Degree in Nursing (57%)
Limitations

• Sample Size
• Accessibility of data
Implications

• Targeted Assessment and Remediation (TAR)
• Sustainability
  • Administrative Needs – personnel, collaboration with educational entities
  • Quality Metrics – qualitative and quantitative
  • Communication Strategies - stakeholders
  • Marketing Tactics – organizations vs. consumer
Future Recommendations

• Statistical vs. Clinical Significance
• Characteristics: Do They Matter?
• Collaboration with other states
References


- Dunn, K. E., Osborne, C., & Link, H. J. (2014). Research Briefs High-Fidelity Simulation and Nursing Student Self-Efficacy: Does Training Help the Little Engines Know They Can?. *Nursing Education Perspectives, 35*(6), 403-404.


References


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▪ Texas Board of Nursing
CONTACT INFORMATION

Lisa N. Mason DNP MBA, MHA, RN, NEA-BC
Lisa.Mason@childrens.com