Predicting NCLEX Failures – Standardized Content Mastery Assessments as Catalyst to Improve Pass Rates

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Disclosures

- Jan Emory, PhD, RN, CNE
- Samantha Robinson, MS
- Employed by the University of Arkansas.
- The authors claim “no conflict of interest” exists in the presentation of this research project.
- The project received funding from a local chapter of STTI.
Learner Objectives

At the conclusion of this presentation, learners will be able to....

- Recognize the gap in the existing literature surrounding NCLEX-RN first attempt failure.
- Discover the utility of Principle Components Analysis for determining redundancy in the content mastery assessments.
- Compare and contrast the significance of the 3 component model vs. the single component findings.
- Recognize the potential CMAs associated with first-attempt NCLEX-RN failures.
Purpose

The secondary purpose was to determine if the reduction modeling can identify CMA for use in predicting NCLEX-RN failure with an increased level of probability.
Background and Need for the Study

- Plethora of evidence available to predict success.
- Comparison studies of those passing and those failing NCLEX-RN.
- Few studies surrounding NCLEX-RN failures only.
- No studies found using Principle Components Analysis.
Purpose

The primary purpose of this retrospective, cross sectional pilot study was to explore the utility of Principal Components Analysis (PCA) as a reduction procedure to eliminate redundancy in the CMA in a sample of NCLEX-RN failures.
Research Design

• The study design was quantitative, non-experimental and retrospective with a cross sectional sample of CMA scores from one public baccalaureate degree granting program of nursing from the southeast United States.
Sample

- The data collection included graduates from spring 2009 through spring 2014 resulting in a reduced sample ($n=68$). Inclusion criteria for the sample were (a) completion of the traditional baccalaureate nursing program; (b) completion of a minimum of three content mastery assessments from the available seven; (c) recorded failure of NCLEX-RN on the first attempt.
Instruments

- The CMA used in this study consisted of seven content areas including: (a) fundamentals; (b) pharmacology; (c) maternal newborn; (d) care of the child; (e) mental health; (f) adult medical-surgical; (g) leadership.
Analysis

- Principle Components Analysis was utilized to detect the redundancy in the CMA scores for reduction of the seven assessments.
- All scores were transformed to Z-scores to eliminate the variations in the different versions of the assessment during the data collection period.
Analysis

- The non-iterative partial least squares estimation (NIPALS) option was applied for correction of missing CMA scores.
- The analysis was completed using STATISTICA Extract, Transform and Load (ETL) for specialized data processing capabilities including filtering, aggregation and analyses for trend detection.
Results

- The cumulative percentage of variance with corresponding eigenvalues across the three component model reached 75.19%.
- Nursing Care of Children, Adult Medical-Surgical and Pharmacology contributed substantially to the first component.
Results

Three-Component Model Eigenvalues and Percentages

<table>
<thead>
<tr>
<th>Component</th>
<th>Eigenvalue</th>
<th>% Total Variance</th>
<th>Cumulative Eigenvalues*</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.98</td>
<td>43.50</td>
<td>2.98</td>
<td>42.50</td>
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<tr>
<td>2</td>
<td>1.34</td>
<td>19.19</td>
<td>4.32</td>
<td>61.70</td>
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<td>3</td>
<td>0.94</td>
<td>13.49</td>
<td>5.26</td>
<td>75.19</td>
</tr>
</tbody>
</table>

*Total Possible Cumulative Eigenvalue = 7
Discussion

- The resulting PCA model reduced the seven CMA to three principle components and emphasized the redundancy present in the CMA areas.
- Leadership was found to load on all three components.
Discussion

- The findings suggest Nursing Care of Children, Adult Medical-Surgical and Pharmacology CMA scores may be critical predictors in NCLEX-RN failures warranting further study.
Thank You for Attending

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References


