



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

Jan Emory, MSN, PhD, RN, CNE
University of Arkansas-Fayetteville

Nursing Education Research Conference 2016
Research as a Catalyst for Transformative Practice

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

Component	Eigenvalue	% Total Variance	Cumulative Eigenvalues*	Cumulative %
1	2.98	43.50	2.98	42.50
2	1.34	19.19	4.32	61.70
3	0.94	13.49	5.26	75.19

*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

Contact Information

demory@uark.edu

References

- Assessment Technologies Institute, LLC. (2013). Evaluating the predictive power of ATI's RN Comprehensive Predictor 2010. Retrieved from http://www.atitesting.com/Libraries/pdf/Research_Brief_-_RN_CPtoNCLEX.sflb.ashx
- Assessment Technologies Institute, LLC. (n.d.). RESEARCH BRIEF: Using RN Content Mastery Series test data to identify student needs. Retrieved from http://www.atitesting.com/Libraries/pdf/Research_Brief_-_RN_CMS_final.sflb.ashx
- Emory, J. (2013). Standardized mastery content assessments for predicting NCLEX-RN outcomes. *Nurse Educator*, 38(2), 66-70.
- Exam Statistics and Publications (2015). Retrieved from <https://ncsbn.org/exam-statistics-and-publications.htm>
- Harding, M. (2010). Predictability associated with exit examinations: A literature review. *Journal of Nursing Education*, 49(9), 493-497. doi: 10.3928/01484834-20100730-01
- Homard, C. M. (2013). Impact of a standardized test package on exit examination scores and NCLEX-RN outcomes. *Journal of Nursing Education*, 52(3), 175-178. doi: 10.3928/01484834-20130219-01
- Reinhardt, A., Keller, T., Ochart Summers, L., & Schultz, P. (2012). Strategies for success: Crisis management model for remediation of at-risk students. *Journal of Nursing Education*, 51(6), 305-311. doi: 10.3928/01484834-20120409-03
- Simon, E. B., McGinniss, S. P. & Krauss, B. J. (2013). Predictor variables for NCLEX-RN readiness exam performance. *Nursing Education Perspectives*, 34(1), 17-21.
- STATISTICA Extract, Transform, and Load (2015). Retrieved from <http://www.statsoft.com/Products/STATISTICA/Extract-Transform-and-Load>
- Yeom, Y.J. (2013). An investigation of predictors of NCLEX-RN outcomes among nursing content standardized tests. *Nurse Education Today*, 33, 1523-1528.