Can Nursing Content Standardized Tests Predict NCLEX-RN Outcomes?

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Problems

- Nursing shortage
  - A lack of more than 260,000 RNs by 2025
  - Increased average age of a RN
- Negative effects of NCLEX-RN failure
  - Graduates: Feelings of embarrassment &anxiety, loss of self-esteem, & financial losses
  - Health care organizations: A lack of qualified nurses and increasing the staff-patient ratio
  - Nursing programs, colleges, and universities: Risk of being on probation or loosing accreditations & financial risks

Purpose of study

- Was to investigate effective predictors of NCLEX-RN outcomes on the first-attempt among standardized tests conducted throughout the nursing program.

Research Questions

1. Are there significant differences in the individual adjusted scores of the standardized tests of the eight subjects between the two groups of students with NCLEX-RN success and failure on the first-attempt?

2. Can the NCLEX-RN outcome (success or failure) on the first-attempt be correctly predicted from the standardized tests of the eight nursing subjects; adult medical-surgical, fundamentals, pharmacology, maternal-newborn, nursing care of children, mental health, community health, and leadership and management?

Research Questions (cont.)

3. If the NCLEX-RN outcome on the first-attempt can be predicted correctly, which variables are central in the prediction of the NCLEX-RN outcome on the first-attempt?

4. How many the NCLEX-RN successes on the first-attempt are classified correctly? How many the NCLEX-RN failures on the first-attempt are classified correctly?

Method

- A quantitative research approach
- A convenience sample
  - All eligible graduates from the traditional baccalaureate nursing program of a public university located in the Midwest from May 2010 to December 2011.

Data Analysis

- The participants' demographic data
  - Descriptive statistics
- Research question #1
  - A *t*-test
  - Level of significance: .05
- Research questions #2, 3, & 4
  - Logistic regression
  - Level of significance: .05

Participants

- 151 participants

  ✓ 118 (78.1 %) participants with NCLEX-RN success on the first-attempt

  ✓ 33 (21.9 %) participants with NCLEX-RN failure on the first-attempt

Demographic information

	Mean age	Gender		Ethnicity			
		Male	Female	African American	Caucasian	Asian/Pacific Islander	Hispanic
NCLEX-RN Success	27.02	9	109	3	112	2	1
NCLEX-RN Failure	26.78	3	30	3	29	1	0
The participants	26.97	12	139	6	141	3	1

Result of the Comparison

- There were significant statistical differences between the two groups with NCLEX-RN success and failure in the individual adjusted scores of the adult medical-surgical, pharmacology, maternal-newborn, mental health, community health, and leadership and management standardized tests.

- There were no significant statistical differences between those groups in the scores on the fundamentals and nursing care of children standardized test.

Result of the Comparison

	Mean		Standard Deviation		t-value	Sig. (2-tailed)
	Success	Failure	Success	Failure		
Adult Medical-Surgical	61.40	52.79	8.03	6.18	-5.697	.000
Fundamentals for Nursing	74.05	70.70	8.90	9.51	-1.880	.062
Pharmacology	64.79	56.02	9.27	7.93	-4.944	.000
Maternal-Newborn	76.21	71.87	7.18	7.30	-3.060	.003
Nursing Care of Children	70.62	70.04	8.70	12.09	-0.308	.759
Mental Health	72.82	67.73	8.41	7.49	-3.143	.002
Community Health	78.45	74.24	6.21	5.01	-3.582	.000
Leadership & Management	72.14	68.27	5.86	6.19	-3.311	.001

Predicting the Probabilities of NCLEX-RN Success

- The overall model was statistically reliable in distinguishing those who succeed on the NCLEX-RN on the first-attempt (-2 Log likelihood=111.713, $X^2(2)$=46.854, and p=.000).

- The odds ratios for the adult medical-surgical, pharmacology, and community health standardized tests revealed little increase in the likelihood of NCLEX-RN success when the predictors increase by 1.

- The model correctly classified 93.2 percent (110 out of 118) of the NCLEX-RN success cases.

Regression Coefficients for Predicting NCLEX-RN

	B	Wald	df	p	Odds Ratio
Adult Medical-Surgical	.115	6.550	1	.010	1.122
Fundamentals	-.010	.127	1	.721	.990
Pharmacology	.084	6.554	1	.010	1.087
Maternal-Newborn	.041	1.471	1	.225	1.042
Nursing Care of Children	-.011	.218	1	.641	.989
Mental Health	-.015	.145	1	.703	.985
Community Health	.096	4.899	1	.027	1.101
Leadership and Management	.050	1.261	1	.261	1.052

Predicting the Probabilities of NCLEX-RN Failure

- The overall model was statistically significant in distinguishing those who failed on the NCLEX-RN on the first- attempt (-2 Log likelihood=111.713, $X^2(2)$=46.854, and *p*=.000).

- The odds ratios for the adult medical-surgical, pharmacology, and community health standardized tests indicated little change in the likelihood of NCLEX-RN failure.

- The model correctly classified only 33.3 percent (11 out of 33) of the NCLEX-RN failure cases.

Regression Coefficients for Predicting NCLEX-RN Failure

	B	Wald	df	p	Odds Ratio
Adult Medical-Surgical	.-115	6.550	1	.010	.891
Fundamentals	.010	.127	1	.721	1.010
Pharmacology	-.084	6.554	1	.010	.920
Maternal-Newborn	-.041	1.471	1	.225	.960
Nursing Care of Children	.011	.218	1	.641	1.011
Mental Health	.015	.145	1	.703	1.015
Community Health	-.096	4.899	1	.027	.908
Leadership and Management	-.050	1.261	1	.261	.951

Conclusions

- The adult medical-surgical, pharmacology, and community health standardized tests were able to predict both NCLEX-RN success and failure

- These tests were less effective to predict NCLEX-RN failure than NCLEX-RN success.

Limitations

- Unequal sizes of the NCLEX-RN success and failure groups

- Collecting data in one nursing program

- Using only the Assessment Technologies Institute (ATI) Content Series as the standardized test variables

- Did not capture individual differences (motivations, maturations, life situations, learning style, cultural background, and faculty performances)

Significance of Study

- Identify students at risk for NCLEX-RN failure by utilizing effective predictors.

- Support the students at risk through providing early remediation.

- Use the comprehensive standardized tests as a mid-point indicator of the remediation's effectiveness.

- Improve NCLEX-RN pass rate.

- Decrease nursing shortage and problems caused by failure on the NCLEX-RN.

Thank you!