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Evaluating the Relationship between Preadmission Assessment Examination Scores
and First-time NCLEX-RN Success.

by

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Abstract

The relationship between preadmission assessment composite and reading scores and first-time National Council Licensure Examination for Registered Nurses (NCLEX-RN) success was evaluated in this study. Following an extensive literature review, the researcher hypothesized that students who score at or above the national average on the Test of Essential Academic Skills (TEAS) composite score and/or reading score are more likely to be successful on the first attempt of the NCLEX-RN examination. Utilizing archived student records from a rural community college in western North Carolina, a convenience sample of 59 graduates from May 2012 and 2013 was used. Findings of this study revealed there is significant positive correlation between TEAS preadmission assessment composite and reading scores and first-time NCLEX-RN success. Based on the results of this study, nursing programs can evaluate their admission criteria as well as remediation policies in an attempt to increase retention and first-time NCLEX-RN success.

Keywords: preadmission assessment, NCLEX-RN success, TEAS, composite and reading scores

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CHAPTER I

Introduction

The nursing profession is facing a profound shortage of licensed registered nurses to fill the vast number of availabilities projected in the future workforce. According to the Bureau of Labor Statistics' Employment Projections for 2010-2020, the nursing workforce will see an increase of 26% or roughly 712,000 available jobs (American Association of Colleges of Nursing, [AACN] 2012). The American Nurses Association (ANA) (2013) has identified factors that will contribute to the proposed nursing demand, such as the aging population of current nurses, healthcare reform, and the increasing geriatric population. Because of the demands on the profession, it is imperative that nursing programs across the nation work to increase the number of students who successfully pass the National Council Licensure Examination for Registered Nurses (NCLEX-RN) following completion of their undergraduate nursing education. According to the National Council of State Boards of Nursing (NCBSN), the current pass rate for the 2013 NCLEX-RN test plan is at a shocking 83% for overall first-time candidates (NCBSN, 2013). This is a decline from the 2012 data that showed a 90.34% pass rate for first-time test takers (NCBSN, 2012). With the decline in pass rate, it is imperative that nurse educators work to identify the student who is at risk of first-time test failure.

Prior to entering nursing school, many students across the nation take a preadmission assessment examination which measures a variety of basic educational skills that will be required to successfully navigate a nursing program. Utilizing the results of preadmission assessment examinations allow nursing faculty the ability to

glimpse into the foundation of a student's education. Nursing programs often rank the results of the preadmissions examinations in order to assist them in determining the students who are admitted to the program. In order to improve first-time pass rates, nursing programs must utilize the preadmission assessment results to identify students who display the highest potential for first-time NCLEX-RN success.

CHAPTER II

Literature Review

A review of current literature suggests that there is a lack of sufficient research to identify the relationship between preadmission assessment scores and first-time NCLEX-RN success. The literature review focused on the concepts of nursing student success, predictor of NCLEX-RN success, and the Test of Essential Academic Skills (TEAS) examination. Much of the available research focuses on student success factors, such as Scholastic Aptitude Test (SAT) admission scores, preadmission Grade Point Average (GPA), grades in preadmission courses, capstone exit exam scores, and benchmark assessments given during the student's education (Raman, 2013; Romeo, 2013; Shaffer & McCabe, 2013; Timer & Clauson, 2011; Trofino, 2013; Ukpabi, 2008). Additional available research examined student demographics in addition to entrance and exit examinations as predictors of NCLEX-RN success (Cooper, 2012). Research conducted by Lavandera et al. (2011) concluded that the Health Education Systems, Inc. (HESI) exit exam was a valuable predictor of timely licensure. Shaffer and McCabe (2013) examined preadmission variables and post admission, non-nursing course variables as predictors of NCLEX-RN success. Murray, Merriman, and Adamson (2008) examined the Health Education Systems, Inc. (HESI) exam as a predictor of student success in passing the program. Although this study did not specifically spell out the relationship of the preadmission examination to NCLEX-RN success, it did examine the relationship between program success and entrance exam scores.

Based on the review of literature, there is a gap between the relationship of preadmission assessment scores and student success on the NCLEX-RN. It is currently

unknown whether or not preadmission assessment scores can predict student success on the national licensure examination.

Purpose of Study

The purpose of this study is to examine the relationship between the TEAS composite and reading scores and first-time student success on the NCLEX for educational program improvement. In April 2013, the National Council of State Boards of Nursing raised the level of difficulty on the NCLEX-RN examination sharply. National pass rates for Associate Degree Nursing students dropped drastically following the test plan change that became effective April 1, 2013. The national pass rate for associate degree prepared registered nurses for the year 2013 was an abysmal 81.43% (NCBSN, 2013). Because of the challenges students face when they take the national licensure examination, it is essential that nursing educators identify students who are at risk for failure. Based on the purpose of the study, the researcher hypothesizes that students who score at or above the national average on the TEAS composite score and/or reading score are more likely to be successful on the first attempt of the NCLEX-RN examination.

CHAPTER III

Methodology

Research Setting

The research proposal was reviewed by the institution's institutional review board prior to data collection. The proposal was found to be satisfactory and approval was obtained. Because the focus of the study is educational program improvement, informed consent from the students is not necessary. Data collected for the study was stored electronically and according to Collaborative Institutional Training Initiative for graduate nursing student research guidelines. This study examined retrospective student records from a rural community college in western North Carolina. In order to protect the identity of those involved in the study, the college was identified generically as ADN-CC. Graduates of ADN-CC receive an Associate in Applied Science (A.A.S) in Nursing and subsequently apply to take the NCLEX-RN examination.

Data Collection

Graduate student data collected from ADN-CC was entered into Microsoft Excel with all identifiers removed. To protect the anonymity of the students' data, each graduate was randomly assigned a four-digit personal identification number between 1,000 and 9,999 by the software. The dependent variable of this study was identified as the graduate's first-time success or failure on the NCLEX-RN as categorized as either pass/fail and converted into a numerical value for analysis. Two independent variables were selected for this study: the graduate's preadmission TEAS composite score and the TEAS reading score. Each student's composite score and reading score was matched to the identification number. During data collection, it was noted that graduates from the

2012 and 2013 classes completed three versions of the TEAS assessment examination, forms B, C, and D. For the purpose of this study, students who had taken the TEAS assessment on more than one occasion were assigned their highest score. The mean of the national average was calculated as 70 for reading score and 63.5 for composite score. The mean of the national average of reading and composite scores were then categorized as above/below the national average and converted into a numerical value for analysis.

Sample

Those graduates who were included in the sample met three criteria; the graduate had completed the TEAS admission assessment examination, had graduated from the selected community college during May 2011- May 2013, and had completed the NCLEX-RN examination. A final sample size of 59 students was obtained utilizing a convenience sample of graduates from ADN-CC from May 2012 through May 2013. Graduates from May 2011 were not included in the study as they did not complete the TEAS preadmission assessment examination.

Data Analysis

Study data was analyzed utilizing Microsoft Excel software. A null hypothesis was generated for each independent variable stating no positive correlation between TEAS Composite or Reading score above national average and first-time success on the NCLEX-RN. An alternative hypothesis was generated stating positive correlation between TEAS Composite or Reading score above national average and first-time success on the NCLEX-RN. Descriptive statistics were collected (see Table 1) and data analysis was completed utilizing a two-tailed test for significance Chi Square and

Spearman's Rho. Following Chi Square analysis, a p value was calculated utilizing the degrees of freedom and the chi square value.

Table 1

Descriptive Statistics

Descriptive Statistics	
National Mean	
Reading Score	70
Composite Score	63.52
Study Mean Reading Score	
First-Time Success	80.6
First-Time Failure	71.9
Study Mean Composite Score	
First-Time Success	72.5
First-Time Failure	64.7

CHAPTER IV

Results

Composite Score

Following data analysis, there was a significant, positive correlation between composite score and first-time NCLEX-RN success ($p=0.01$) with a positive Spearman's Rho (0.33) (see Table 2). Based on data analysis, the null hypothesis is rejected.

Therefore, the alternate hypothesis stating there is positive correlation between TEAS Composite score above national average and first-time NCLEX-RN success is accepted.

Table 2

TEAS Composite Score and the Relationship to NCLEX-RN Success

	NCLEX Result	
	Pass	Fail
Above National Mean	42	5
At or Below National Mean	7	5
CI=95% df=1 Critical Value = 3.84 Chi Square = 6.54 Spearman's Rho = 0.33 p value = 0.01		

Note. CI = Confidence Interval; df = Degrees of Freedom

Reading Score

Based on data analysis, there is a significant, positive correlation between the reading score and first-time NCLEX-RN success ($p=0.008$) with a positive Spearman's Rho (0.44) (see Table 3). Based on data analysis, the null hypothesis is rejected. Therefore, the alternate hypothesis stating there is positive correlation between TEAS Reading score above national average and first-time NCLEX-RN success is accepted.

Table 3

TEAS Reading Score and Relationship to NCLEX-RN Success

	NCLEX Result	
	Pass	Fail
Above National Mean	45	5
At or Below National Mean	4	5
CI=95% df=1 Critical Value =3.84 Chi Square = 11.245 Spearman's Rho= 0.44 P value= 0.0008		

Note. CI=Confidence Interval; df = Degrees of Freedom

CHAPTER V

Conclusion

This study investigated the relationship between preadmission assessment examination scores and first-time NCLEX-RN success. TEAS preadmission assessment composite scores along with reading scores at or above the national average were found to correlate positively with first-time NCLEX-RN success.

Limitations

Prior to data collection, a power analysis was conducted using G Power to determine sample size based on 80% power with a 0.15 effect size. Based on the results of this analysis, the recommended sample size was set at 93 students. However, the recommended sample size was not available for ADN-CC due to lack of TEAS assessment scores. Utilizing a post-hoc power analysis, the decrease in sample size yields a power of 65%. In addition to sample size, the number of attempts on the TEAS preadmission assessment is an additional limitation. During data collection, the researcher noted that the number of attempts on the TEAS examination ranged from one to three attempts. The change in the NCLEX-RN test plan in April 2013 was another limitation of this study. The increase in level of difficulty could account for differences in pass rates from 2012 graduates to 2013 graduates. Future research would need to be conducted minimizing these limitations in an attempt to increase validity.

Implications for Associate Degree Nursing Education

The nation is facing a critical nursing shortage of 712,000 jobs by the year 2020 (AACN, 2012). The predicted nursing shortage, in addition to the increasing difficulty of

the NCLEX-RN exam, demands that nursing programs across the nation evaluate their program of study to increase the likelihood of first-time success.

One area that is imperative for educators to evaluate is preadmission assessment scores in relationship to program acceptance. In order to increase the probability of student success, programs should establish a benchmark score for reading and composite scores. By establishing a benchmark score, nursing programs will demand a higher caliber student who is more likely to successfully pass the challenging NCLEX-RN exam. Benchmark scores will prevent students who are ill-prepared for the rigors of the nursing program and the licensure examination from entering until they are competent.

Another area that is critical for educators to evaluate is the program's remediation policy for students who are currently enrolled in the program. By examining students who have scored at or below the national average on reading scores, nurse educators can work to tailor remediation to increase student success in this area. Remediation policies should reflect the specific needs of the student and not the needs of the program.

Lastly, nursing programs across the nation can utilize the results of this study in order to conduct their own independent review of preadmission assessment scores as they relate to NCLEX-RN success. In addition to composite and reading scores, additional areas such as math and science scores could play critical roles in student success on the NCLEX-RN exam.

Because of the increasing demands on the nursing profession, it is imperative that nursing programs also increase the level of competency placed on students in both the preadmission setting as well as during the program. Nursing educators must be diligent in identifying students who are at risk of NCLEX-RN failure and offer remediation to

increase student success. Nursing educators are at the forefront of nursing education and must ensure that students are prepared to face not only the national licensure examination but, the challenges that will be placed on them as entry level registered nurses.

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