PREDICTORS OF SUCCESS IN AN ASSOCIATE NURSING PROGRAM

UTILIZING COMPREHENSIVE EXAMINATION SCORES

A NURSING INVESTIGATION

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Abstract

The purpose of this research study was to examine the relationship between the scores obtained on the Assessment Technologies Institute (ATI) tests and the results of the first attempt on the National Council Licensure Examination for Registered Nurses (NCLEX-RN). A quantitative approach was utilized for this study. The dependent variable for the study was the results of the NLCEX-RN on the first attempt. The independent variables were the ATI adjusted individual total scores that include the medical-surgical, mental health, maternal-newborn, fundamentals, the comprehensive predictor test, and the TEAS exam score.

Acknowledgments

I would first like to acknowledge Dr. Eugenia Shapinsky, my research advisor and friend, who provided encouragement, gave up much of her personal time, and devoted hours to assisting me with this research study. It was her belief in me that gave me the encouragement to become a nurse educator and obtain my Master's degree in nursing education. She has been a positive source of encouragement, motivation, and an educational resource, answering numerous questions and maintaining a level of patience beyond belief.

I would like to thank my mother and all of my children for their continuous love and support through encouragement and believing in me; and my husband, Gordon who has given me love, understanding, encouragement, and support in every way to assist in my success.

God has blessed me tremendously to have so many supportive friends and family. I am thankful that He has led me to become a nurse educator, to an area that I feel very passionate about making a difference in the lives of others. I will continue to follow where He leads me and pray that He continues to bless me through being a world changer.

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Chapter 1

Introduction

Nurse educators possess a strong desire for students to be successful not only by passing curricular courses but also by passing the licensure examination on the first attempt post graduation. Research has shown that a variety of variables can have an affect on the outcome of the licensure examination and range from personal demographics to academic performance. The purpose of this research study was to examine the relationship between the scores obtained on the Assessment Technologies Institute (ATI) tests and the results of the first attempt on the National Council Licensure Examination for Registered Nurses (NCLEX-RN). The results of this study are valuable in guiding the admission and selection process of an associate degree nursing program as well as identifying students whose ATI scores indicate they may be at risk for not passing the NCLEX-RN examination on the first attempt. Identification of at-risk students early in the program allows nurse educators to provide additional support systems that promote success for the student.

Recent nursing shortages require inquisition into discovering new avenues that promote a career in nursing. Encouraging students to consider a career in the healthcare field requires strategies to assist students to be successful in their coursework as well as encouraging success in obtaining a nursing license.

Several research studies were reviewed that focused on ways to improve student success. This literature review discussed a variety of studies that offer specific details to assist nursing students with successful completion of the NCLEX-RN. Although the literature focused on a variety of variables, this study focused on student test scores earned on the ATI exams.

Undergraduate, senior nursing students from two cohort groups were the focus in the first study reviewed. Information obtained from student records included demographics (student age, gender, ethnic background, prerequisite grade point average, and ACT scores) and nursing program variables (earned grades in prerequisite courses and three nursing program courses). Standardized test scores were utilized that included the Mosby Assess Test and the Health Education Systems, Incorporated (HESI) Exit Examination (Daley, Kirkpatrick, Frazier, Chung, & Moser, 2003).

The total number of subjects participating in this study was 224. The first cohort was composed of 121 students who completed the Mosby Assess Test. The result of the first cohort on the initial attempt of the NCLEX-RN examination revealed 13 (10.7%) of the students were unsuccessful. Out of the 103 students in the second cohort, only 80 students volunteered to take the HESI. In the second cohort, here were 7 (6.8%) students who failed the NCLEX-RN on the first attempt. No significant differences were noted between the two cohorts (Daley et al., 2003).

Haas, Nugent, and Rule (2004) identified students at risk for failure and instituted immediate interventions with the goal that a successful outcome may be possible. Existing student data was determined to be a significant predictor of success. The literature investigated academic and nonacademic predictors. The variables examined in this study (gender, race, age, nursing cumulative grade point average, transfer undergraduate grade point average, cumulative undergraduate grade point average, verbal and quantitative SAT scores, and group membership according to campus location) were obtained on all students upon admission.

The study by Hass et al. (2004) included nursing students who graduated between the years 1991 and 2001. This population consisted of 368 subjects predominately Caucasian women between the ages of 22 and 50 years. Data was collected from a database containing student records. The study identified a group of students who were assigned a SAT score in absence of their true score, n=17. Due to this discrepancy, those records were not utilized in the study. A total of 351 records were considered in the data. Of these records, 34 records indicated failure on the first attempt at the NCLEX-RN examination. The pass rate of those records included in the study was 90.3%, n=317 (Haas et al., 2004).

Thirty-nine nursing graduates from North Carolina Central University, who completed the NCLEX-RN examination in 2006, were the subjects for a study conducted by Ukpabi (2008). Variables utilized in this study were scores in 18 different nursing courses. Data collected included course data and overall grade point average (Ukpabi).

In an attempt to predict success on the NCLEX-RN examination, a discriminate analysis was utilized to examine the 18 variables. The results of the research study revealed 39 students completed the NCLEX-RN examination; 77% of the students passed the licensure examination on the first attempt while 23% were unsuccessful. The study noted that 17 students (43.6%) were disqualified due to missing at least one discriminating variable. The total number of validated cases was 22 (56.4%). Results of the study indicate that of the 18 predictor variables, only 11 variables (ATI Critical Thinking, ATI TEAS Comp, ATI Percentile Reading, ATI Percentile Math, ATI Percentile English, NLN Percentile Adult I, NLN Percentile Adult II, NLN Percentile

Pediatric, Mental Percentile ATI, Pharmacology Percentile ATI, and Fundamental

Percentile ATI) were identified as significant in predicting success on the NCLEX-RN

examination (Ukpabi, 2008).

Uyehara, Magnussen, Itano, & Zhang (2007) conducted a five-year research study

at the University of Hawaii, Manoa School of Nursing. The study was designed after a

new curriculum was implemented following concerns regarding success on the NCLEX-

RN examination when students completed the previous or old curriculum.

The researchers collected data on admission, during the program, and at the end

of the program. Data collected on admission included SAT scores, prerequisite science

and math courses, prerequisite GPA, cumulative GPA, ethnicity, and entrance

examinations. Several courses and grades were identified as significant predictors

(Pathophysiology, Adult Health Nursing I and II, Mental Health Nursing, Maternal-

Newborn Nursing, Pediatric Nursing, and Nursing Care of the Critically Ill). Of the

independent variables, only the grades from the pathophysiology course were significant

($N= 271$, $p <.0001$). This indicated the higher the grade, the increased probability of

program success. Exit predictors that were significant in predicting success include the

Mosby Assess Test score and the nursing grade point average.

Uyehara et al. (2007) tracked a sample of 280 students throughout the six

semester program. A total of 10 groups of students were admitted during this time, and

data were collected on 224 students who graduated the program. The 56 students who

withdrew from the program were not included in the final calculations. The sample size

included female students ($n=230$ or 82.1%) and male students ($n=50$ or 17.8%). The age

range of the subjects in the study was between the ages of 20 and 47 year with a mean

age of 24.63 years. The results of the study indicate that of the 218 subjects who reported NCLEX-RN results, 97.25% (212 students) reported success on the first attempt at the NCLEX-RN examination (Uyehara et al., 2007).

Waterhouse and Beeman (2003) utilized a modified version of the Risk Appraisal Instrument (RAI) to meet the needs of a research study conducted at University of Delaware's nursing program. The study was conducted during the years 1995-1998 and utilized 538 students. Determining students at risk of failure on the NCLEX-RN examination was the focus of the study. Five hundred thirty-eight graduate students' records were utilized in the study. The age range of the students was between 18 and 49 years with a mean age of 24.3 years. The subjects were predominately female (91.3%) and graduated from the traditional program (82.7%). The results of the study indicated 81.6% of the subjects were successful on the NCLEX-RN examination while 18.4% of the subjects reported failure. Eleven subjects were eliminated from the analysis due to incomplete data (Waterhouse & Beeman).

All research studies utilized in the literature review focused on identifying variables that predict success on the first attempt at the NCLEX-RN examination. Similar methods and variables were utilized in each study. The results are similar in each study and indicate that nurse educators or researchers can identify variables that are significant in predicting the success of students utilizing previous data from the studies. Many of the studies identified the nursing shortage as an important factor in establishing a need for predicting or identifying variables with a significant relationship to NCLEX-RN examination results.

Statement of the problem

Nursing graduates who are not successful in passing the NCLEX-RN examination on the first attempt decrease the number of anticipated licensed nurses in the healthcare workforce as well as cast a negative light on the college or university from which they graduated. Often the nursing graduate and their families are financially burdened and have anticipated the salary of the registered nurse upon graduation. When the licensure examination is not successfully passed, the graduate postpones earnings and fails to alleviate the financial issues encountered while enrolled in school.

In an attempt to identify nursing students who may be at risk for failing the licensure examination (NCLEX-RN), this researcher examined the relationship between scores obtained on the ATI tests and their relationship to passing the NCLEX-RX examination.

The outcome of student success is an important goal for every nurse educator. The opportunity to predict this success for nursing students through available data is extremely beneficial for the student and the educational facility. Identifying variables related to success and developing a plan of action that promotes success are a priority for nursing programs.

Significance of the problem

This research study serves as an addition to the body of knowledge that currently exists focusing on the variables that predict NCLEX-RN success. Previous research studies reveal data are available related to predicting student success on the NCLEX-RN.

Haas et al. (2004) found it was possible to identify students at risk for failing the licensure examination and discovered variables that indicate successful outcomes through immediate interventions. Uyehara et al. (2007) the five-year study, conducted at the University of Hawaii, was designed after new curriculum was implemented following concerns regarding success on the NCLEX with previous curriculum.

The Uyehara study (2007) collected data on admission, during the program, and at the end of the program. Admission data included SAT scores, prerequisite science and math courses, prerequisite GPA, cumulative GPA, ethnicity, and entrance examinations. Several courses and grades were identified as predictors. Exit predictors included the Mosby Assess Test scores and nursing course GPA.

Awareness of risk factors can assist in early identification of problems that may lead to failure. Early identification offers opportunities for intervention that can change the potential for failure into a successful nursing career. Nurse educators must be aware of risk factors that may have an affect on the success or failure of students. Implementing measures that provide the desired outcomes is an important role of the nurse educator.

Purpose of the study

The purpose of this research study was to determine if a relationship existed between the scores attained on the ATI tests and the result of the first attempt on the NCLEX-RN. The dependent variable for the study was the result of the NLCEX-RN examination (initial attempt) for each nursing graduate. The independent variables were the ATI adjusted individual total scores on the Medical-Surgical Examination, Mental Health Examination, Maternal-Newborn Examination, Fundamentals of Nursing Examination, and the Comprehensive Predictor Examination. The TEAS test score was

also included as an independent variable in the study. Archival data, including ATI examination scores, were gleaned from the ASN graduate records who were admitted to the nursing program between January 1, 2007 and August 31, 2008.

The results of this study are valuable in guiding the admission and selection process of an associate degree nursing program. It also identified students whose ATI scores indicated they may be at risk for not passing the NCLEX-RN examination on the first attempt.

Research questions

The research questions utilized for this study included:

1. Is there a relationship between the adjusted individual scores on the Medical-Surgical Examination, Mental Health Examination, Maternal-Newborn Examination, Fundamentals of Nursing Examination and the Comprehensive Predictor Examination, with the result on the initial attempt at the NCLEX-RN examination?

2. Is there a relationship between the score obtained on the TEAS examination taken on admission to the nursing program and the result on the initial attempt at the NCLEX-RN examination?

A regression analysis was utilized to explore the relationship between the dependent and independent variables for the study.

Definition of terms

Adjusted individual score. A numerical score assigned by the testing organization (ATI) to the student's completed content examination.

Assessment Technologies Institute (ATI). A privately owned organization that promotes a learning system designed to teach the way individuals learn. This organization provides

a comprehensive testing system that incorporates all aspects of the registered nurse curriculum.

National Council Licensure Examination for Registered Nurses (NCLEX-RN). A comprehensive national examination that measures entry-level competencies of newly graduated nurses.

National Council of State Boards of Nursing (NCSBN). A national organization responsible for the development of the licensure examination for practical and registered nursing. It is responsible for development of licensure examination for registered nurses.

National League for Nursing Accrediting Commission (NLNAC). A commission responsible for the specialized accreditation of nursing education programs.

Theoretical framework

The framework selected to guide the theoretical aspect of this study was the Benner Theory based on the Dreyfus Model (Benner, 1984). The Dreyfus Model focuses on skill obtainment and presumes that a student passes through five levels of proficiency: (a) novice, (b) advanced beginner, (c) competent, (d) proficient, and (e) expert. Although this study focused on only the student's performance while enrolled in the nursing program and immediately post-graduation, the model remains applicable to the testing program and achievement level.

Assumptions and limitations of the study

Schools of nursing across the country all share similar goals: the desire for every student to be successful in the curriculum and to pass the licensure examination on the first attempt. A decrease in pass rates on the NLCEX-RN examination led to the

development of this research study with the desire to identify variables associated with success or failure on the NCLEX-RN examination.

Possible limitations of this study include the population is composed of associate degree nursing students only. All subjects were taken from a single Midwestern community college and in a limited geographical location. The number of subjects utilized in the study is small as well as limited. Little diversity existed as the large majority of graduates were female and Caucasian. The findings of this study may not be generalized for other schools of nursing across the country.

Some possible solutions to the limitations include increase the sample size to greater than 500 students and include community college nursing graduates from multiple states. A repeat study could also be conducted utilizing bachelor prepared nursing students from multiple institutions. By broadening the study's population and including bachelor degree prepared students, the researcher reduces bias and formulates a more generalized prediction of the relationship between the independent and dependent variables in the study.

Chapter II

Review of Related Literature

    Overview

Nurse educators possess a strong desire for students to be successful not only by passing curricular courses but also by passing the licensure examination on the first attempt post-graduation. Research has shown that a variety of variables can have an effect on the outcome of the licensure examination and range from personal demographics to academic performance.

The purpose of this research study is to examine the relationship between the scores obtained on the ATI tests and the results of the first attempt on the NCLEX-RN. The result of this study are valuable in guiding the admission and selection process of an associate degree nursing program as well as identifying students whose ATI scores indicate they may be at risk for not passing the NCLEX-RN examination on the first attempt. Identification of at-risk students early in the program allows nurse educators to provide additional support systems that promote success for the student.

Recent nursing shortages require inquisition into discovering new avenues that promote a career in nursing. Encouraging students to consider a career in the healthcare field requires strategies to assist students to be successful in their coursework as well as encouraging success in obtaining a nursing license.

Several research studies were reviewed that focused on ways to improve student success. The literature review examines a variety of studies that identify various variables related to nursing students and their results on the NCLEX-RN. Although the literature

focused on a variety of variables, this study focused on student test scores earned on the ATI exams.

Theoretical framework

There were several theories that could be applied to this research study, but the theory deemed most applicable is the Benner Theory (1984) based upon the Dreyfus Model. This theory focuses on the novice to expert approach. The Dreyfus Model, on which the Benner Theory is founded, is centered on student levels. In this model, the student acquires and develops a skill and then passes through five levels of proficiency. The levels of proficiency are labeled (a) novice, (b) advanced beginner, (c) competent, (d) proficient, and (e) expert.

According to Benner (1984), the designated levels reflect change in three general aspects of skill performance.

> One is a movement from reliance on abstract principles to the use of past, concrete experience as paradigms. The second is a change in the learner's perception of the demand situation, in which the situation is seen less and less as a compilation of equally relevant bits and more and more as a complete whole in which certain parts are relevant. The third is a passage from detached observer to involved performer. The performer no longer stands outside the situation but is now engaged in the situation (p. 13).

Benner's focus is centered on nursing practice versus student focus. Benner's research studies were directed toward understanding the nurse's knowledge more completely and are valuable in differentiating the different levels of nursing practice (Chitty, 2001).

The Good Samaritan Medical Center in Phoenix, Arizona developed and

implemented a successful program on the bone marrow transplantation unit utilizing the

Dreyfus Model and the Benner Theory. The education program is considered to be

successful and promotes professional growth of the staff as outlined by Marble (2009):

> The five-step model of excellence provides a fluid and individualized framework
>
> for the professional development of the healthcare providers working in the
>
> oncology program and a method to measure progress. In addition, the
>
> requirements for education and a method to measure progress are clear for nurses
>
> who would be considered experts in the unit. As a result of the implemented
>
> process model, 65 of 96 RNs (68%) met the criteria for expert compared to 18%
>
> prior to the implementation, 58 of 79 RNs (73%) are oncology certified (OCN®)
>
> compared to 24% prior to implementation, and 42 of 96 RNs (44%) are mentors
>
> compared to 19% prior to implementation. The five-step model has helped foster
>
> a culture of staff and leadership development with engaging, motivating, and
>
> high-performing work groups that promote career progression within the
>
> workforce (p. 313).

Empirical literature

Undergraduate, senior nursing students from two cohort groups were the focus in

the first study reviewed. Information obtained from student records included student age,

gender, ethnic background, prerequisite grade point average (GPA), and ACT scores as

well as grades earned in prerequisite courses and three nursing program courses.

Standardized test scores were utilized that included the Mosby Assess Test and the

Health Education Systems, Incorporated (HESI) Exit Examination (Daley et al., 2003).

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Haas et al. (2004) identified students at risk for failure of the licensure examination and instituted immediate interventions with the intent to promote a successful outcome. Existing student data were determined to be a significant predictor of success. The research study examined academic and nonacademic variables. The variables examined included gender, race, age, nursing cumulative grade point average, transfer undergraduate grade point average, cumulative undergraduate grade point average, verbal and quantitative SAT scores, and group membership according to campus location.

The sample for Hass et al.'s study included nursing students who graduated between the years 1991 and 2001. The population consisted of 368 subjects who were predominately Caucasian women between the ages of 22 and 50 years. Data were collected from a database containing student records. The study identified a group of students who were assigned a SAT score in absence of their true score, n=17. Due to this discrepancy, those records were not utilized in the study. A total of 351 records were utilized. Of these records, 34 records indicated student failure on the first attempt at the

NCLEX-RN examination. The pass rate of those records included in the study was 90.3%, *n*=317 (Haas et al., 2004).

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Uyehara et al. (2007) conducted a five-year longitudinal research study at the University of Hawaii, Manoa School of Nursing. The study was conducted after a new curriculum was implemented. The curricular change was instituted following concerns

focusing on the results of the NCLEX-RN examination by students who graduated on the old curriculum.

The researchers collected data on admission, during the program, and at the end of the program. Data collected on admission included SAT scores, prerequisite science and math courses, prerequisite GPA, cumulative GPA, ethnicity, and entrance examinations. Several courses and grades were identified as significant predictors including Pathophysiology, Adult Health Nursing I and II, Mental Health Nursing, Maternal-Newborn Nursing, Pediatric Nursing, and Nursing Care of the Critically Ill. Of the independent variables, only the grades from the pathophysiology course were significant ($n= 271$, $p <.0001$). This indicates the higher the grade, the increased probability of program success. Exit predictors that were significant in predicting success included the Mosby Assess Test scores and the overall nursing grade point average.

Uyehara et al. (2007) tracked a sample of 280 students throughout the six semester program. A total of 10 groups of students were admitted during this time and data were collected on 224 students who graduated from the program. The 56 students who withdrew from the program were not included in the final calculations. The sample size included female students ($n=230$ or 82.1%) and male students ($n=50$ or 17.8%). The ages of the subjects in the study were between the ages of 20 and 47 years with a mean age of 24.63 years. The results of the study indicated that of the 218 subjects who reported NCLEX-RN results, 97.25% (212 students) reported success on the first attempt at the NCLEX-RN examination (Uyehara et al.).

Waterhouse and Beeman (2003) utilized a modified version of the Risk Appraisal Instrument (RAI) to meet the needs of a research study conducted at University of Delaware's nursing program. The study was conducted during the years 1995-1998 and utilized 538 students. Identifying which students were at risk of failure on the NCLEX-RN examination was the focus of the study. Five hundred thirty-eight graduate students' records were utilized in the study. The ages of the students ranged between 18 and 49 years with a mean age of 24.3 years. The subjects were predominately female (91.3%) and graduated from the traditional program (82.7%). The results of the study indicated 81.6% of the subjects were successful on the NCLEX-RN examination while 18.4% of the subjects reported failure. Eleven subjects were eliminated from the analysis due to incomplete data (Waterhouse & Beeman,).

Prior to 1995, the NCLEX-RN was completed via pencil and paper method over a two-day period. The examination was offered twice yearly. The waiting period for examination results was between two weeks to several months and was only provided through the postal service via written communication.

In 1995, computer adaptive testing (CAT) was instituted which resulted in significant changes in the licensure procedure. The nursing graduates were allowed to choose when and where to take the examination, and results of the examination were provided within two weeks or less. This significant change allowed graduates to enter the nursing workforce in a much quicker time frame than the previous method of testing.

During the above mentioned changes with the licensure examination procedures, an important standard materialized. The *first-time pass rate* became a measurement of the quality of the nursing education program. This became known as the *gold standard* of a

program and often utilized to grade or assess the nursing program's ability to produce a

qualified graduate (Bernier, Helfert, Teich, & Viterito, 2005).

Many state boards of nursing across the country have identified pass rate

percentages considered to be *satisfactory*. Nursing program pass rates are continually

monitored. If pass rates fall below the specified required percentages, a plan of correction

may be required. The individual program pass rates are published for the public to

review. This action alone can cast a negative light on programs that continually fall

below the benchmark.

A recent study was conducted to "determine strategies to raise the NCLEX-RN

pass rates and lower the attrition rate in a community college nursing program" (Higgins,

2005, pg 541). Two hundred thirteen former nursing student records were obtained for

data collection; qualitative data were collected from 10 fulltime faculty, 30 new

graduates, and 45 directors of associate degree nursing programs in Texas.

The study was designed to be conducted in three phases. Phase one consisted of

utilizing quantitative methods to identify the relationship of variables in the application

process through successful completion of the nursing program and passage of the

NCLEX-RN. Phase two was designed to research other associate degree programs

located in Texas as well as identifying strategies currently utilized to promote success on

the NCLEX-RN examination as well as decreasing attrition rates. Phase three addressed

faculty and former students' perceptions of the methods utilized to increase the pass rate

on the NCLEX-RN examination and lower the attrition rates. Phases two and three were

qualitative studies that used the following data to augment the validity of the data: (a)

participant language, (b) verbatim accounts, (c) member checking, (d) recorded data, and (e) participant review.

The results of the study were broken into the three phases represented in the study. In phase one, the "dependent variables (completion or non-completion of the nursing program and passing/failing the NCLEX-RN) provided nominal data through two dichotomous groups. The chosen level of significance (alpha level) for rejection was 0.05; the region of rejection was two-tailed" (Higgins, 2005, pg 544).

Biology 2402 (Anatomy and Physiology II) (r=0.152) and Biology 2420 (Microbiology) (r= 0.191) were noted as a statistical difference between these courses and completion of the nursing program. Another difference noted was between Biology 2401 (Anatomy and Physiology I) (r= 0.171) and passing the NCLEX-RN examination.

Phase two results revealed that most all of the nursing programs in the study were utilizing some type of remediation to address attrition rates. Through the research study, it was determined that four areas were reflective of lowering the attrition rates. Those areas were: (a) readmission requirements, (b) campus counselors, (c) remediation, and (d) faculty.

Increasing the pass rate on the NCLEX-RN examination reflected four areas as well during Phase two of the study: (a) exit examinations, (b) achievement testing throughout the curriculum, (c) remediation, and (d) revision of test item questions to reflect NCLEX-RN questions.

Numerous schools examined in the study hired additional faculty both full-time and part-time to assist in remediation. Many schools reviewed their prerequisite requirements and executed achievement tests throughout the curriculum.

The faculty responses noted in Phase three attributed to attrition rates reveals three themes: (a) prerequisites for program admission, (b) mentoring, and (c) faculty needs. Faculty noted the students' needs could be better met if their assignments and tasks did not take them away from teaching and working with the students. The study identified the opportunity to be creative and develop teaching strategies were limited due to the increased demands on faculty.

The students expressed difficulty in answering the question regarding attrition rates. The areas noted included: (a) not knowing the answer, (b) individual student motivation, (c) mandatory class for test-taking skills, (d) test reviews, (e) study groups, (f) faculty contact with at-risk students, and (g) use the NCLEX-RN review books throughout the program.

Faculty responses in phase three addressed the pass rates and reflected three themes including teaching, test-item writing, and curriculum changes. "Comments related to teaching included the desire to increase the use of case studies and scenarios, critical thinking exercises, and application of theory information in the clinical setting" (Higgins, 205, pg 546). Five faculty members mentioned the need to change the exam bank questions to represent more uniformity with the NCLEX-RN questions.

Recommendations resulting from this study included an evaluation of the admission policies with revisions that focused on the variables that were identified as significant in predicting successful program completion and success on the NCLEX-RN examination. Monitoring the overall attrition rate for nursing programs is essential as well as noting the attrition rate for each individual course. At-risk students must be

identified early in the program, and implementation of interventions designed to promote success instituted (Higgins, 2005).

NCLEX-RN licensure examination pass rates are declining as revealed by Sifford & McDaniel (2007):

> In a response to demand for an increased level of competence for beginning nurses, the National Council for State Boards of Nursing has raised the cut-off score required for passing the NCLEX-RN. This action has challenged nursing programs to develop strategies for student success on the licensure exam. Between 1994 and 2000, the annual NCLEX-RN pass rate for first time candidates educated in the United States dropped from 90.3 percent to 83.8 percent. In the first quarter of 2005, the pass rate for a similar group of candidates was 80 percent, suggesting a downward trend is continuing (pg. 34).

The downward trend of declining pass rates has an adverse affect on both nursing programs and their faculty. Satisfactory program pass rates are criteria for program accreditation by both state boards of nursing as well as national accrediting agencies. Fewer graduates achieving licensure also affects the number of licensed nurses in the healthcare workforce.

Negative results on the licensure examination can affect the nursing graduate both financially and emotionally. Often employers hire nursing graduates with the perception that the graduate will successfully pass the NCLEX-RN examination on the first attempt. Many times the graduate may have already started the orientation process. This can be costly maneuver for employers when the graduate fails to receive the required licensure.

The purpose of the Sifford and McDaniel (2007) study was to compare senior nursing students' performance on a commercially prepared exit examination before and after remediation. Approximately 10,000 senior nursing students from a state supported institution of higher education were the participants for the study. At the end of the spring term in their junior year, 86 students were given an exit exam. A score of <850 was flagged as at-risk, and those students with that particular score became potential participants for the study. Fall term of their senior year, these potential participants were administered the exit exam. Forty-seven students scored <850 and became the participants in the study.

To measure the effectiveness of the remediation and compare individual students with students throughout the United States, a computerized, comprehensive exit exam that utilized a predictability model (HPM) was administered. Previous research studies indicated this particular examination was highly predictive of NCLEX-RN success or failure.

Participants of the study attended a graded two-credit hour remediation class given in the spring semester of the senior year (final term). The course met for two hours each week, and attendance was mandatory. Near the end of the term, the exam was given for a final time.

Fifteen weeks of instruction on test taking, pacing for a timed exam, identification of key elements of questions, reducing options, prioritizing answers, nursing process, and communication questions were included. During the course, students were offered opportunities to identify their testing personality type and strengths and weakness pertaining to test taking. Test questions were given via PowerPoint presentation, written

format, and in the context of game playing. Time was allotted for questions and presenting rationales.

Scores from the exam were in the form of raw scores and analyzed by a paired t-test. A percentage of passing scores (i.e., > 850) were computed for the final administration. Statistics revealed significant data from two terms for the exit exam. The results revealed performance increased for the second administration of the exam:

A significant difference was observed, t (46) = -5.228, $p< .001$, suggesting that student performance significantly improved following the intervention. Of the forty seven participants who were required to take the intervention class because of their failure to achieve a passing score, 18 (38.3 %) achieved a passing score following the intervention class (pg. 35).

All research studies utilized in the literature review focused on identifying variables that predicted success on the first attempt at the NCLEX-RN examination. Similar methods and variables were utilized in each study. The results are similar in each study and indicate that nurse educators or researchers can identify variables that are significant in predicting the success of students utilizing previous data from the studies. Many of the studies identified the nursing shortage as an important factor in establishing a need for predicting or identifying variables with a significant relationship to NCLEX-RN examination results.

Chapter III

Methodology

    Introduction

The purpose of this research study is to examine the relationship between the scores obtained on the ATI tests and the results of the first attempt on the NCLEX-RN. The results of this study are valuable in guiding the admission and selection process of an associate degree nursing program as well as identifying students whose ATI scores indicate they may be at risk for not passing the NCLEX-RN examination on the first attempt. Identification of at-risk students early in the program allows nurse educators to provide additional support systems that promote success for the student.

In the United States, the NCLEX-RN pass rates have declined for the past several years among nursing graduates. In 2006, the National Council of State Boards of Nursing (NCSBN) reported a national pass rate of 88.1% for nursing graduates educated within the U.S. (National Council State Boards of Nursing, 2007). In 2007, the national pass rate declined to 85.5% (National Council State Boards of Nursing, 2008). In 2008, the national pass rate increased slightly to 86.7% (National Council State Boards of Nursing, 2009). The 2009 results reveal 88.42% which reflects an increase of 1.72% (National Council State Board of Nursing, 2010). This is a concern for nursing schools across the U.S. as well as healthcare employers here in some areas of the country the nursing shortage continues to be a major problem.

In an attempt to identify nursing students who may be at risk for failing the NCLEX-RN, this researcher examined the relationship between scores obtained on the ATI tests and their relationship to passing the NCLEX-RX examination.

The research questions utilized for this study included:

1. Is there a relationship between the adjusted individual scores on the Medical-Surgical Examination, Mental Health Examination, Maternal-Newborn Examination, Fundamentals of Nursing Examination, and the Comprehensive Predictor Examination with the result on the initial attempt at the NCLEX-RN examination?

2. Is there a relationship between the score obtained on the TEAS examination taken on admission to the nursing program and the result on the initial attempt at the NCLEX-RN examination?

Research design

A quantitative approach was utilized for this research study. The dependent variable for the study was the results of the NLCEX-RN on the first attempt. The independent variables were the ATI adjusted individual total scores that include the medical-surgical, mental health, maternal-newborn, fundamentals, and the comprehensive predictor test. The TEAS test score utilized in the selection process of the nursing students was also included.

Two groups of nursing students were analyzed separately. The first group (group 1) were students who enrolled at the college in the traditional two-year tract, and the second group (group 2) were transitional students who were already licensed practical nurses and were enrolled in the completion program. All subjects utilized in the study were admitted to the nursing program between January 1, 2007 and August 31, 2008. Data for Group 1 included all ATI examinations including scores from the TEAS test. Group 2 did not include the maternal-newborn ATI scores as these examinations were not part of the transitional curriculum. This resulted in five independent variables for Group 2

analysis. A Logistic Regression Analysis was utilized to explore the relationship between the dependent and independent variables for the study which included NCLEX-RN results serving as the dependent variable. The statistical software package (SPSS) was used to compute the analysis of the data collected for this research study.

Subjects

Approximately 130 student records were examined and gleaned for ATI examination scores. The overwhelming majority of student records examined belonged to Caucasian female students with male student records composing less than 2% of the entire population. Students associated with the respective records ranged in age from 19 to 59years. Random selection was not utilized as all student's records affiliated with students admitted during the specified dates (January 2007 to August 31, 2008), graduated and completed the NCLEX-RN licensure examination were utilized.

All subjects utilized in this study were admitted to the nursing program utilizing the same, identical admission procedures which included completion of the TEAS examination. Fifteen students from Group 1 (traditional students) were deleted from the population due to incomplete data or not completing the NLCEX-RN licensure examination. Nine students had pending NCLEX-RN results; two students did not have scores for the fundamentals ATI; one student did not have a final score for the maternal-newborn ATI; and three students had missing TEAS scores. The final number of subjects utilized in the study was 30 transitional students (Group 2) and 85 traditional students (Group1).

Permission to conduct this study was granted from the Office of Institutional Research at the community college as well as the IRB Committee from Indiana Wesleyan

University. The Department of Nursing at the community college and the staff at ATI

provided assistance in the data collection process for this research study. At no time

during the study was contact made with any subject.

Procedure for data collection

A quantitative approach was utilized for this research study. The dependent

variable for the study was the result of the NLCEX-RN examination (initial attempt) and

was recorded as pass/fail. The independent variables were the ATI adjusted individual

total scores on the Medical-Surgical Examination, Mental Health Examination, Maternal-

Newborn Examination, Fundamentals of Nursing Examination, and the Comprehensive

Predictor Examination. The TEAS test score was also included as an independent

variable in the study. Archival data, including ATI examination scores, were gleaned

from the ASN graduate records of students admitted to the nursing program between

January 1, 2007 and August 31, 2008. A Regression Analysis was utilized to explore the

relationship between the dependent and independent variables for the study which

included NCLEX-RN results and the individual total scores for the ATI examinations.

The on-line data base from the Indiana Professional Licensing Agency was

utilized to obtain the result for the nursing graduates NCLEX-RN examination as well as

the Indiana State Board of Nursing (2010) program report. The program report identifies

program graduates who have completed the NCLEX-RN examination. The graduates are

identified as a passing or failing and if the results apply to an initial or repeat attempt.

The results of this study are valuable in guiding the admission and selection

process of an associate degree nursing program. It also identified students whose ATI

scores indicated they may be at risk for not passing the NCLEX-RN examination on the first attempt.

Summary

In summary, the research design was quantitative in nature and utilized a Logistic Regression Analysis. The goal of the research study was to determine if a correlation existed between scores on the ATI examinations and the results on the NCLEX-RN examination of students who were admitted to the community college between January 1, 2007 and August 31, 2008. In an attempt to identify nursing students who may be at risk for failing the licensure examination (NCLEX-RN), this researcher examined the relationship between scores obtained on the ATI tests and their relationship to passing the NCLEX-RX examination.

The research questions utilized for this study included:

1. Is there a relationship between the adjusted individual scores on the Medical-Surgical Examination, Mental Health Examination, Maternal-Newborn Examination, Fundamentals of Nursing Examination, and the Comprehensive Predictor Examination with the result on the initial attempt at the NCLEX-RN examination?

2. Is there a relationship between the score obtained on the TEAS examination taken on admission to the nursing program and the result on the initial attempt at the NCLEX-RN examination?

A Logistic Regression Analysis was utilized to explore the relationship between the dependent and independent variables for the study.

Nursing graduates who were not successful in passing the NCLEX-RN examination on the first attempt decrease the number of licensed nurses in the healthcare

workforce as well as cast a negative light on the college or university from which they graduated. Often the nursing graduate and their families are financially burdened and have anticipated the salary of the registered nurse upon graduation. When the licensure examination is not successfully passed, the graduate postpones earnings and fails to alleviate the financial issues encountered while enrolled in school.

This author anticipated that the results of this study would identify students who may be at risk of not passing the NCLEX-RN exam and may need additional support to promote successful completion of the program. Obtaining this information would allow the nursing program to revise their admission process based upon evidence-based practice through the research of archival data and statistical analysis.

Chapter IV

Analysis of Data

>   *Introduction*

The purpose of this research study was to examine the relationship between the scores obtained on the AT) tests and the results of the first attempt on the NCLEX-RN. The research questions utilized for this study included:

1. Is there a relationship between the adjusted individual scores on the Medical-Surgical Examination, Mental Health Examination, Maternal-Newborn Examination, Fundamentals of Nursing Examination, and the Comprehensive Predictor Examination with the result on the initial attempt at the NCLEX-RN examination?

2. Is there a relationship between the score obtained on the TEAS examination taken on admission to the nursing program and the result on the initial attempt at the NCLEX-RN examination?

A quantitative approach was utilized for this research study. The dependent variable for the study was the results of the NLCEX-RN on the first attempt. The independent variables were the ATI adjusted individual total scores that include the medical-surgical, mental health, maternal-newborn, fundamentals, and the comprehensive predictor test. The TEAS test score utilized in the selection process of the nursing students was also included.

Two groups of nursing students were analyzed separately. The first groups (Group 1) were students who enrolled at the college in the traditional two-year tract, and the second groups (Group 2) were transitional students who were already licensed practical nurses and were enrolled in the completion program. All subjects utilized in the study were admitted to the nursing program between January 1, 2007 and August 31, 2008.

Data for Group 1 included all ATI examinations including scores from the TEAS test.

Group 2 did not include the maternal-newborn ATI scores as these examinations were not

part of the transitional curriculum. This resulted in five independent variables for Group 2

analysis. A Logistic Regression Analysis was utilized to explore the relationship between

the dependent and independent variables for the study which included NCLEX-RN

results serving as the dependent variable. Fifteen students from Group 1 (traditional

students) were deleted from the population due to incomplete data or not completing the

NLCEX-RN licensure examination. Nine students had pending NCLEX-RN results; two

students did not have scores for the fundamentals ATI; one student did not have a final

score for the maternal-newborn ATI; and three students had missing TEAS scores. The

final number of subjects utilized in the study was 30 transitional students (Group 2) and

85 traditional students (Group1).

Approximately 130 student records were examined and gleaned for ATI

examination scores. The overwhelming majority of records examined were for Caucasian

female students with male students composing less than 2% of the entire population.

Students ranged in age from 19 to 59 years. Random selection was not utilized as all

students admitted during the specified dates (January 2007 to August 31, 2008) that

successfully completed the program and took the NCLEX-RN licensure examination

were utilized.

After obtaining examination scores and licensure examination results, all

identifying remarks were removed from the records and a random number assigned to

each record. This action was instituted in an attempt to void revealing the student's

identity. The data were incorporated into an Excel spread sheet and then analyzed using SPSS statistical software.

Descriptive data

A descriptive summary of means, standard deviations, minimum, and maximum scores for all variables utilized in the study is outlined in Table 1 and Table 2.

Table 1

Descriptive Statistics Group 1

Variable	N	Min. score	Max. score	Mean	Std. deviation
NCLEX results	85	.00	1.00	.764	.4267
TEAS	85	71.80	95.30	84.049	4.7955
Comp. Predictor	85	38.00	81.30	71.097	7.2472
Mental Health	85	51.70	90.00	69.583	7.1487
Mat/New Born	85	45.00	85.00	67.268	7.9872
Med/Surg	85	38.90	81.10	61.555	8.4032
Fundamentals	85	55.00	86.70	70.401	6.4368

Table 2

Descriptive Statistics Group 2

Variable	N	Min. score	Max. score	Mean	Std. deviation
NCLEX results	30	.00	1.00	.5333	.5074
TEAS	30	66.50	90.00	79.530	5.356
Comp. Predictor	30	60.00	81.30	70.546	6.074
Mental Health	30	46.70	81.70	66.100	8.288
Med/Surg	30	45.90	83.30	64.180	9.278
Fundamentals	30	55.00	80.00	69.236	7.149

Response to research questions

A logistic regression was conducted utilizing SPSS software. In logistic regression, the dependent variable is dichotomous and generally takes the value of *1* with a probability of success or *0* if the result was failure. The NCLEX-RN results for each student were coded utilizing that same method, *1* for passing the examination on the first attempt and *0* or failing results. Logistic regression is a useful tool for calculating statistics; however, it may not be accurate if too few cases are used in the study. The results of the logistic regression for Groups 1 and 2 are outlined in Table 3 and Table 4.

Table 3

Logistic Regression Group 1 (n=85)

Variable	B	SE	Wald	df	sig.	Exp (B)
TEAS	-.051	.073	.487	1	.485	.950
Comp. Predictor	.091	.045	4.413	1	.042	1.096
Mental Health	.066	.058	1.313	1	.252	1.069
Mat/Newborn	.029	.045	.426	1	.514	1.030
Med/Surg	.098	.051	3.650	1	.050	1.103
Fundamentals	.080	.063	1.590	1	.207	1.083

p<.05

The variables identified as having a significant relationship to the score on the NCLEX-RN licensure examination in Group 1(students who graduated from the traditional tract) were the Comprehensive Predictor Examination and the Medical/Surgical Examination for Registered Nurses. Although the other examinations

utilized in the research study are beneficial to students, only two had a significant

relationship to the dependent variable ($p<.05$).

Table 4

*Logistic Regression for Group 2   (n=30)*_____

Variable	B	SE	Wald	df	sig.	Exp (B)
TEAS	-.051	.073	.487	1	.485	.950
Comp. Predictor	.091	.045	4.413	1	.042	1.096
Mental Health	.066	.058	1.313	1	.252	1.069
Med/Surg	.098	.051	3.650	1	.056	1.103
Fundamentals	.080	.063	1.590	1	.207	1.083

p<.05

   All independent variables utilized in the logistic regression for Group 2 (students

who graduated from the transitional program) were not significant ($p<.05$). This may be

in part due to the large percentage of students from Group 2 who were not successful in

passing the NCLEX-RN licensure examination on the first attempt. The pass rates for the

two groups utilized in this research study are outlined in Table 5.

Table 5

NCLEX-RN Pass Rates for all Groups of Students _____

Group	N	% passed on the first attempt	% failed on the first attempt
Group 1	85	76.47	23.53
Group 2	30	53.33	46.66

It is recommended that an additional research study be conducted to explore variables that may have an influence on the pass rates of the Group 2 students. Curricular issues, attendance rates, and clinical performance are some possible indicators that may warrant further investigation.

Discussion

Several research studies were reviewed that focused on ways to improve student success. A variety of studies were examined that identified various variables related to nursing students and their results on the NCLEX-RN.

Thirty-nine nursing graduates from North Carolina Central University, who completed the NCLEX-RN examination in 2006, were the subjects for a study conducted by Ukpabi (2008). Variables utilized in this study were scores in 18 different nursing courses. Data collected included course data and overall grade point average (Ukpabi, 2008).

In an attempt to predict success on the NCLEX-RN examination, a discriminate analysis was utilized to examine the 18 variables. The results of the research study revealed 39 students completed the NCLEX-RN examination; 77% of the students passed the licensure examination on the first attempt while 23% were unsuccessful. The study noted that 17 students (43.6%) were disqualified due to missing at least one discriminating variable. The total number of validated cases was 22 (56.4%). Results of the study indicate that of the 18 predictor variables, only 11 variables (ATI Critical Thinking, ATI TEAS Comp, ATI Percentile Reading, ATI Percentile Math, ATI Percentile English, NLN Percentile Adult I, NLN Percentile Adult II, NLN Percentile Pediatric, Mental Percentile ATI, Pharmacology Percentile ATI, and Fundamental

Percentile ATI) were identified as significant in predicting success on the NCLEX-RN examination (Ukpabi, 2008).

The majority of research conducted, which focused on variables and their relationship to passing the NCLEX-RN licensure examination on the first attempt, center on student's cumulative grade point average, SAT scores, scores on the Mosby Assess Test, entrance examination results, course grades, and personal demographics such as financial status, marital status, ethnicity, and age. The lack of research available utilizing student data from the ATI total testing program indicates a need for further investigation.

Chapter V

Conclusion

    Introduction

        Research has shown that a variety of variables can have an effect on the outcome of the licensure examination for registered nurses (NCLEX-RN) and range from personal demographics to academic performance. The driving force for much of this research stems from the fact that nurse educators possess a strong desire for students to be successful not only by passing curricular courses but also by passing the licensure examination on the first attempt post-graduation.

        The purpose of this research study was to examine the relationship between the scores obtained on the ATI tests and the results of the first attempt on the NCLEX-RN. The research questions utilized for this study included:

        1. Is there a relationship between the adjusted individual scores on the Medical-Surgical Examination, Mental Health Examination, Maternal-Newborn Examination, Fundamentals of Nursing Examination, and the Comprehensive Predictor Examination with the result on the initial attempt at the NCLEX-RN examination?

        2. Is there a relationship between the score obtained on the TEAS examination taken on admission to the nursing program and the result on the initial attempt at the NCLEX-RN examination?

        In the U.S., the NCLEX-RN pass rates have declined for the past several years among nursing graduates. In 2006, the NCSBN reported a national pass rate of 88.1% for nursing graduates educated within the U.S. (National Council State Boards of Nursing, 2007). In 2007, the national pass rate declined to 85.5% (National Council State Boards of Nursing, 2008). In 2008, the national pass rate increased slightly to 86.7% (National

Council State Boards of Nursing, 2009). The 2009 results reveal 88.42% which reflects an increase of 1.72% (National Council State Board of Nursing, 2010). This is a concern for nursing schools across the U.S. as well as healthcare employers where in some areas of the country the nursing shortage continues to be a major problem. The decrease in the number of graduates passing the licensure examination presents a dilemma for all constituents associated with higher education and the healthcare workforce.

Recent nursing shortages require inquisition into discovering new avenues that promote a nursing career. Encouraging students to consider a career in the healthcare field requires strategies to assist students to be successful in their coursework as well as encouraging success in obtaining a nursing license by passing the NCLEX-RN on the first attempt.

Nursing graduates who are not successful in passing the licensure examination on the first attempt decrease the number of licensed nurses as well as cast a negative light on the college or university from which they graduated. Often the nursing graduate and their families are financially burdened and have anticipated the salary of the registered nurse upon graduation. When the licensure examination is not successfully passed, the graduate postpones earnings and fails to alleviate the financial issues encountered while enrolled in school.

Several research studies were reviewed that focused on ways to improve student success. The literature review discussed a variety of studies that offered specific details to assist nursing students with successful completion of the NCLEX-RN. Although the literature focused on a variety of variables, this study focused on student test scores earned on the ATI exams.

Awareness of risk factors can assist in early identification of problems that may lead to failure. Early identification offers opportunities for intervention that can change the potential for failure into a successful nursing career. Nurse educators must be aware of risk factors that may have an effect on the success or failure of students. Implementing measures that provide the desired outcomes is an important role of the nurse educator.

Summary of the study

A quantitative approach was utilized for this study. The dependent variable for the study was the results of the NLCEX-RN on the first attempt. The independent variables were the ATI adjusted individual total scores that include the medical-surgical, mental health, maternal-newborn, fundamentals, the comprehensive predictor test, and the TEAS examination.

Two groups of students were analyzed separately. The first group was students who enrolled at the college as a traditional student (Group 1), and the second groups were transitional students (Group 2). The students were admitted into the nursing program between January 1, 2007 and August 31, 2008. Group 1 independent variables included all six exam scores in the final analysis. Group 2 did not include the maternal-newborn ATI exam scores as this particular exam is not required for the transitional curriculum. A logistic regression analysis was utilized to explore the relationship between the dependent and independent variables for the study which included initial NCLEX-RN results and the examination scores from ATI. The statistical software package known as SPSS was utilized to calculate the statistical analysis for this research study.

Approximately 130 records were utilized for this research activity. The majority of nursing students were female, and a wide age-range was represented. The students

were not chosen randomly. All student records that indicated program admission between the specified dates and had documented graduation dates were examined. The number of graduate students was reflective of the data obtained from the community college for admission into the nursing program from January 2007 to August 31, 2008.

All subjects were selected for the nursing program using the same identical admission criteria. Fifteen students from Group 1 were eliminated from the data pool; nine students had pending NCLEX-RN results; two students did not have scores for the fundamentals ATI; one student did not have a final score for the maternal-newborn ATI; and three students had missing TEAS scores. The final number of subjects in the two Groups (1 and 2) totaled 125 students.

Permission was granted from the Office of Institutional Research at the community college as well as the IRB Committee from Indiana Wesleyan University. The Department of Nursing at the community college and the staff at ATI provided assistance in the data collection process for this research study.

Archival data, including ATI examination scores, were gleaned from the nursing student records. A logistic regression analysis was conducted and explored the relationship between the dependent and independent variables (NCLEX-RN results and the individual total scores for the ATI examinations).

The on-line data base from the Indiana Professional Licensing Agency was utilized to obtain the result for the NCLEX-RN examination as well as the Indiana State Board of Nursing quarterly NCLEX report. The quarterly report identifies program graduates who have completed the NCLEX-RN examination. The graduates are identified as passing or failing the exam and if this was an initial or repeat attempt.

The results of this study are valuable in guiding the admission and selection process of an associate degree nursing program. The data is also useful in identifying students whose ATI scores indicated they may be at risk for not passing the NCLEX-RN examination on the first attempt.

The goal of the research study was to determine if a correlation exists between scores on the ATI examinations and the results on the NCLEX-RN examination. This author anticipated that the results would identify students who may be at risk of not passing the NCLEX-RN exam and may need additional support to promote successful completion of the program. Obtaining this information would allow the nursing program to revise their admission process based upon evidence practice through the research of archival data and statistical analysis.

Implications and recommendations

The variables identified as having a significant relationship to the score on the NCLEX-RN licensure examination in Group 1 were the Comprehensive Predictor Examination and the Medical/Surgical Examination for Registered Nurses. All independent variables utilized in the logistic regression for Group 2 were deemed as not having a significant relationship to the dependent variable. Although not all independent variables had a significant relationship to the NCLEX-RN pass rate, they may prove useful in identifying students who need additional support for successful program and licensure completion.

A recommendation stemming from this research study would be that further research is necessary to identify possible factors for the low pass rate in Group 2 students as well as repeating this study with a larger number of subjects and conducting studies at

a variety of educational facilities. It may prove useful to incorporate bachelor degree prepared nursing graduates who utilize ATI materials as well.

Conclusion

Nursing graduates who were not successful in passing the NCLEX-RN examination on the first attempt decrease the number of licensed nurses in the healthcare workforce as well as cast a negative light on the college or university from which they graduated. Often the nursing graduate and their families are financially burdened and have anticipated the salary of the registered nurse upon graduation. When the licensure examination is not successfully passed, the graduate postpones earnings and fails to alleviate the financial issues encountered while enrolled in school.

It is through research conducted with the intent of improving student performance and finding ways to identify *at risk* students that nurse educators can best prepare the healthcare workforce of the future and guarantee that healthcare consumers will be cared for by the best prepared graduate possible.

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Appendices

Appendix A: Permission to conduct research from Indiana Wesleyan University

Appendix B: Permission to conduct research from Ivy Tech Community College

List of Tables

Table 1

*Descriptive Statistics Group 1*_____

Variable	N	Min. score	Max. score	Mean	Std. deviation
NCLEX results	85	.00	1.00	.764	.4267
TEAS	85	71.80	95.30	84.049	4.7955
Comp. Predictor	85	38.00	81.30	71.097	7.2472
Mental Health	85	51.70	90.00	69.583	7.1487
Mat/New Born	85	45.00	85.00	67.268	7.9872
Med/Surg	85	38.90	81.10	61.555	8.4032
Fundamentals	85	55.00	86.70	70.401	6.4368

Table 2

*Descriptive Statistics Group 2*_____

Variable	N	Min. score	Max. score	Mean	Std. deviation
NCLEX results	30	.00	1.00	.533	.507
TEAS	30	66.50	90.00	79.530	5.356
Comp. Predictor	30	60.00	81.30	70.546	6.074
Mental Health	30	46.70	81.70	66.100	8.288
Med/Surg	30	45.90	83.30	64.180	9.278
Fundamentals	30	55.00	80.00	69.236	7.149

Table 3

Logistic Regression Group 1 (n=85)

Variable	B	SE	Wald	df	sig.	Exp (B)
TEAS	-.051	.073	.487	1	.485	.950
Comp. Predictor	.091	.045	4.413	1	.042	1.096
Mental Health	.066	.058	1.313	1	.252	1.069
Mat/Newborn	.029	.045	.426	1	.514	1.030
Med/Surg	.098	.051	3.650	1	.050	1.103
Fundamentals	.080	.063	1.590	1	.207	1.083

p<.05

Table 4

Logistic Regression for Group 2   (n=30)

Variable	B	SE	Wald	df	sig.	Exp (B)
TEAS	-.051	.073	.487	1	.485	.950
Comp. Predictor	.091	.045	4.413	1	.042	1.096
Mental Health	.066	.058	1.313	1	.252	1.069
Med/Surg	.098	.051	3.650	1	.056	1.103
Fundamentals	.080	.063	1.590	1	.207	1.083

p<.05

Table 5

NCLEX-RN Pass Rates for all Groups of Students

Group	N	% passed on the first attempt	% failed on the first attempt
Group 1	85	76.47	23.53
Group 2	30	53.33	46.66