THE RELATIONSHIP BETWEEN EDUCATIONAL PREPARATION OF NURSING

FACULTY AND ASSOCIATE DEGREE PROGRAM PASS RATES ON

THE NATIONAL COUNCIL LICENSURE EXAMINATION

FOR REGISTERED NURSES

by

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A DISSERTATION

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ABSTRACT

Today's complex healthcare system requires nursing graduates to be prepared to deliver high quality, patient-centered care to a diverse population. Nurse educators must be highly proficient nurses as well as excellent educators who are able to facilitate student learning. There is a paucity of published literature regarding the optimal preparation for nurses entering the faculty role. This retrospective survey study examined the relationship between the educational preparation of nursing faculty and the student outcomes of program pass rates and performance on key components on the National Council Licensure Examination for Registered Nurses (NCLEX-RN) in 40 associate degree nursing (ADN) programs in Florida, both public and private/proprietary. The specific components of educational preparation that were included in this study were (a) the highest degree attained; (b) the type of doctoral degree attained (Doctor of Education, Doctor of Philosophy, Doctor of Nursing Practice, or other); and (c) completion of a minimum of nine credits of graduate level education coursework covering topics such as curriculum development, instructional design, assessment and evaluation, and adult learning theories. Other faculty characteristics analyzed were teaching experience, student-to-faculty ratio, and percentage of full-time faculty. All faculty data were grouped by program. Faculty characteristics shown to predict program NCLEX-RN pass rates were faculty completion of graduate level education coursework and years of teaching experience (averaged teaching experience by the full-time faculty group within a program), although faculty completion of education coursework was related to NCLEX-RN pass rates at a significantly higher rate than was found with years of teaching experience. Based on the findings from this study, ADN

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programs in Florida that employ full-time faculty members who have completed graduate-level education coursework may see positive effects on NCLEX-RN pass rates. Likewise, ADN programs in Florida that increase the average teaching experience of the full-time faculty may see positive effects on NCLEX-RN pass rates.

DEDICATION

This work is dedicated to Dr. Kit Kuss, my husband, partner, and best friend, who helped me navigate this journey in countless ways. Kit, I love you and can't wait to spend the post-graduate school, post-dissertation years enjoying life with you and our family in our new role as Mimi and Papa!

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LIST OF ABBREVIATIONS AND SYMBOLS

AACN	American Association of Colleges of Nurses
ADN	Associate Degree Nursing
β	Beta, or rate of type II error
DNP	Doctor of Nursing Practice
EdD	Doctor of Education
FCNEA	Florida Council of Nursing Education Administrators
FT	Full-Time
H	Hypothesis
IOM	Institute of Medicine
IRB	Institutional Review Board
MSN	Master of Science in Nursing
N	Number in population
n	Number in sample
NCES	National Center for Education Statistics
NCLEX-RN	National Council Licensure Examination for Registered Nurses
NCSBN	National Council of State Boards of Nursing
NLN	National League for Nursing
NPTE-PTA	National Physical Therapy Examination for Physical Therapy Assistants
OPPAGA	Office of Program Policy Analysis and Government Accountability
p	Probability value

PA	Physician's Assistant
PANCE	Physician's Assistant National Certifying Examination
PhD	Doctor of Philosophy
PTA	Physical Therapy Assistant
r	Correlation coefficient
R^2	Coefficient of determination
r_s	Spearman's correlation coefficient
RN	Registered Nurse
SACS-COC	Southern Association of Colleges and Schools Commission on Colleges
SD	Standard deviation
sig	Significance
SPSS	Statistical Package for the Social Sciences
=	Equal
<	Less than
%	Percentage

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INTRODUCTION

Nurses deliver high quality, patient-centered care to a diverse patient population in a highly complex, technologically-advanced, rapidly changing healthcare environment (Benner, Sutphen, Leonard, & Day, 2010; Institute of Medicine [IOM], 2010). Nursing graduates are expected to provide compassionate, safe, and effective care in multiple settings (Benner et al., 2010), which means that nursing faculty must be highly qualified nurses and educators in order to facilitate the learning their students need to prepare them for this rewarding but challenging career. Unfortunately, in a time when more nurses are needed due to the increasing demands of the changing healthcare system (IOM, 2010), there is a shortage of faculty (American Association of Colleges of Nurses [AACN], 2011). Nurse educators must recruit excellent nurses to become involved in training the next generation of nurses. Depending on the level of program (practical or professional nursing; associate degree, bachelor's degree, or higher) and the college or university, there is wide range of acceptable levels of educational preparation required to become a nurse educator, from a bachelor's in nursing to a variety of doctoral degrees. What is unknown is whether or not there is an optimal combination of faculty with different educational preparation who are serving together in a program that maximizes student outcomes. The intent of this study was to determine if there is a relationship between the educational preparation of nursing faculty and student outcomes.

This chapter provides a brief description of the nursing shortage and nursing faculty shortage in the study's target state of Florida, as well as in the U.S., and outlines some of the reasons behind the shortages. The national licensure examination for nurses is briefly discussed in the context of applicability for use as a program outcome measurement. The research problem is then highlighted by describing the choice of post-baccalaureate degrees that can lead to a career in nursing education. The purpose of the study is stated, followed by an explanation of the theoretical framework. Finally, the research questions are presented, with a focus on whether or not there is a relationship between faculty preparation and desired student outcomes.

The Nursing Shortage

The nursing shortage in the U.S. is a well-documented problem. The U.S. registered nursing workforce is projected to grow by 26% by 2020, according to the Bureau of Labor Statistics' Employment Projections 2010-2020. Adding replacement positions to this high growth rate results in a projection of one million total number of job openings for registered nurses (RNs) by 2020 (U.S. Department of Labor, 2012). Within the state of Florida there were nearly 9,000 vacancies for RNs in 2011 and over 6,500 new positions projected for 2012, leaving a need for over 15,000 RNs that were not available during that period (Florida Center for Nursing, 2012b). More than half of the qualified applicants to Florida's RN programs (both associate degree and bachelor's degree programs) were denied admission in 2010 due to limited clinical sites, limited funding to hire nurse educators, and difficulty recruiting qualified faculty, which is consistent with national data (Florida Center for Nursing, 2012a).

To complicate the issue of an ongoing shortage of nurses, there is a progressing complexity of patient care and an expansion in mandates from the federal government to meet

increasingly high standards in order to receive payment or avoid penalties that are putting

pressure on the healthcare system (Centers for Medicare and Medicaid Services, 2013).

Employers of new graduate nurses have a great need for RNs with strong clinical reasoning skills

to provide safe patient care in the collaborative environments that are required in current

healthcare settings. Wilgis and McConnell (2008) noted that nurses must be able to think

critically and intervene appropriately when faced with life-threatening situations, which can

happen at any time. Knowing that hospitals have limited resources to cultivate these critical

thinking skills in novice nurses, demands are placed on pre-licensure program educators to

develop these skills in their students. The need for well-prepared nurse educators is as necessary

in the current healthcare climate as it has ever been.

The Nursing Faculty Shortage

The Florida Center for Nursing conducts an annual survey of nursing programs. Data

from those surveys show that some of the significant reasons why nursing programs cannot

admit more students to help alleviate the nursing shortage are directly linked to another

significant problem, the nursing faculty shortage (Florida Center for Nursing, 2012b). This

shortage is documented at the national level as well. Survey data collected from undergraduate

nursing programs by the AACN (2011) revealed that these programs turned away over 65,000

qualified applicants in 2010. Two-thirds of the respondents to the survey indicated that the

primary reason they could not admit more students to their programs was because there were not

enough qualified faculty (AACN, 2011). The problem will be compounded in future years if not

addressed because the ranks of experienced nurse educators are thinning due to retirement. Less

than 40 % of the full-time nurse educators teaching in RN programs in Florida in 2010 were

under the age of 50, and nearly 20 % were over the age of 60, with the number of reported retirements increasing over the prior year (Florida Center for Nursing, 2012b). At the national level, the average age of nurse educators is 55.2 years (AACN, 2012), which is significantly older than the average age of the nurse at 47 years (U.S. Department of Health and Human Services, 2010). The average age of nursing faculty is higher than the average age of the nursing workforce as a whole because nurses enter academia later in their careers. They must gain clinical expertise and are required to attain higher degrees, all of which take several years to accomplish, even when a nurse has a goal to be an educator (Allan & Aldebron, 2008; McDermid, Peters, Jackson, & Daly, 2012). Often, however, nurses do not consider the faculty role as a possibility early in their careers, so they do not take the necessary steps to prepare themselves for that role. Current faculty should begin recruiting potential future nurse educators early in the students' nursing careers.

There are other factors contributing to the nurse faculty shortage. The National League for Nursing (NLN) and AACN observed that competition from other career options and the salary differential between clinical practice and academia have contributed to the erosion of the faculty pool (AACN, 2012; NLN, 2010b). The average annual salary for full-time nurse faculty with masters or doctoral degrees can be $20,000 lower than for nurse practitioners with similar qualifications (McDermid et al., 2012). Earning advanced degrees can be costly, so the lure of working in a more lucrative clinical practice after years of sacrifice is strong. On the positive side for nursing education, research shows that nurse educators receive job satisfaction from many other areas, including co-worker collegiality, autonomy and flexibility, supervisor support, and working with students (Disch, Edwardson, & Adwan, 2004; Evans, 2013; Gui, Barriball, & White, 2009).

NCLEX-RN

The statistics related to nurse and nurse educator populations, as well as the current climate in healthcare, indicate that nurse educators are faced with multiple challenges. Each nursing program's faculty are expected to maximize the number of students admitted, minimize the attrition of those students, and maintain high first-time pass rates on the National Council Licensure Examination for Registered Nurses [NCLEX-RN] (National Council of State Boards of Nursing, 2013), which pre-licensure nursing graduates must successfully complete to practice as RNs. Nurse educators must work closely with their colleagues in practice to ensure that program curricula reflect current trends in nursing while maintaining the focus of building a solid foundation for entry-level RNs. The National Council of State Boards of Nursing (NCSBN), the organization of nursing professionals that develops and modifies the examination, surveys 12,000 newly licensed RNs every three years about the "frequency and importance of nursing care activities" (NCSBN, 2012b, p. 1), the results of which guide the modification of the NCLEX-RN test plan. At the same time the test plan is modified, the passing standard for the examination is typically increased. This ensures that the examination tests graduates at the level necessary for the current practice environment that will be faced by newly licensed RNs. As is their custom, the NCSBN significantly increased the passing standards for the NCLEX-RN in 2013 with the latest test plan modification, which means that graduates must be prepared to pass a more difficult examination in order to practice nursing. The passing standard was changed from -0.21 to -0.16 logits in 2010, whereas the passing standard was changed from -0.16 logits to 0.00 logits in 2013, with logits being "a unit of measurement to report relative differences between candidate ability estimates and item difficulties" (NCSBN, 2012c). As shown in Table 1, the revised test plan stresses safe and effective care, with special emphasis on items within

three specific areas: "Management of Care," "Pharmacological and Parenteral Therapies," and "Physiological Adaptation" (NCSBN, 2010; NCSBN, 2012b). With this change comes the charge to nurse educators to produce graduate nurses with the knowledge, skills, and abilities of an entry-level RN who is competent to care for multiple high-acuity patients, and who can prioritize and delegate effectively.

Table 1

NCLEX-RN Distribution of Content: 2010 and 2013

Client Needs	Percentage of Items from Each Category/Subcategory	
	2010 Test Plan	2013 Test Plan
Safe and Effective Care Environment		
Management of Care	16-22%	17-23%
Safety and Infection Control	8-14%	9-15%
Health Promotion and Maintenance	6-12%	6-12%
Psychosocial Integrity	6-12%	6-12%
Physiological Integrity		
Basic Care and Comfort	6-12%	6-12%
Pharmacological and Parenteral Therapies	13-19%	12-18%
Reduction of Risk Potential	10-16%	9-15%
Physiological Adaptation	11-17%	11-17%

Note. Reconstructed from "NCLEX-RN Test Plan: Effective April 2010," by National Council of State Boards of Nursing (NCSBN), 2010, p. 4, and "NCLEX-RN Test Plan: Effective April 2013," by NCSBN, 2012b, p. 3. Portions copyrighted by the National Council of State Boards of Nursing, Inc. All rights reserved.

The issues facing nursing education seem overwhelming, but they are not insurmountable. A few of the issues already discussed include (a) faculty shortages, (b) the need to continually increase the level at which new graduates can safely perform, and (c) a changing, complex healthcare system that requires an increased amount of nursing ability to practice competently at the entry level. Nurse educators can meet these challenges by implementing

innovative strategies in nursing education. Thus, nurse educators must be excellent nurses and they must also be excellent educators who are able to develop curriculum, implement learner-centered strategies, and evaluate student outcomes and the effectiveness of those strategies.

Statement of the Problem: Degree Choices

The faculty shortage has been an ongoing challenge for many years. Universities nationwide responded to the call to produce more nurse educators by developing or expanding graduate nursing programs designed, in part, to prepare nurse educators (AACN, 2011). However, there is some disagreement about what kind of education will best prepare nurse educators. Should all nurse educators have doctoral degrees? If so, should those degrees be focused on research, teaching, or advanced clinical practice? If master's level preparation is sufficient for some nurse educators who plan to teach in associate degree programs or who wish to teach only in clinical settings, should those degrees be focused on advanced clinical practice, teaching, or a blend of both? While it is beneficial to have a choice of pathways for nurses to prepare for the role of nurse educator, there is a need to establish best practices in nurse educator preparation.

The Southern Regional Education Board Council on Collegiate Education for Nursing (2002) pioneered the first study to identify nurse educator competencies within three domains of academic responsibility: teaching, scholarship, and collaboration (service). The researchers refined the data received from expert nurse educator respondents into 35 nurse educator competency statements. The NLN undertook a similar project in 2004 and developed a set of core competencies for nurse educators. This effort united a diverse group of nursing professionals who were leaders in the field of nursing education, solidifying their belief that

educational preparation of nurse faculty significantly impacts student outcomes and that the

preparation to develop evidence-based competencies was not available in traditional practice-

based nursing master's and doctoral programs (NLN, 2005a). The NLN project resulted in the

publication of *The Scope of Practice for Academic Nurse Educators* (2005b) and ultimately the

Academic Nurse Certification Program (NLN, 2011a). These core competencies can be used to

form the curricular framework for nurse educator programs as well as the basis for faculty

development and evaluation tools for current nurse educators (Halstead, 2007; Kalb, 2008).

Nurse educators, as healthcare professionals, must possess expertise in nursing practice as well

as advanced knowledge of nursing science, including health assessment, evidence-based practice

roles and processes, pathophysiology, and pharmacology (Bartels, 2007; Finke, 2009; Halstead,

2007; Johnsen, Aasgaard, Wahl, & Salminen, 2002; Penn, Wilson, & Rosseter, 2008; Zungolo,

2004). However, this knowledge and expertise is not enough. Educators must also

> facilitate learning; socialize students to the profession; evaluate learning outcomes; . . .
> design educational programs; provide leadership for change; develop their own careers
> within the educational environment; and contribute to the scholarship and research that
> advance the science of nursing education. (Halstead, 2007, p. 5)

It is clear that nurse educators must develop knowledge, skills, and abilities beyond advanced

clinical knowledge and expertise in order to optimally function in the educator role.

Expert clinical nurses who have transitioned to the educator role have reported significant

stress during the transition, stating a need for mentoring and more educational preparation

(Dempsey, 2007; Duphily, 2011; Schriner, 2007). While some of the educators in the three

qualitative studies referenced here had a nursing education focus in their master's education,

over 75% of them did not, and none were prepared at the doctoral level for the educator role.

Stress during role transition is expected to some degree, but entering a new career path with

advanced levels of preparation as the foundation on which to develop a new set of skills could make the transition easier.

As noted here, there are a handful of studies that explored the experiences of new faculty members as they transitioned from being clinical practice experts to novice nurse educators. One mixed method study focused on nurse educators' opinions of the importance of different nurse educator competence domains (Johnsen et al., 2002). Another study (Stevens, 1996) described the relationships between a variety of faculty qualifications and student outcomes as well as the relationships between a variety of program attributes and student outcomes in nursing programs in one state. Because there have been so few reported studies that focused on nursing faculty attributes as opposed to academic qualifications of nursing students, whether the educational preparation of faculty has an effect on student outcomes remains unclear.

Statement of Purpose

The purpose of this cross-sectional, retrospective survey study was to examine the relationship between the educational preparation of nursing faculty and student outcomes of program pass rates and performance on key components on the national RN licensure examination in associate degree nursing (ADN) programs in Florida.

Theoretical Framework

The input-output model was used as the theoretical framework for this study. Wassily Leontief, a Nobel Laureate, first developed the input-output model in 1932 to analyze interdependencies within a complex economic system (Rugina, 2003). Based on the principle of economic interdependence, this was considered a general theory of production that could be used

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in the analysis of a wide variety of economic situations (Miernyk, 1967). This theory is

described as follows:

> In its most basic form, the process of input-output analysis is a research strategy through which one attempts to measure changes in system output(s) brought about by changes in quantity and quality of system inputs. Through manipulation and analysis of system costs (financial, human, and informational) and of system benefits (explicit and implicit), one is better able to understand the nature of the transformation process taking place. (Cohn, Millman, & Chew, 1975, p. 7)

The application of this model provides the theoretical framework for this study. The

independent variables reflect the "quantity and quality" of inputs. These input variables, which

relate to "quantity and quality," but will be expressed solely in quantitative terms at the program

level, are (a) the education level of the faculty, (b) the percentage of faculty who have completed

graduate-level education coursework, and (c) the years of teaching experience. The "system

output" is the dependent variable, the first-time pass rate on NCLEX-RN, which can also be

measured in quantitative terms at the program level, as well as each program's performance on

key areas within the NLCEX-RN.

While the input-output theory was developed by economists, it was adopted by scientists

outside the field of economics. They found useful application of the model depicting the flow of

resources in many kinds of organizations (Cohn et al., 1975). Educators attempt to describe the

educational process in terms of outcomes of those who exit the system in relation to the

resources that were used as inputs into the system (Cohn et al., 1975). It is assumed that the

educational achievement of the student (output) is influenced by all factors related to the

educational experience (inputs) (Huffman, 1982; Stevens, 1996). Because faculty comprise a

large component of instructional expenditure and focus, their quality is frequently measured by

the institution and accrediting bodies, which often use characteristics such as faculty credentials

or publication rates (Astin, 1985; Klein, Kuh, Chun, Hamilton, & Shavelson, 2005). System

outputs that are often utilized in this model are reports of student performance on standardized tests such as licensure examinations. This means that the quality or achievement of an institution may be tied to the quality of its products; in other words, student outcomes (Klein et al., 2005; Manning, 2011).

Conceptual Definitions

The educational preparation of nursing faculty (the main independent variable) was analyzed to determine if there is a relationship with a nursing program's first-time pass rate on NCLEX-RN, (the main dependent variable). Other variables and items to be clarified follow.

- ADN programs: All programs included in this study are ADN programs that are approved by the Florida Board of Nursing. Graduates of these programs are eligible to apply for RN licensure by examination. The dean or director of each ADN program belongs to an organization, the Florida Council of Nursing Education Administrators, which meets three times a year to discuss issues directly affecting ADN programs in Florida.

- Education coursework: For the purposes of this study, a nurse educator must have a minimum of nine credits of graduate-level (master's or doctoral) education coursework completed, not including graduate-level research or statistics courses, in order to be classified as being prepared in teaching and learning sciences. Examples of acceptable courses are (a) Curriculum Development and Evaluation, (b) Instructional Design, (c) Principles of Adult Learning, (d) Assessment/Measurement & Evaluation, (e) Principles of Teaching and Learning, and (f) Instructional Technology. This meets the same threshold set by the NLN as one option to determine if a nurse educator meets the

eligibility requirements to apply for the Certified Nurse Educator designation (NLN, 2011b). This is an independent variable.

- Student-to-faculty ratio: For the purposes of this study, the student-to-faculty ratio will be reported at the program level as a measure of the total number of students and the number of full-time faculty in the program.

- First-time pass rate on NCLEX-RN: This is the percentage of graduates from a program who have taken and passed the NCLEX-RN on the first attempt in a given year. This first attempt is the only one credited to the program for student outcomes or student success by outside entities such as state boards of nursing, accrediting bodies, and other stakeholders. This is the main dependent variable.

- Full-time faculty: A full-time faculty member is a nursing faculty member employed by a college for at least a nine-month contract each year. Tenure or continuing contract status is not an issue of concern for the purposes of this study. The percentage of full-time faculty in each program is an independent variable in this study.

Research Questions

The overarching research question for this study is, "What is the relationship between the educational preparation of nursing faculty and the first-time program pass rate on the NCLEX-RN?" The guiding questions for each program in the study are as follows:

Descriptive Questions

1. What percentage of full-time faculty members have completed at least nine credits of graduate-level education coursework?

a. How many full-time nursing faculty members taught in each program at any time during the time period from 2008-09 through 2011-2012? (This question establishes a denominator for the desired percentage calculation.)

b. How many part-time/adjunct faculty members taught in each program at any time during the time period from 2008-2009 through 2011-2012?

2. For each full-time faculty member identified above:

a. What is the highest degree and type of degree attained?

b. Is he or she currently enrolled in a graduate program? If yes, what type?

c. How long has he or she been teaching in a nursing program (ADN or pre-licensure baccalaureate degree program)?

3. What is the program's pass rate on NCLEX-RN in 2010, 2011, and 2012?

a. What is the program's percentage score on the NCLEX-RN "Management of Care" subsection in 2010, 2011, and 2012?

b. What is the program's percentage score on the NCLEX-RN "Pharmacological and Parenteral Therapies" subsection in 2010, 2011, and 2012?

c. What is the program's percentage score on the NCLEX-RN "Physiologic Adaptation" subsection in 2010, 2011, and 2012?

Inferential Questions with Hypotheses

1. What is the relationship between the educational preparation of nursing faculty and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections?

a. What is the relationship between type of degree and the student outcome of NCLEX-RN pass rate? The following hypotheses are related to this question:

- Hypothesis 1. The presence of nursing faculty who hold any type of doctoral degree in a program positively affects that program's NCLEX-RN average pass rate.

- Hypothesis 2. The presence of nursing faculty who hold a doctorate in education in a program positively affects that program's NCLEX-RN average pass rate.

b. What is the relationship between type of degree and the student outcome of program performance on selected NCLEX-RN subsections? The following hypotheses are related to this question:

- Hypothesis 3. The presence of nursing faculty who hold any type of doctoral degree in a program positively affects that program's performance on selected NCLEX-RN subsections.

- Hypothesis 4. The presence of nursing faculty who hold a doctorate in education in a program positively affects that program's performance on selected NCLEX-RN subsections.

c. What is the relationship between the percentage of faculty who have completed graduate-level education coursework and the student outcomes of NCLEX-RN pass rates? The following hypothesis is related to this question:

- Hypothesis 5. The presence of nursing faculty in a program who have completed graduate-level education coursework positively affects that program's NCLEX-RN average pass rate.

d. What is the relationship between the percentage of faculty who have completed graduate-level education coursework and the student outcomes of program performance on selected NCLEX-RN subsections? The following hypothesis is related to this question:

- Hypothesis 6. The presence of nursing faculty in a program who have completed graduate-level education coursework positively affects that program's performance on selected NCLEX-RN subsections.

2. What is the relationship between the program's average student-to-faculty ratio and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections? The following hypotheses are related to this question:

- Hypothesis 7: The average ratio of students to faculty in a program positively affects that program's NCLEX-RN average pass rate.

- Hypothesis 8. The average ratio of students to faculty in a program positively affects that program's performance on selected NCLEX-RN subsections.

3. What is the relationship between the percentage of full-time faculty and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections? The following hypotheses are related to this question:

- Hypothesis 9. The proportion of full-time faculty in a program positively affects that program's NCLEX-RN average pass rate.

- Hypothesis 10. The proportion of full-time faculty in a program positively affects that program's performance on selected NCLEX-RN subsections.

4. What is the relationship between the average number of years of teaching experience and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections? The following hypotheses are related to this question:

- Hypothesis 11. The average number of years teaching experience that the nursing faculty share in a program positively affects that program's NCLEX-RN average pass rate.

- Hypothesis 12. The average number of years teaching experience that the nursing faculty share in a program positively affects that program's performance on selected NCLEX-RN subsections.

Summary

Nurse educators must first be excellent nurses. They must understand the individual nurse-patient relationship as well as the broader healthcare environment. Additionally, they must be expert clinicians in an area of nursing practice with advanced knowledge of nursing science. However, they must also be adept at teaching nursing. Educators need to understand how students learn best so they can create experiences in which understanding and thinking develop. Educators must be able to evaluate student learning and to facilitate student remediation to help them move beyond roadblocks toward success. Depending on the student population, educators also need to use adult learning theories to adapt teaching strategies to best engage the more mature learners in programs. The ability of nurse educators to engage students in educationally sound ways could improve student outcomes. Therefore, the knowledge base and skill set possessed by excellent nurse educators expands beyond expertise in nursing knowledge and clinical practice. There is a need to expand the body of knowledge about best educational

practices to ensure that nurse educators have the best preparation possible to guide student

learning and equip future generations of nurses for the complex healthcare environments in

which they will work. Graduate nursing program administrators may benefit from these data as

they make decisions about the kinds of graduate programs to develop. In addition, potential

graduate students could use these data to assist them in making informed decisions about the

kind of graduate education to pursue. In the future, as new nurse educators enter confidently into

their roles because of the educational preparation they received, the nursing faculty shortage may

finally begin to turn around.

CHAPTER 2

REVIEW OF RELATED LITERATURE

This chapter begins with a review of literature relevant to the preparation for nurse educators. Because of the paucity of research on this topic, literature from other healthcare professions that have strong clinical components similar to nursing was explored. The next section includes a discussion about the nursing faculty shortage, followed by information about first-time pass rate on the NCLEX-RN and the topic of outcome measures. Finally, because this study targets associate degree nursing (ADN) programs, the chapter concludes with a brief history and overview of associate degree nursing, including the broad characteristics of ADN students and the role that ADN programs hold in nursing education as a whole.

Preparation of Nurse Educators

Very few studies were found that address preparation of nursing faculty, but some qualitative researchers have studied the transition into the faculty role, helping to identify a need for educational preparation. Dempsey (2007) found five themes emerging from a qualitative study of six new nurse educators teaching at the baccalaureate level, including a theme focused on educational preparation. The respondents felt that a course in education taken prior to beginning to teach was somewhat beneficial, but more was needed. This study highlighted the need for educational preparation as well as a strong support system to help ease the stress that is inherent in any major change (Dempsey, 2007). Schriner (2007) also found that formal preparation for the educator role was lacking among the group of novice nurse faculty teaching

at the baccalaureate level that she interviewed. She recommended that nursing programs increase the accessibility to graduate programs focused on nursing education (2007).

Much literature that was not data-based was found regarding nursing faculty preparation. Finke (2009) noted that advanced preparation is necessary to teach, including developing expertise in an area of nursing as well as developing the competencies for the educator role. There is a need for faculty development for all faculty members, not only for those new to a teaching position, and there must be a rigorous evaluation process to ensure competent teaching (Fink, 2009). Many agree that nursing faculty should be prepared with knowledge of learning and teaching theory (Bartels, 2007; Cyr, 2007; Finke, 2009; Ganley & Sheets, 2009; Kalb, 2008; NCSBN, 2008; NLN, 2010a; Penn, Wilson, & Rosseter, 2008; Schriner, 2007; Zungolo, 2004). However, there is little agreement about the amount and kind of preparation that should be completed prior to beginning a teaching career. Recommendations vary from offering an orientation course for new nurse faculty (Cyr, 2007) to requiring that all nursing faculty be doctorally prepared with advanced understanding of nursing science and practice as well as understanding of the full spectrum of teaching, including pedagogy, evaluation, and curriculum development (Bartels, 2007).

To further confuse the matter, the kind of doctoral degree that nurse educators should earn is under debate. Currently, the three main choices are the Doctor of Philosophy (PhD), the Doctor of Education (EdD), and the Doctor of Nursing Practice (DNP). The PhD is traditionally recognized as the more rigorous research degree. Many PhD students pursue this degree so that they have the qualifications to teach in higher education. However, while most faculty members consider teaching the most important part of their jobs, many graduate programs minimize the importance of the teaching role and do little to prepare future faculty for this role (Jones, 2008).

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The research role is often elevated in importance at universities where promotion and tenure depend more on productivity in research and publishing than on excellence in teaching (Robertson, 1999). While in graduate school, much of the coursework is focused on developing the researcher, not the teacher (Trautmann, 2008). Lacking the understanding of teaching and learning principles, novice instructors often teach as they were taught, and tend to go through stages of development, the first of which is the tendency to be focused on themselves, not their students. These instructors progressively become more student-centered as they gain experience (Kugel, 1993). While experience and faculty development efforts often result in more effective teachers, changing graduate program curricula to focus more on the scholarship of teaching is the ultimate solution (Jones, 2008; Trautmann, 2008).

Kumar, Roberts, and Thistlethwaite (2011) were also concerned about this focus and support for research over teaching in their field of academic medicine. The data from their study indicated that those who chose to engage in research gained more security in their profession than those who focused on the teaching role. The researchers recommended flexible pathways be provided in academic medicine and broaden the view of scholarship in medical education. Murray (2010) described similar concerns in the broader community college arena, where the primary mission is to teach a population of students that is becoming more diverse. The author expressed the concern that graduate programs are not preparing individuals to teach in community colleges; rather, these programs, which are predominantly found in research institutions, teach research. While there is absolutely a need for PhD programs in nursing to continue to expand nursing science, the argument made here is that perhaps not all nurse educators need to have the PhD preparation and those who do may need to take additional

graduate coursework in education studies to develop understanding of teaching and learning principles.

The education doctorate (EdD) is often earned in education programs totally isolated from nursing and nursing education, and can be focused on technology, leadership, instructional design, or a variety of other specialized areas. While graduates with this degree possess strong understanding of education science, they may find it challenging to adapt these principles when teaching in the clinical setting. This isolation between education and nursing does not always have to be the case. At The University of Alabama, for example, the College of Education and the Capstone College of Nursing provide students with a unique program that develops the teaching and research knowledge and skills needed to become effective nurse educators (University of Alabama, n.d.). The advantage of this EdD program focused on nursing education is the exposure to education science, teaching and learning theories and strategies, curriculum development, and evaluation, all put in the context of nursing education. While the College of Education faculty facilitate student learning in education theory and principles, the faculty members in the Capstone College of Nursing help students build on those theories and principles and apply them to specific nursing education situations. The graduate students in this program who have previously earned masters' degrees in nursing focus on developing their understanding and abilities as educators. The university also offers a dual MSN/EdD track within this program for those nurses who wish to become educators but who also need instruction in advanced nursing science (University of Alabama, n.d.). This dual track is designed to ensure that these students receive a greater depth of instruction and interaction with the nursing faculty as knowledge of both advanced nursing and education sciences are developed.

Bartels (2007) expressed a strong belief that nurse educators should possess "advanced nursing science expertise" (p. 154). If an educator's master's level and doctoral level education is focused solely on education science rather than nursing science, the result is a faculty member with "an undergraduate level understanding of, and preparation in, the science and practice of nursing" (p. 154). The NCSBN agreed. That organization's Faculty Qualifications Committee recommended that "nursing faculty in RN programs (full-time and part-time) shall have either a master's degree or a doctoral degree in nursing. Their education should include graduate preparation in the science of nursing, including clinical practice, and graduate preparation in teaching and learning, including curriculum development and implementation" (NCSBN, 2008, p. 2).

The Doctor of Nursing Practice (DNP) is a relatively new choice for doctoral education for nurses, and is a practice-focused degree. The AACN (2004) stated that healthcare has become so complex that the practice doctorate should be the entry point into advanced practice nursing with a phase-out period of master's level advanced practice nursing. A recommendation about graduates of practice doctorate programs serving as faculty is key to the topic of faculty preparation: "Practice doctorate programs . . . are encouraged to offer additional coursework and practice that would prepare graduates to fill the role of nurse educator" (AACN, 2004, p. 13). However, "the foundational essentials for the DNP curriculum design do not include courses related to pedagogy, evaluation, academic role issues, and educational theory" (Malone, 2011, p. 117). Malone is concerned about the DNP graduates who have not had the opportunity to take education coursework and who are then hired into full faculty positions because they hold doctoral degrees, especially in light of the ongoing debate about limiting entry points for both RNs and advanced practice nurses. If all RNs must be prepared at the bachelor's level for initial

licensure, more educators must be doctorally prepared. Because there is already a faculty

shortage, the tendency is for programs to hire DNP prepared nurses regardless of whether they

completed education coursework (Malone, 2011). AACN (2004) recommended that education

of the generalist nurse should be elevated to the master's level, so, therefore, education of the

advanced practice nurse would be elevated to the doctorate level. The NLN (2010a), in response

to this recommendation, wrote a document that clearly stated their belief in the need to retain a

variety of entry points for both pre-licensure and post-licensure nursing programs in order to

prepare a flexible workforce of nurses and nurse educators to meet changing healthcare needs.

Another key point made in this document is the NLN's commitment to the science of nursing

education. They support the need to include nurse educator preparation in master's and doctoral

programs, recognizing a need for specialized training to become a nurse educator.

Zungolo (2004) presented another concern about the preparation of nurse faculty who

teach in pre-licensure programs. While this article was published prior to the development of the

DNP degree, the author's concern can be applied to both educators with DNP preparation and

those with the master's degree in advanced nursing practice. Many nurse educators have earned

graduate training in an area of clinical nursing specialization but have not received preparation

for the faculty role, especially principles of teaching and curriculum needed to meet the learning

needs of students preparing for a nurse generalist role. At the time this article was published, the

core competencies for nurse educators had not yet been developed and many graduate programs

were focused on clinical nursing specialization. Zungolo was concerned that, while pursuing the

high level of knowledge needed for advanced practice and certification in a specialty, the nurse

may lose sight of what the beginning nurse needs to know. Eventually, curricula become laden

with unnecessary content for students in pre-licensure programs, but shifting the focus to current

healthcare needs in the community is slow and cumbersome. Zungolo recommended the development of partnerships between nursing education and nursing service to ensure that curricula are current. An additional recommendation was for more universities to develop graduate programs that blend advanced nursing knowledge with nurse educator preparation in order to develop nurses for the faculty role that best gives them the knowledge needed to teach students to become excellent beginning generalist nurses (Zungolo, 2004).

The debate about the different doctoral degrees is not confined to nursing education. Brueilly, Williams, and Morris (2007) made it clear that a similar debate is occurring in physical therapy education. Much like nursing, there are several different doctoral degrees held by core faculty in physical therapist education programs. The authors contended that (a) the PhD, focused on research, best prepared the individual to engage in the scholarship of discovery; (b) the EdD focused on education theory and pedagogy, best prepared the faculty member to engage in the scholarship of teaching; (c) the Doctor of Science in Physical Therapy linked to clinical studies in physical therapy, best prepared the person to engage in the scholarship of application; and (d) the newer Doctor of Physical Therapy, which is considered a first professional degree, does not qualify the individual to be a core faculty member. Physical therapy, like nursing, is a clinically-based profession that has unique education program needs. The authors promote the position that a faculty group that possesses diverse doctoral preparation will best meet the needs of an education program.

Novak (2009) investigated the relationship between faculty characteristics in Physical Therapist Assistant (PTA) programs and program outcomes on the National Physical Therapy Examination for Physical Therapist Assistants (NPTE-PTA). The researcher assessed the faculty breakdown (full-time, part-time, and adjunct), the percentage of faculty who were physical

therapists versus PTAs in each program, the clinical specialization of the physical therapists, the

terminal degree of each faculty member, the years of teaching experience for each faculty

member, and the first-time pass rate on the NPTE-PTA. The data revealed weakly significant

correlations for some of the relationships (weak positive correlation between years of teaching

experience and success on the NPTE-PTA; weak negative correlation between both the number

of full-time faculty and the number of faculty with a terminal degree and success on the NPTE-

PTA). However, the study failed to show a predictive model for success on the NPTE-PTA. The

researcher recommended further studies to determine if educator quality significantly influenced

the outcome on the examination, such as identifying common faculty characteristics in a

longitudinal study of programs that had a consistently high pass rate on the NPTE-PTA (Novak,

2009).

Physician assistants (PA) comprise another clinically-based health profession that can be

compared to nursing in some of its educational needs and challenges. "The ideal terminal degree

for PAs has been the subject of debate since 1998" (Bushardt, Booze, Hewett, Hildebrandt, &

Thomas, 2012, p. 19), with the master's degree as the current preferred terminal degree for PA

education programs. Additionally, PA program graduates must pass the Physician Assistant

National Certifying Examination (PANCE) in order to practice. Bushardt et al. (2012) examined

PA program characteristics, faculty credentials, and first time pass rates on the PANCE. Specific

variables that the researchers studied were level of degree that the program conferred (master's

or bachelor's degree), number of full-time faculty, percentage of faculty with doctoral degrees,

and student-to-faculty ratio. They found that two of the variables--programs that conferred a

master's degree and student-to-faculty ratio--showed significantly positive correlations to first-

time pass rates on the PANCE, while the number of full-time faculty and the percentage of

faculty with doctoral degrees showed no correlation to the PANCE. No attempt was made to determine the kind of doctoral degree that these faculty possessed, nor whether they were actively engaged in research efforts rather than focused on teaching. The researchers assumed that all faculty members who had doctorates would be focused on research. Their main recommendation was for programs to follow the guidelines regarding preferred degree to confer and to focus resources on improving the student-to-faculty ratio in order to increase graduate performance on PANCE (Bushardt et al., 2012).

One nursing-focused study assessed the relationship between faculty qualifications and student outcomes as well as the relationship between program attributes and student outcomes in nursing programs (Stevens, 1996). The data from this study supported high faculty-to-student ratios, a higher percentage of full-time faculty, and selecting qualified applicants. However, there was a negative relationship between the percentage of faculty with earned doctoral degrees and NCLEX-RN pass rates. The researcher did not differentiate between the types of doctoral degrees earned by the nursing faculty in the study (Stevens, 1996). Another thing to note is that this study was published 17 years ago and dealt with data from as early as 1985. The researcher recommended that further research should be done to "discriminate the type of doctoral degrees held by nurse educators to determine if [the findings] can be generalized" (Stevens, 1996, p. 113). To date, such a study has not been published.

The three studies just cited explored several faculty variables and their relationship with the student outcome of licensure examination pass rates in healthcare programs. The researchers approached their studies with different methodologies, and not all measured all the same variables. When more than one study included the same variable, the findings were not always in agreement.

The key variables addressed in this study and the current knowledge about each variable is summarized in Table 2. Some of the variables in this study have not been measured in previous studies, so Table 2 lists the variables in this study that may build on existing knowledge and variables that may generate new knowledge.

Table 2

Summary of Key Independent Variables and Current Knowledge

	Variables	Relationship to Licensure Exam Pass Rate	Study
Faculty variables with known effect on licensures examination pass rate	Faculty-to-student ratio	Positive correlation	Bushardt et al., 2012
		Positive correlation	Stevens, 1996
	Teaching experience	Positive correlation	Novak, 2009
		Positive correlation	Stevens, 1996
	Percentage of full-time faculty	Positive correlation	Stevens, 1996
		Weakly negative correlation	Novak, 2009
		No correlation	Bushardt et al., 2012
	Faculty with terminal degree (no differentiation between types of terminal degrees or if these faculty were focused on research, teaching, or both)	Weakly negative correlation	Novak, 2009
		Negative correlation	Stevens, 1996
		No correlation	Bushardt et al., 2012
Faculty variables with unknown effect on licensure examination pass rate	Type of degree (BSN, MSN, DNP, PhD, EdD, other)	Unknown	
	Completed graduate-level education coursework	Unknown	

The literature cited thus far highlights some of the complexities of healthcare professional education in general, and nursing education specifically, as it relates to faculty preparation. While there are no firm answers regarding the best degree or best combination of degrees for a given faculty group, there is a definite gap in the nursing education literature regarding this issue. In their important work, *The Future of Nursing: Leading Change, Advancing Health,* one of the Institute of Medicine's (2010) mandates to nursing education was to provide seamless transitions into higher degree education programs so that nurses can achieve higher levels of education. In order to do that effectively, there must be a sufficient number of nurse educators who are able to develop curricula, implement learner-centered strategies, and evaluate outcomes.

The Nursing Faculty Shortage

An examination of factors contributing to the nursing faculty shortage is linked to the preparation of nursing faculty in several ways. A major reason for the current faculty shortage is the increasingly aging academic workforce (AACN, 2012). Nurse educators reach retirement age faster than they can be replaced because nurses enter academia later in their careers. Younger nurses are encouraged to gain clinical expertise and are required to attain higher degrees before they can begin teaching, all of which takes several years to accomplish (Allan & Aldebron, 2008; McDermid et al., 2012). Once they have the clinical and academic credentials needed, other factors come into play. The expense of earning advanced degrees may make the relatively lower faculty compensation untenable for some faculty candidates, especially if other family expenses must be considered (McDermid et al., 2012).

The complexities of the nursing faculty roles and responsibilities add another layer of contributing factors in the nursing faculty shortage. Although nurse educators enjoy a great deal

of autonomy and flexibility in their jobs, much is required of them regardless of the education level at which they teach. Nurse educators are expected to meet the same goals as faculty from other academic areas such as conducting research, publishing, grant writing, and serving the college or university, to name a few. They are also expected to maintain clinical competence in addition to learning and fulfilling their teaching obligations (Blauvelt & Spath, 2008; Elliott & Wall, 2008). Faculty shortages cause already heavy workloads to become unsustainable, which can lead to more loss of faculty (Allan & Aldebron, 2008; Brady, 2007).

Boyer's (1990) important work, *Scholarship Reconsidered: Priorities of the Professoriate*, challenged the commonly held views of faculty roles and responsibilities and generated considerable discussion regarding the way colleges and universities prepare and evaluate faculty. In response, some institutions of higher learning began to have serious discussions about their responsibilities in preparing graduate students for the full range of faculty roles and responsibilities. The degree to which this transformation has flowed into the world of nursing education and made a difference in the working lives of nursing faculty remains unclear.

NCLEX-RN

The most important consideration regarding nursing faculty preparation is the degree to which faculty are able to positively impact student outcomes; achieving positive student outcomes is the main reason that educators expend so much effort in their work. Faculty members want students to graduate from the programs and to become caring, quality nurses. One student outcome tracked by all pre-licensure nursing programs is the performance of their graduates on the NCLEX-RN. This outcome is important because it measures the degree to which the program has prepared the graduates with the knowledge, skills, and abilities necessary

to enter into practice. The programs' stakeholders, including students, parents, administrators, clinical facility employers, faculty, donors, and the public, have expectations that the graduates will have a reasonable chance of securing licensure upon successful completion of the program.

Much research in past years has focused on studying student variables that influence pass rates on the NCLEX-RN, including academic qualifications for program admission and performance on standardized tests before admission and upon exiting the program (Abbott, Schwartz, Hercinger, Miller, & Foyt, 2008; Harding, 2010; Stuenkel, 2006; Tipton et al., 2008; Yoho, Young, Adamson, & Britt, 2007). The literature also includes faculty-focused strategies designed to improve NCLEX-RN pass rates (Carr, 2011; Carrick, 2011; Herrman & Johnson, 2009; Higgins, 2005; March & Ambrose, 2010). Inherent in this literature is an implied link between well-prepared faculty and positive student outcomes. One such recommended strategy was to offer a review course at the end of the curriculum (Herrman & Johnson, 2009). Due to the increased complexity of information, changes in passing standards, and the addition of alternative format items on NCLEX-RN, the authors stated that it is necessary for students to receive this focused review to help them prepare for the examination (Herrman & Johnson, 2009; NCSBN, 2012b). In addition, the authors believed that educators must also employ strategies that build knowledge, self-confidence, and professionalism in future nurses. They presented a senior seminar course that promoted these goals. The course focused on study skills, content review, and personal preparation plans (Herrman & Johnson, 2009). Carrick (2011) utilized systems theory to analyze how the nursing education system and student learning systems worked interdependently to try to understand the complexity of at-risk students. By determining the students' approach to learning, strategies could be implemented and changes in the teaching and learning environment could be made to promote learning for these at-risk students.

Higgins (2005) conducted a mixed-method study that explored strategies to raise the NCLEX-RN pass rate and lower the attrition rate. Program records were analyzed to identify student variables in the application process in order to compare the variables of the students who successfully completed the nursing program and the NCLEX-RN with those who did not. Additionally, both former students and faculty were interviewed to determine their perceptions of strategies for lowering attrition rates and raising NCLEX-RN pass rates. Some science course grades were linked to either completion of the program or passing the NCLEX-RN. Some components of the preadmission test (reading, science, and math) were linked to both outcomes. Exit examination scores and a nursing skills course were both significantly linked to both program outcomes. Qualitative findings from faculty centered on three themes for attrition issues: (a) the need to examine prerequisites for program admission, (b) the need for mentoring students, and (c) the need for faculty to focus on teaching and working with students as well as mentoring new faculty. Strategies to explore curricular changes and to improve teaching and test-item writing were suggested ways to help raise NCLEX-RN pass rates. Students also noted the need for NCLEX-style exam questions. They also suggested teaching prioritization and delegation, critical thinking skills, and communication skills. Data from this study showed that both faculty and students understood the importance of faculty possessing teaching and learning expertise. In addition, Higgins (2005) recommended that programs evaluate admissions policies, implement methods for early detection of at-risk students, and develop standardized remediation plans.

Outcome Measures

Accreditation at the regional level in higher education began as early as the 1850s as a means of regulating colleges and universities and setting standards of excellence (Ewell, 2008). The U.S. Department of Education began to require outcomes assessment as a means of making programs more accountable for their effectiveness in 1988. While the main purpose of licensure is to ensure a minimum level of competence to protect the public, licensure examinations results are also an outcome measure of program and institutional excellence and effectiveness (Huffmann, 1982; Klein et al., 2005; Manning, 2011; Southern Association of Colleges and Schools Commission on Colleges [SACS-COC], 2013). The impact of this method of outcomes assessment can be critical. Several states utilize the program pass rates on licensure examinations as a basis for performance-based funding at the institutional level (Dowd, 2005; Lanham, & McGalliard, 1998; Mulready-Shick, 2005; Palomba & Banta, 1999; Pitter,). In addition, in the state of Florida, a nursing program is placed on probation if its pass rate falls greater than 10% below the national NCLEX-RN average pass rate for two years in a row. If the program's pass rate does not improve in the following year, the program is terminated (The Florida Legislature, 2013).

Some arguments in support of quantitative analysis are that this method of assessment is easier to perform than qualitative outcome measures, and is more effective when responding to demands for accountability and when supporting budget requests with trustees and legislatures (Cleary, 2001; Olscamp, 1976). Olscamp (1976) suggested that a quantitative framework be almost exclusively used when answering questions in the name of accountability because decision-makers are more likely to understand the meaning of a quantitative analysis over a qualitative analysis. Quantitative licensure examinations are regularly used to assess graduates'

understanding of the principles, methods, and knowledge that should have been acquired in formal coursework and related experiences, and are therefore appropriate for outcome assessment (Cleary, 2001; Dowd, 2005; Klein et al., 2005; Manning, 2011; SACS-COC, 2013). The NCLEX Test Plan asserts that the examination "assesses the knowledge, skills and abilities that are essential for the entry-level nurse to use in order to meet the needs of clients requiring the promotion, maintenance or restoration of health" (NCSBN, 2012b, p. 1).

An opposing viewpoint about the appropriateness of using licensing examinations as outcome measures would suggest that scores on standardized tests like the NCLEX-RN may not adequately measure actual competencies as well as performance in real situations (Cohn et al., 1975; Stevens, 1996). Mulready-Shick (2005) agreed with this viewpoint, and also warned that standardized tests may discriminate against particular populations of students, such as those who are classified as being an ethnic minority or those who are economically disadvantaged.

In outcomes research, it is challenging to discriminate between the influence of program variables, such as the terminal degree or teaching experience of the faculty members, and student variables. Pitter et al. (1998) cautioned against using licensure examination pass rates for evaluating programs because these types of examinations assessed the competence of the individual graduate and were not indicative of the performance of the program that prepared the graduate. Conversely, they proposed that low pass rates on licensure examinations should prompt program self-assessment because they may be indicative of program deficiencies (Pitter et al., 1998). Palomba and Banta (1999) agreed that the emphasis on assessment should be on programs rather than on individuals. They believed that group assessment is more useful to educators than individual student assessment, in determining if an educational program is achieving its goal.

Cleary (2001), who was more enthusiastic about using licensure examinations as an outcome measure, conducted a study to determine which performance indicators were viewed as the strongest measures of institutional quality at two-year colleges. He found that of the 15 ranked variables, pass rates on licensure and certification examinations were ranked highest (mean of 4.44/5.00) by community college constituent groups (students, faculty, administrators, trustees, and employers). The next highest ranking was the percentage of faculty's time dedicated to teaching (mean of 4.19/5.00), followed by student graduation rates (mean of 4.16/5.00) (Cleary, 2001).

Examination criticality, described by Pitter et al. (1998) as the amount of importance a certification or licensure examination has on an individual's ability to obtain a first job in the profession, has a place in the discussion about whether or not licensure examination results should be included in a program's outcome assessment plan. There is a correlation between examination criticality and examination pass rates. In disciplines such as nursing, where there is a high criticality to pass the examination, the national pass rate is high compared to professions where criticality is moderate to low, such as in accounting or engineering (Pitter et al., 1998). When graduates of a program cannot work in the field without passing the licensure examination, it is logical to include the pass rates as one of the program outcome measures.

Associate Degree of Nursing

This study focused on the educational preparation of nurse educators who teach in ADN programs. Nursing education moved from primarily hospital-based apprenticeship programs to institutions of higher learning in the post-World War II era. There were already schools of nursing that provided baccalaureate nursing education in existence at the time; however, due to

an exponential growth in the number of community hospitals being built, the changes in healthcare that were occurring, and the shift in expectations of young women who were no longer entering hospital-based diploma programs, the existing university programs could not meet the demand for nurses. At the same time, a new system of community junior colleges was being developed to increase the number of people prepared to work, with the central mission of these colleges to serve the communities in which they were located (Orsolini-Hain & Waters, 2009). The NLN worked with the Association of Community Junior Colleges to explore the idea of developing a two-year nursing education program at these new colleges. At the end of the five-year pilot study that introduced AD nursing, outcome measures were highly favorable; graduate first-time pass rates on the NCLEX-RN were greater than 90%, employer and graduate satisfaction rates were high, as were employment rates. The pilot program was deemed successful, and AD nursing was born (Orsolini-Hain & Waters, 2009). Following successful licensure, and upon entry into practice, the ADN graduate is educationally prepared to provide safe, effective, and competent nursing care.

The new ADN programs attracted nontraditional students who were ineligible for admission to the hospital diploma programs, including men, single mothers, and married women. Additionally, these programs attracted students with modest financial means because tuition was very low or nonexistent. The community colleges were geographically accessible, and students who attended these programs were from the local area and remained in the local area to work after graduating (Orsolini-Hain & Waters, 2009). When analyzing current trends, it is evident that community colleges continue to attract "nontraditional" students who have families, jobs, and are slightly older. These students may also come from lower-income families and are perhaps the first ones in their families to attend college. According to the National Center for

Education Statistics (NCES) (2008), the average age of students in associate degree health programs in 2007-2008 was 28.4 whereas the average age of students in bachelor's degree health programs in the same year was 25.2. In the same year, over 45% of students in associate degree health programs had parents who did not attend college. In comparison, 71.6% of students in bachelor's degree health programs had a parent with some college experience (NCES, 2008). Community colleges and associate degree programs open the door to higher education for many people, and ADN programs are a viable entry into nursing practice for qualified students who might otherwise be unable to pursue this course of study.

The introduction of associate degree education programs has had the most impact on current nursing education practice by supplying approximately 60% of the entry-level nursing graduates each year (NCSBN, 2012d). Furthermore, the NCSBN data revealed that in 2011, 56.7% of the graduates from RN programs who were U.S.-educated and passed the NCLEX-RN on the first attempt came from ADN programs (NCSBN, 2012a). Thus, ADN programs continue to play a significant role in nursing education.

Summary

Limited research exists that addresses nursing faculty preparation and how it affects student outcomes. There is a need to expand the body of knowledge about the best educational practices to ensure that nurse educators have the most effective preparation possible to guide student learning and equip future generations of nurses for the complex healthcare environments in which they will work. The few studies in nursing and related health professions in which the relationship between faculty characteristics and student outcomes, and specifically licensure examination pass rates, were examined (Bushardt et al., 2012; Novak, 2009; Stevens, 1996).

This study will explore some similar questions and will, therefore, build on existing knowledge about student-to-faculty ratios, the percentage of full-time faculty, and the years of teaching experience, and the effect that each one of these variables has on programs' licensure exam pass rates. However, it will also generate new knowledge by exploring in detail the educational preparation of nursing faculty who teach in ADN programs, beginning the process of determining if there is a desirable percentage of faculty with doctoral degrees, identifying if there is a type of doctoral degree that leads to better outcomes, and exploring whether a minimum amount of education coursework in addition to master's or doctoral-level nursing knowledge is sufficient to develop the necessary educator skills.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter provides an overview of survey research and describes the research methodology in detail. The research design, research questions, population and sample, instrument, data collection procedures, and data analysis procedures that were used in this research study are explored.

Research Design

Descriptive non-experimental research was utilized for this study by way of a cross-sectional, retrospective survey design. Survey designs are an accepted method for obtaining information about the prevalence, distribution, and interrelationships of variables within a population, as well as for collecting demographic information (Webb, 2011). One advantage of a survey design is that anonymous, objective questionnaires can easily be administered to large numbers of participants in a short timeframe. Other advantages of this design are that participants may respond to the survey at their leisure and the researcher can immediately retrieve the data for analysis (Polit & Beck, 2010).

Some potential limitations of the survey method have been noted. Because the researcher has no direct contact with the participants, there may be some misunderstanding about the survey questions that cannot be addressed, resulting in error due to submission of incomplete surveys. Another limitation may be a small sample size if the participants are not motivated to respond to

the survey (Polit & Beck, 2008). The advantage of delivering the survey for this study via electronic mail was used to minimize the potential disadvantages.

Sample

The target population for this study included all ADN programs in the state of Florida that graduated students during the years 2010, 2011, and 2012 ($N = 80$). A purposive sampling design was used; each case in the population reflected the data collected from a single Florida ADN program. The administrator of each of these programs belongs to an organization, the Florida Council of Nursing Education Administrators (FCNEA), which meets three times a year to discuss issues directly affecting ADN programs in Florida. The researcher-developed online survey was sent to all 80 programs in the target population via the program administrators. Half of those programs (n = 40) participated in the study, which created the study's sample. All of the ADN programs included in the sample were approved by the Florida Board of Nursing, but not all were nationally accredited by a nursing accrediting agency. The governing organizations in which these programs operate are a mix of public community or state colleges and private, proprietary schools. Graduates of these programs are eligible to apply for RN licensure by examination.

Instrument

Data were collected from the administrators of the sample programs. A researcher-developed online survey using Qualtrics (2012) was e-mailed to each administrator using the address supplied by the FCNEA president. Data collected from each administrator included the following items:

1. The program's classification as a public or private, proprietary associate degree nursing program.

2. The program's approval standing with the Florida Board of Nursing for the years 2010, 2011, and 2012.

3. The program's national accreditation status for the years 2010, 2011, and 2012.

4. The program's yearly average NCLEX-RN first-time pass rate from the years 2010, 2011, and 2012. These years were included in the data because the NCLEX-RN is revised on a three-year cycle and these years encompass a full cycle. These data were recorded as a measure of student outcomes, which is the key dependent variable.

   - The program's yearly average on the "Management of Care" subsection of the NCLEX-RN for the same three years (2010, 2011, and 2012).

   - The program's yearly average on the "Pharmacological and Parental Therapies" subsection of the NCLEX-RN for the same three years (2010, 2011, and 2012).

   - The program's yearly average on the "Physiologic Adaptations" subsection of the NCLEX-RN for the same three years (2010, 2011, and 2012).

5. The number of the full-time faculty members who were teaching in the program at any time during the academic years of 2008-2009 through 2011-2012 was requested. This four-year timeframe was included in the data collection because these are the years when most of the graduates who took the NCLEX-RN during the target dates for the study would have been enrolled in the nursing program. This number established a denominator for the purposes of computing percentages for the variables associated with these faculty members, which included:

   - the highest and type of degree attained;

- enrollment in a graduate program during the specified years and type of program;

- completion of a minimum of nine credits of graduate-level (master's or doctoral) education coursework, not including research or statistics courses; and

- the number of years teaching in any professional, pre-licensure (associate degree or bachelor's degree) nursing program.

6. Data regarding the number of full-time faculty, number of part-time faculty, and size of the program in 2011-2012 were requested. All Florida Council of Nursing Education Administrators (FCNEA) members are required by law to complete a report for the Florida Board of Nursing (FBN) or a survey for the Office of Program Policy Analysis and Government Accountability (OPPAGA) each year (Florida Legislature, 2013). Therefore, these data were easily retrievable for the administrators. The researcher requested the information in the same manner that it is requested in the FBN report or the OPPAGA survey.

Procedures

The researcher contacted the president of FCNEA and obtained a letter of support (see Appendix A) and list of associate degree nursing program administrators. The procedure follows:

1. Exempt approval was obtained from The University of Alabama Institutional Review Board (IRB) (see Appendix B). This study qualified for exempt status with IRB because of the methodology used, which was an electronic survey that protected the respondents' anonymity by preventing any electronic link back to the respondents' e-mail account through which they accessed the survey. In addition, the survey

questions contained no identifying information and all data were analyzed and
reported as group data.

2. An e-mail was sent to the target members of FCNEA to inform the administrators that
a survey would be forthcoming within 1 week and invited participation (see Appendix
C). This e-mail, designed to enhance response rates, contained a brief description of
the study.

3. Two days later, the online survey link was sent to the same FCNEA members via e-
mail (see Appendix D). This e-mail once again contained a brief description of the
study, an explanation of why the recipients were asked to participate in the study, the
estimated length of time needed to complete the survey, general informed consent
information, the researcher's contact information, and the link to the actual survey
(see Appendix E).

4. The consent form was embedded in the online survey (see Appendix F), which helped
to protect the privacy of the respondents. The participants were not able to complete
the survey without acknowledging consent.

5. The participants were given four weeks to complete the survey. An e-mail was sent
to all participants two weeks after the survey was first sent with a reminder to
complete the survey if they had not yet done so, as well as a thank you to those who
had completed the survey (see Appendix G). This reminder e-mail also contained the
link to the survey.

6. At the end of four weeks, the survey was closed to all participants. The researcher
downloaded the survey data to a spreadsheet and saved it in a password-protected
online storage account. No identifying information was included in the data because

the survey software did not link e-mail addresses to participants' responses in any way. Therefore, there was no foreseeable risk that the participants could be identified.

Data Analysis

Once the data were collected, analysis was conducted using statistical software (IBM$^{©}$ SPSS Statistics Grad Pack 20.0 Premium [SPSS-20]). Some of the data were at the nominal or ordinal level of measurement (type of degree earned by each faculty member, enrollment in a graduate program and the type of graduate program, graduate-level education coursework completed, and the status of each program [accreditation, approval, and whether public or private/proprietary]). All other data were at the ratio level of measurement, including program NCLEX-RN pass rates, program performance on subsections of the NCLEX-RN, proportion of full-time faculty, student-to-faculty ratios, and faculty members' years of teaching experience.

Descriptive statistics were analyzed for all data including measures of central tendency, as well as standard deviation and correlation. Correlation is defined as the association between two variables and is measured by a correlation coefficient (Hinkle, Wiersma, & Jurs, 2003). Evaluation of correlations between faculty characteristics (proportion of full-time faculty, student-to-faculty ratio, average years of teaching experience, proportion of full-time faculty who were enrolled in graduate programs, and proportion of faculty who had completed graduate-level education coursework) and the student outcome of NCLEX-RN program pass rates gave an overview of the individual relationship that each faculty characteristic had with the student outcome of NCLEX-RN program pass rates.

The next step in the data analysis process was to determine whether the faculty characteristics that were significant related to NCLEX-RN program pass rates were additive or

not, by first using correlation analysis, followed by regression analysis. Because independent

variables do not operate in isolation, this process clarified the extent to which each significant

variable was affecting pass rates when correlated with one another.

CHAPTER 4

RESULTS

This chapter presents the findings as they related to the study's guiding questions and 12 hypotheses, and ultimately identifies the relationship between faculty characteristics in nursing programs in this study, including educational preparation, employment status, student-to-faculty ratio, and teaching experience and first time program pass rates on NCLEX-RN. The chapter begins with an overview of the descriptive statistical findings. These descriptive findings will then be individually examined and linked with correlational and regression analysis as they relate to each guiding question and related hypotheses. Statistics were calculated based upon the level of significance at a 0.05 level.

Descriptive Statistical Findings

The researcher-developed survey collected retrospective data about three years (2010, 2011, and 2012) from each participating ADN program. Initially, the descriptive statistical findings are presented in the context of the different variables to provide an overview of the programs that responded to the survey.

NCLEX-RN Descriptive Findings

There were a total of 40 ADN programs that responded to the survey, and 38 of those programs had graduates who took the NCLEX-RN in 2010. The mean average program pass

rate for the NCLEX-RN in 2010 for those 38 programs was 88.03%, with a range of 68 (32% to 100%, *SD* = 11.58). The following year, 39 of the 40 programs that participated in this study had graduates who took the exam. The mean average program pass rate for the NCLEX-RN in 2011 for those 39 programs was 88.95%, with a range of 50 (50% to 100%, *SD* = 9.95). Finally, all 40 of the programs that participated in this study had graduates who took the NCLEX-RN in 2012. The mean average program pass rate for the NCLEX-RN in 2012 for those 40 programs was 89.05%, with a range of 45 (55% to 100%, *SD* = 10.44). Table 3 presents the descriptive statistics for NCLEX-RN pass rates for all 40 participating programs.

Table 3

Descriptive Statistics: NCLEX-RN Program Pass Rates

Variable	*n*	Range	Minimum	Maximum	Mean	SD
NCLEX-RN 2010	38	68	32	100	88.03	11.58
NCLEX-RN 2011	39	50	50	100	88.95	9.95
NCLEX-RN 2012	40	45	55	100	89.05	10.44
NCLEX-RN Average	40	48	51	99	88.28	9.95

Selected Subsections of the NCLEX-RN Findings

Of the 40 programs that responded to the research survey, 10 of those programs responded to the questions about the three selected subsections of the NCLEX-RN ("Management of Care," "Pharmacological and Parenteral Therapies," and "Physiologic Adaptation") for each of the three years (2010, 2011, and 2012) included in the survey. Scoring on the subsections of the NCLEX-RN are percentile scores. Program scores in each area of the examination and the percentage of graduates from the program that passed the NCLEX-RN in the specified time period were reported.

"Management of care" subsection of the NCLEX-RN. The mean percentile score on the "Management of Care" subsection for the 10 programs that participated in this portion of the survey in 2010 was 58.1, with a range of 64 percentile points (15 to 79, *SD* = 19.17). The mean percentile score on this subsection of the NCLEX-RN for the same 10 programs in 2011 was 54.5, with a range of 63 percentile points (18 to 81, *SD* = 17.19). The mean percentile score in 2012 was 62.7, with a range of 49 percentile points (29 to 78, *SD* = 16.27). The average mean percentile score on the "Management of Care" subsection of the NCLEX-RN for the 10 programs for the three years included in this study was 58.44, with a range of 55 (20.67 to 75.67, *SD* = 17.04).

"Pharmacological and parenteral therapies" subsection of the NCLEX-RN. The mean percentile score on the "Pharmacological and Parenteral Therapies" subsection for the 10 programs that participated in this portion of the survey in 2010 was 56.4, with a range of 51 percentile points (22 to 73, *SD* = 16.47). The mean percentile score on this subsection of the NCLEX-RN for the same 10 programs in 2011 was 60.1, with a range of 53 percentile points (23 to 81, *SD* = 18.64). The mean percentile score in 2012 was 57.6, with a range of 44 percentile points (29 to 73, *SD* = 12.68). The average mean percentile score on the "Pharmacological and Parenteral Therapies" subsection of the NCLEX-RN for the 10 programs for the three years included in this study was 58.03, with a range of 51 (24.67 to 75.67, *SD* = 15.45).

"Physiologic adaptation" subsection of the NCLEX-RN. The mean percentile score on the "Physiologic" subsection for the 10 programs that participated in this portion of the survey was 58.2 in 2010, with a range of 69 percentile points (14 to 83, *SD* = 17.33). The mean

percentile score on this subsection of the NCLEX-RN for the same 10 programs in 2011 was

57.8, with a range of 59 percentile points (18 to 77, $SD = 16.36$). The mean percentile score in

2012 was 59.2, with a range of 52 percentile points (23 to 75, $SD = 16.58$). The average mean

percentile score on the "Physiologic Adaptation" subsection of the NCLEX-RN for the 10

programs for the three years included in this study was 57.85, with a range of 60 (18.33 to 78.33,

$SD = 16.02$). Table 4 presents the descriptive statistics for the three subsections of the NCLEX-

RN.

Table 4

Descriptive Statistics: Selected Subsections of the NCLEX-RN

Variable	Range	Minimum	Maximum	Mean	SD
NCLEX-RN Pass Rates	48	50.67	98.67	85.03	16.04
NCLEX-RN Subsections					
"Management of Care" 2010	64	15.00	79.00	58.10	19.17
"Management of Care" 2011	65	18.00	81.00	54.50	17.19
"Management of Care" 2012	49	29.00	78.00	62.70	16.27
"Management of Care" Average	55	20.67	75.67	58.44	17.04
"Pharmacological Therapies" 2010	51	22.00	73.00	56.40	16.47
"Pharmacological Therapies" 2011	58	23.00	81.00	60.10	18.64
"Pharmacological Therapies" 2012	44	29.00	73.00	57.60	12.68
"Pharmacological Therapies" Average	51	24.67	75.67	58.03	15.45
"Physiologic Adaptation" 2010	69	14.00	83.00	58.20	17.33
"Physiologic Adaptation" 2011	59	18.00	77.00	57.80	16.36
"Physiologic Adaptation" 2012	52	23.00	75.00	59.20	16.59
"Physiologic Adaptation Average	60	18.33	78.33	57.85	16.02
All Subsections – Average	56	21.00	77.00	58.30	16.19

Note. $n = 10$ (number of programs that responded to survey questions about selected subsections
of NCLEX-RN).

Faculty Descriptive Findings

The number of full-time faculty per program varied greatly in this population of ADN programs due to the variation in program size. Therefore, a more meaningful comparison among programs is the percentage of total faculty who are full-time in each program. The mean percentage of full-time faculty for the ADN programs that responded to the survey was 49.18%, with a range of 62% (26% to 88%, *SD* = 11.42). The student-to-faculty ratio mean was 19:1, with a range of 47 (8:1 to 55:1, *SD* = 9.37). To compute the teaching experience by program instead of individual faculty member, the years of teaching experience was averaged for all current faculty members in each program. The mean for the averaged teaching experience was 9.97 years, with a range of 10.3 years (3.7 years to 14 years, *SD* = 2.52).

The educational preparation of full-time faculty was the focus of this study; therefore this was measured in multiple ways. Because the study focused on faculty groups that taught together in nursing programs as opposed to individual faculty members, all data regarding educational preparation were measured in terms of the percentage of the faculty group comprised of all full-time faculty members. These percentages, which were expressed in mean proportions, included the highest degree and type of degree held by faculty members. These percentages were calculated by dividing the number of full-time faculty members with the degree being measured by the total number of full-time faculty in each program, and then computing the descriptive statistics from the 40 programs that participated in the study. The descriptive statistics from these findings are as follows:

- The mean proportion of full-time faculty members who held a Doctor of Education degree (EdD) was .0498, with a range of .33 (.00 to .33, *SD* = .0899).

- The mean proportion of full-time faculty members who held a Doctor of Philosophy degree (PhD) was .032%, with a range of .17 (.00 to .17, $SD = .0499$).

- The mean proportion of full-time faculty members who held a Doctor of Nursing Practice degree (DNP) was .0345, with a range of .20 (.00 to .20, $SD = .0565$).

- The mean proportion of full-time faculty members who held any type of doctorate degree (EdD, PhD, or DNP) was .1162, with a range of .50 (.00 to .50, $SD = .1422$).

- The mean for the percentage of full-time faculty members who held a master's degree in nursing as their highest degree was .8483, with a range of .50 (.50 to 1.00, $SD = .1446$).

The educational preparation of nursing faculty was also measured by the proportion of full-time faculty members who had completed at least nine credits of graduate-level coursework in the teaching and learning sciences. The mean proportion of full-time faculty in each program completing education coursework was .2717, with a range of .00 to .70, $SD = .1854$.

A third way the educational preparation of nursing faculty was measured was by the proportion of full-time faculty members who were currently enrolled in graduate education programs during the years included in the survey. The mean proportion of full-time faculty in each program who were currently enrolled in graduate education programs was .1355, with a range of .50 (.00 to .50, $SD = .1204$). Table 5 presents the descriptive statistics for faculty characteristics, including educational preparation, experience, and employment status.

Table 5

Descriptive Statistics: Selected Faculty Characteristics

	Range	Minimum	Maximum	Mean	SD
Full-Time Faculty	48	.26	.88	.4918	.1142
Student : FT Faculty Ratio	47	8:1	55:1	19.47	9.367
Teaching Experience	10.30	3.70	14.00	9.967	2.525
FT Faculty with any Doctoral Degree	.50	.00	.50	.1162	.1422
FT Faculty with EdD	.33	.00	.33	.0498	.0899
FT Faculty with PhD	.17	.00	.17	.0320	.0499
FT Faculty with DNP	.20	.00	.20	.0345	.0565
FT Faculty with MSN	.50	.50	1.00	.8483	.1448
Education Coursework	.70	.00	.70	.2717	.1854
Enrolled-Graduate Program	.50	.00	.50	.1355	.1204

Note. n = 40 (number of total responses to research survey).

Findings Related to Research Questions and Related Hypotheses

The overarching research question for this study was, "What is the relationship between the educational preparation of nursing faculty and the first time program pass rate on the NCLEX-RN?" The first guiding question to help answer that question, "What is the relationship between the educational preparation of nursing faculty and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections?," had multiple sub-questions and related hypotheses to help guide the research. This set of questions and hypotheses was the focus of the study. The three remaining guiding questions and their related hypotheses take into account as many of the contributing faculty-related variables as possible, recognizing that the overarching research question dealt with a complex situation that is impossible to attribute to just one variable. Table 6 presents the research questions and related hypotheses.

Table 6

Research Questions and Related Hypotheses

Overarching Research Question: What is the relationship between the educational preparation of nursing faculty and the first time program pass rate on the NCLEX-RN?	
Guiding Questions	Hypotheses
1. What is the relationship between the educational preparation of nursing faculty and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections?	
a. What is the relationship between type of degree and the student outcome of NCLEX-RN pass rate?	H_1: The presence of nursing faculty who hold any type of doctoral degree in a program positively affects that program's NCLEX-RN average pass rate. H_2: The presence of nursing faculty who hold a doctorate of education in a program positively affects that program's NCLEX-RN average pass rate.
b. What is the relationship between type of degree and the student outcome of program performance on selected NCLEX-RN subsections?	H_3: The presence of nursing faculty who hold any type of doctoral degree in a program positively affects that program's performance on selected NCLEX-RN subsections. H_4: The presence of nursing faculty who hold a doctorate of education in a program positively affects that program's performance on selected NCLEX-RN subsections.
c. What is the relationship between the percentage of faculty who have completed graduate-level education coursework and the student outcomes of NCLEX-RN pass rates?	H_5: The presence of nursing faculty in a program who have completed graduate-level education coursework positively affects that program's NCLEX-RN average pass rate.
d. What is the relationship between the percentage of faculty who have completed graduate-level education coursework and the student outcomes of program performance on selected NCLEX-RN subsections?	H_6: The presence of nursing faculty in a program who have completed graduate-level education coursework positively affects that program's performance on selected NCLEX-RN subsections.

(*table continues*)

Guiding Questions	Hypotheses
2. What is the relationship between the program's average student-to-faculty ratio and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections?	H_7: The average ratio of students to faculty in a program positively affects that program's NCLEX-RN average pass rate.
	H_8: The average ratio of students to faculty in a program positively affects that program's performance on selected NCLEX-RN subsections.
3. What is the relationship between the percentage of full-time faculty and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections?	H_9: The percentage of full-time faculty in a program positively affects that program's NCLEX-RN average pass rate.
	H_{10}: The percentage of full-time faculty in a program positively affects that program's performance on selected NCLEX-RN subsections.
4. What is the relationship between the average number of years of teaching experience and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections?	H_{11}: The average number of years teaching experience that the nursing faculty share in a program positively affects that program's NCLEX-RN average pass rate.
	H_{12}: The average number of years teaching experience that the nursing faculty share in a program positively affects that program's performance on selected NCLEX-RN subsections.

Program Performance on Selected NCLEX-RN Subsections

A portion of each of the guiding questions, and therefore several of the related hypotheses, dealt with program performance on selected NCLEX-RN subsections ("Management of Care," "Pharmacological and Parenteral Therapies," and "Physiologic Adaptations"). Of the 40 participating programs, 10 answered the questions on the survey related to these NCLEX-RN subsections. The average mean percentile score on all subsections of the NCLEX-RN combined

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for the 10 programs for the three years included in this study was 58.30, with a range of 56 (21 to 77, *SD* = 16.19). Correlations for faculty variables (percentage of full-time faculty, student-to-faculty ratios, teaching experience, and educational preparation variables) and the average percentile scores for the three combined subsections of the NCLEX-RN for the three years included in this study with the NCLEX-RN average pass rates were analyzed (see Table 7). However, a post hoc power was calculated based on a sample size of 10 (see Table 8). Power was found to be .46, supporting findings that there was not sufficient power to detect significant or meaningful correlations between program variables of those 10 programs and the selected subsections of the NCLEX-RN. Therefore, the hypotheses related to the selected subsections of the NCLEX-RN (H_3, H_4, H_6, H_8, H_{10}, and H_{12}) can neither be supported nor rejected.

Table 7

Correlation Matrix and Descriptive Statistics for Faculty Characteristics and Percentile Scores on Selected Subsections of the NCLEX-RN

					Doctorally Prepared FT Faculty					
Variable	NCLEX-RN Sub-sections	FT Faculty	Stu:Fac Ratio	Teach Exp	Any Doc Degree	EdD	PhD	DNP	Ed Courses	Grad Program
NCLEX-RN Subsections	1.00									
FT Faculty	-.531	1.00								
Stu:Fac Ratio	.881**	-.458	1.00							
Teaching Exp	.295	-.123	.371	1.00						
Doctoal Fac										
Any Doc	-.027	.452	.027	.068	1.00					
EdD	-.009	.110	-.030	-.147	.789	1.00				
PhD	-.009	.110	-.030	-.147	.789	1.00	1.00			
DNP	.022	.608	-.015	.037	.664	.255	.255	1.00		
Ed Courses	.720*	-.242	.612	.256	.474	.431	.431	.090	1.00	
Grad Program	-.091	.321	.091	.515	-.273	-.450	-.450	.052	-.317	1.00
Mean	.5830	.4870	22	9.41	.0520	.0150	.0150	.0230	.3030	.2210
SD	.1619	.1133	14.42	2.93	.0784	.0338	.0338	.0377	.2219	.1402

Note. n = 10. Dependent variable: NLCEX-RN Subsections

**$p < .01$ (2-tailed); *$p < .05$ (2-tailed)

Table 8

Bivariate Normal Model: Post Hoc Power Analysis Using Exact Distribution of Programs Responding to NCLEX-RN Subsections

Variable	Input			Output		
	n	Corr ρ H1	Corr ρ H0	Lower Crit *r*	Upper Crit *r*	Power (1 - β err prob)
Programs Responding to NCLEX-RN Subsections	10	0.5	0	0.55	0.55	0.46

p < .05 (1-tailed)

The remainder of the findings was explored in relation to the four main guiding questions for the research study and related research hypotheses. The key topics of these four guiding questions were (a) educational preparation of nursing faculty, (b) student-to-faculty ratio, (c) percentage of full time faculty, and (d) teaching experience. The questions asked whether there is a relationship between each of these areas and NCLEX-RN pass rates for the programs in which the faculty groups being studied teach.

Educational Preparation of Nursing Faculty

This topic includes the subtopics of earned doctoral degrees and completion of graduate-level education coursework. Data about faculty enrollment in graduate education were also collected and analyzed, and the results are reported here, although a research hypothesis had not been formulated about that variable.

In the 40 nursing programs that responded to the survey for this study, the mean proportion of full-time faculty members, with earned doctoral degrees in each program, was .1162, with a range of .50 (.00 to .50, *SD* = .1422). Of the 40 programs, 17 (42.5%) did not have any full-time faculty members with earned doctoral degrees and 8 (20%) had greater than 25% of

the full-time faculty who held earned doctoral degrees. The correlation ($r_s = .099$) between the

proportion of full-time faculty with earned doctoral degrees and the corresponding program's

NCLEX-RN average pass rate accounted for only 0.98% of the variance on the NCLEX-RN

average pass rate and was, therefore, not statistically significant (see Table 9).

Table 9

Correlation Matrix and Descriptive Statistics for Educational Preparation of Nursing Faculty (Doctoral Degree Status, Education Coursework Completed, and Enrolled in Graduate Program)

Variable	NCLEX-RN Pass Rates	FT Faculty Doctoral Degrees				Education Coursework Complete	Enrolled In Grad Program
		Any Doctoral Degree	EdD	PhD	DNP		
NCLEX-RN Pass Rates	1.00						
FT Faculty Doctoral Degrees							
Any Doctoral Degree	.099	1.00					
EdD	.095	.860	1.00				
PhD	.063	.707	.619	1.00			
DNP	.049	.615	.385	.071	1.00		
Education Coursework Complete	.639*	.285	.371	.198	.064	1.00	
Enrolled in Grad Program	.115	-.075	-.210	-.118	-.104	.098	1.00
Mean	88.28	.1162	.0498	.0320	.0345	.2718	.1355
SD	9.95	.1422	.0899	.0499	.0565	.1854	.1204

Note. Dependent variable: NLCEX-RN pass rate.
*$p < .01$

The mean proportion of full-time faculty members with earned education doctorates in

each program was .0498, with a range of .33 (.00 to .33, $SD = .0899$). Of the 40 programs, 26

(65%) did not have any full-time faculty who held an EdD degree and 3 programs (7.5%) had

greater than 25% of the full-time faculty with an earned doctorate in education. The correlation

($r_s = .095$) between the percentage of full-time faculty with the EdD degree and the

corresponding program's NCLEX-RN average pass rate accounted for only 0.90% of the variance on the NCLEX-RN average pass rate and was, therefore, not statistically significant (see Table 9).

Likewise, the correlations between the proportion of full-time faculty with earned Doctor of Philosophy (PhD) and Doctor of Nursing Practice (DNP) degrees and the corresponding program's NCLEX-RN average pass rates were not statistically significant, accounting for only 0.40% and 0.24% of the variance on the NCLEX-RN average pass rate respectively (see Table 9). The mean proportion of full-time faculty members with the PhD in each program was .032, with a range of .17 (.00 to .17, $SD = .0499$). Of the 40 programs, 27 (67.5%) did not have any full-time faculty with the PhD degree and one (2.5%) had greater than 25% of their full-time faculty with the PhD degree. The mean proportion of full-time faculty members with the DNP degree in each program was .0345, with a range of .20 (.00 to .20, $SD = .1448$). Of the 40 programs, 29 (72.5%) did not have any full-time faculty with the DNP degree and none had greater than 25% of their full-time faculty with this degree. Overall, there was no significant relationship between the doctoral degree status of full-time nursing faculty and program pass rates on NCLEX-RN. Therefore, H_1 and H_2 cannot be supported.

Hypothesis 5 states that the presence of nursing faculty in a program who have completed graduate-level education coursework positively affects that program's NCLEX-RN average pass rate. For the purposes of this study, a nurse educator must have had a minimum of nine credits of graduate-level (master's or doctoral) education coursework completed, not including graduate-level research or statistics courses, to meet this criterion. The faculty member may or may not have completed a degree at the time of this study. The mean proportion of full-time faculty members who completed coursework at this level was .2717, with a range of .70 (.00 to

.70, $SD = .1854$). There was a positive correlation ($r_s = .639$, $p < .01$) between programs that had faculty who had completed graduate level education coursework and the programs' NCLEX-RN average pass rates, accounting for 40.83% of the variance on the NCLEX-RN average pass rate, which was statistically significant (see Table 9) and support H_5.

In the 40 nursing programs that responded to the survey for this study, the mean proportion of full-time faculty members who were enrolled in graduate degree programs was .1355, with a range of .50 (.00 to .50, $SD = .1204$). The correlation ($r_s = .115$) between the proportion of full-time faculty who were enrolled in graduate degree programs and the NCLEX-RN average pass rate for the programs in which they taught accounted for only 1.32% of the variance on the NCLEX-RN average pass rate and was therefore not statistically significant (see Table 9).

Student-to-Faculty Ratio

Hypothesis 7 states that the average ratio of students to full-time faculty in a program positively affects that program's NCLEX-RN average pass rate. The mean average student-to-faculty ratio for the 40 programs that responded to the survey for this study was 19.47 students to each faculty member, with a range of 47 (8 students to each faculty member to 55 students to each faculty member, $SD = 9.37$). The correlation ($r_s = .167$) between the average ratio of students to full-time faculty and the corresponding program's NCLEX-RN average pass rate accounted for only 2.79% of the variance on the NCLEX-RN average pass rate, which was not statistically significant. Therefore, H_7 cannot be supported.

Percentage of Full-time Faculty

Hypothesis 9 states that the percentage of full-time faculty in a program positively affects that program's NCLEX-RN average pass rate. The mean for the proportion of full-time faculty in a program is .4918, with a range of .62 (.26 to .88, $SD = .1142$). The correlation ($r_s = .167$) between the percentage of full-time faculty and the corresponding program's NCLEX-RN average pass rate accounted for only 2.79% of the variance on the NCLEX-RN average pass rate, which was not statistically significant. Therefore, H_9 cannot be supported.

Teaching Experience

Hypothesis 11 states, that the average number of years teaching experience that the nursing faculty members share in a program positively affects that program's NCLEX-RN average pass rate. For the purpose of this study, faculty members were grouped together in programs. Each individual full-time faculty member's years of experience contributed to the averaged group years of experience. The mean of the average group years teaching experience for the groups of nursing faculty who taught in the 40 programs that participated in this study was 9.97 years, with a range of 10.3 years (3.7 years to 14 years, $SD = 2.52$). The correlation ($r_s = .480, p < .01$) between the average number of years teaching experience that the nursing faculty shared in a program and the corresponding program's NCLEX-RN average pass rate accounted for 23.04% of the variance on the NCLEX-RN average pass rates. This is statistically significant, and supports H_{11}. Table 10 provides a summary of research hypotheses and outcomes.

Table 10

Research Hypotheses and Outcomes

Research Hypotheses	Outcome
H_1: The presence of nursing faculty with any type of doctoral degree in a program positively affects that program's NCLEX-RN average pass rate.	Not supported
H_2: The presence of nursing faculty who hold an education doctorate in a program positively affects that program's NCLEX-RN average pass rate.	Not supported
H_3: The presence of nursing faculty with any type of doctoral degree in a program positively affects that program's performance on selected NCLEX-RN subsections	Not supported or rejected
H_4: The presence of nursing faculty who hold an education doctorate in a program positively affects that program's performance on selected NCLEX-RN subsections	Not supported or rejected
H_5: The presence of nursing faculty in a program who have completed graduate-le education coursework positively affects that program's NCLEX-RN average pass rate.	Supported
H_6: The presence of nursing faculty in a program who have completed graduate-le education coursework positively affects that program's performance on selected NCLEX-RN subsections.	Not supported or rejected
H_7: The average ratio of students to faculty in a program positively affects that program's NCLEX-RN average pass rate.	Not supported
H_8: The average ratio of students to faculty in a program positively affects that program's performance on selected NCLEX-RN subsections.	Not supported or rejected
H_9: The percentage of full-time faculty in a program positively affects that program's NCLEX-RN average pass rate.	Not supported
H_{10}: The percentage of full-time faculty in a program positively affects that program's performance on selected NCLEX-RN subsections.	Not supported or rejected
H_{11}: The average number of years teaching experience that the nursing faculty share in a program positively affects that program's NCLEX-RN average pass rate.	Supported
H_{12}: The average number of years teaching experience that the nursing faculty share in a program positively affects that program's performance on selected NCLEX-RN subsections.	Not supported or rejected

Analysis of Significant Variables

Two faculty characteristics that were significantly related to NCLEX-RN pass rates on the individual correlation tests were faculty completion of graduate level education coursework ("education coursework") and group years of teaching experience ("teaching experience"). These two variables were analyzed further to determine the degree to which their effect on NCLEX-RN pass rates was independent of each other or whether one of the variables influenced the other variable, and thus diminished its effect on NCLEX-RN pass rates. Based on correlation analysis, the variables tested were significant related to NCLEX-RN pass rates (education coursework, $r = .611$; teaching experience, $r = .399$) as well as to each other ($r = .123$). Further analysis using the regression model not only validated that the two variables were significantly related to NCLEX-RN pass rates, but were also independently related to pass rates and accounted for 45% of the variance on the NCLEX-RN average pass rates (see Table 11).

Table 11

Regression: Faculty Completion of Graduate Level Education Coursework and Teaching Experience

Model 1	R	R^2	Adj R^2	Std Error of Est	df	F
Education Coursework and Teaching Experience	.693	.480	452	7.368	2 (37, 39)	17.053

Note. Dependent variable: NCLEX-RN pass rate.
$p < .001$

A second regression model was run to analyze the interaction between the two variables (see Table 12 and 13). This analysis indicated that education coursework was more significantly related to NCLEX-RN pass rates than was teaching experience (see Illustration 1).

Table 12

Regression: Interaction Between Faculty Completion of Graduate Level Education Coursework and Teaching Experience

Model	R	R^2	Adj R^2	Std Error of Est	Change Statistics			
					$R2$ Change	F Change	$df1$	$df2$
1	.693[a]	.480	.452	7.368	.480	17.053	3	.37
2	.737[b]	.543	,505	6.998	.064	5.012	1	.36

Note. a. Predictors: (Constant), Education Coursework, Average Teaching Experience
   b. Predictors: (Constant), Education Coursework, Average Teaching Experience,
   Years x Experience.

$p < .05$

Table 13

Coefficients: Interaction Between Faculty Completion of Graduate Level Education Coursework and Teaching Experience

Model		Unstandardized Coefficients		Standardized Coefficients	
		B	Std Error	Beta	t
1	(Constant)	67.044	4.941		13.569
	Education Coursework	1.296	.471	.329	2.752
	Average Teaching Experience	30.609	6.412	.570	4.774
2	(Constant)	53.012	7.830		6.770
	Education Coursework	2.747	.788	.697	3.488
	Average Teaching	82.650	24.029	1.540	3.440
	Experience	-5.272	2.355	-1.108	-2.239
	Years x Education				

Note. Dependent variable: NCLEX-RN pass rate.
$p < .05$
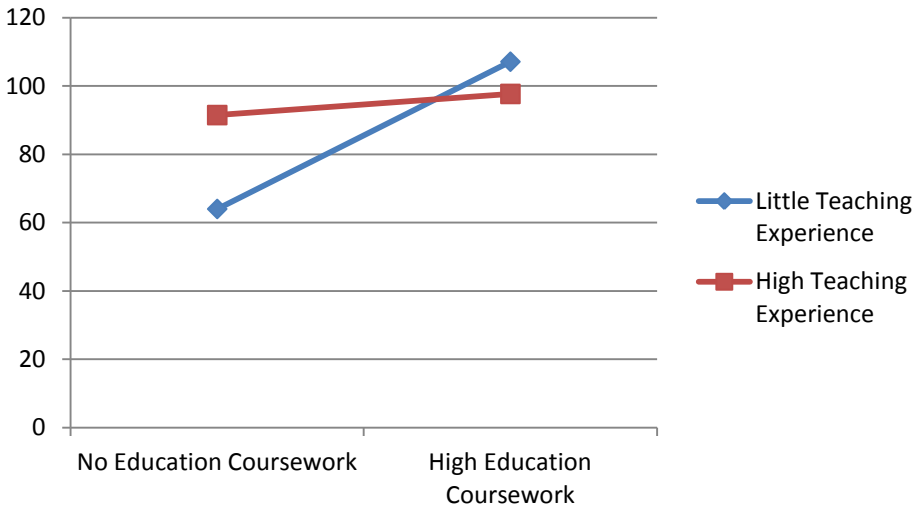
Illustration 1. Interaction between two variables: Faculty with education coursework and faculty with teaching experience.

Conclusions

Twelve research hypotheses were developed for investigation. The dependent variable of a nursing program's NCLEX-RN average pass rate was the focus of six of these hypotheses. The other six were companion hypotheses to the others, but had the focus of the dependent variable of a nursing program's performance on selected NCLEX-RN subsections. Because there were so few programs ($n = 10$) that responded to the portion of the survey regarding performance on selected NCLEX-RN subsections, the six hypotheses that had this dependent variable as their focus could not be supported or rejected.

Two of the remaining six hypotheses were supported. Faculty characteristics that were shown to predict program NCLEX-RN pass rates were faculty completion of graduate level education coursework and group years of teaching experience (average teaching experience by the full-time faculty group within a program). Further analyses of these two variables using correlation and regression models indicated that they were both independently related and were

predictive of program NCLEX-RN pass rates. Faculty characteristics that were not predictive of program NCLEX-RN pass rates were doctoral degrees earned, whether measured all together or separated by type; enrollment in a graduate program; percentage of full-time faculty; and student-to-faculty ratio.

The purpose of this study was to examine the relationship between the educational preparation of nursing faculty and student outcomes of program pass rates and performance on key components on the NCLEX-RN in ADN programs in Florida. Based on the findings from this study, ADN programs in Florida that employ full-time faculty members who have completed graduate-level education coursework may see positive effects on NCLEX-RN pass rates. Likewise, ADN in Florida that increase the average teaching experience of the full-time faculty group may see positive effects on NCLEX-RN pass rates.

CHAPTER 5

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this cross-sectional, retrospective survey study was to examine the relationship between the educational preparation of nursing faculty and student outcomes of program pass rates and performance on key components on the national RN licensure examination in ADN programs in Florida. Nursing faculty must be highly proficient nurses and educators in order to facilitate the learning their students need to prepare them to deliver high quality, patient-centered care to a diverse patient population in a complex, technologically-advanced, rapidly changing healthcare environment (Benner et al., 2010; IOM, 2010). Qualified nursing graduates must successfully pass the NCLEX-RN before they can be licensed to practice nursing. Nursing programs use first-attempt NCLEX-RN pass rates to report graduate success on the NCLEX-RN to communities of interest such as governing organizations, community clinical facilities and partners, state boards of nursing, national accrediting commissions, and other official entities. This outcome can affect student enrollment, grant funding, community support, and, in some cases, continued ability to operate the nursing program (Florida Legislature, 2013).

There are a variety of paths for students to obtain the education necessary to be eligible to take the NCLEX-RN, including diploma, associate degree, and bachelor's degree nursing programs. Depending on the level of program and the college or university in which they operate, there is wide range of acceptable levels of educational preparation required to become a nurse educator, from a bachelor's degree in nursing to a variety of doctoral degrees. There is a

paucity of evidence-based research on the impact of the educational preparation of nursing

faculty and student outcomes. This study is the first step to determine if there is an optimal

combination of faculty with different educational preparation in a program that maximizes

student outcomes. It can also help nurses choose the kind of graduate education to pursue.

For the purposes of this study, all nursing faculty data were grouped within programs.

Therefore, variables were group characteristics, not those of individual faculty members. The

following discussion about the research findings is organized by the study's guiding questions.

This discussion is followed by an exploration of the implications of the research findings and a

statement of the study's limitations and delimitations. The chapter will conclude with

recommendations for further research.

Discussion of Research Findings

Educational Preparation of Nursing Faculty

What is the relationship between the educational preparation of nursing faculty and the

student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN

subsections? This question was the basis of the study, and was therefore addressed from

multiple angles. Educational preparation measures included five categories (any doctoral

degrees, EdD degree, PhD degree, DNP degree, and completion of graduate-level education

coursework). Each of these categories was analyzed individually in relationship with the two

outcome measures of NCLEX-RN pass rates and program performance on selected NCLEX-RN

subsections.

There was a positive relationship between faculty who completed graduate-level

education coursework and NCLEX-RN pass rates. For the purposes of this study, faculty

members meet this requirement when they have a minimum of nine credits of graduate-level (master's or doctoral) education coursework completed, not including graduate-level research or statistics courses. This meets the same threshold set by the NLN as one option to determine if a nurse educator meets the eligibility requirements to apply for the Certified Nurse Educator designation (NLN, 2011b). No previous research was found that considered this variable. It is interesting to note that while the findings seem to suggest that faculty completion of graduate level education coursework predicted NCLEX-RN pass rates, the data regarding the faculty members who hold education doctoral degrees or any other doctoral degree did not predict NCLEX-RN pass rates. One possibility is that ADN faculty who earn a doctoral degree may be more likely to be senior faculty with administrative responsibilities and engage in less "hands-on" teaching, especially in the clinical arena in ADN programs. On the other hand, the percentage of faculty members in the reporting programs who completed at least nine credits of graduate-level education coursework was much higher than those who had earned doctoral degrees. Of the 40 programs, 22 (55%) had greater than 25% of their full-time faculty who had completed education coursework, whereas only 8 (20%) had greater than 25% of their full-time faculty with an earned doctoral degree. The faculty members who completed the education coursework may have been enrolled in masters or doctoral programs or they may have decided to take a few education courses to enhance their knowledge as they were embarking on the educator role. Some colleges may have formal agreements with universities to offer education courses to new faculty members as part of the orientation/mentorship process.

There was no significant relationship between the percentage of nursing faculty who held earned doctoral degrees in each program, whether those degrees were EdD, PhD, DNP, or any combination thereof and the corresponding program's pass rates on the NCLEX-RN. These data

validate Bushardt et al (2012), Novak (2009), and Stevens (1996), all who either found a negative correlation or no correlation between faculty with terminal degrees and licensure exam pass rates in their respective fields. There are several possible explanations for this finding. Associate degree nursing program administrators and their governing institutions do not require faculty to hold doctoral degrees. Of the 40 programs that responded to this survey, 42.5% had no full-time, doctorally-prepared faculty and only 20% had more than 25% of the full-time faculty who held earned doctoral degrees. Associate degree nursing program administrators are included in these faculty percentages because they often continue to teach even while serving in the administrator role. Many of these administrators hold doctoral degrees and they are often the more senior educators on the ADN faculty. However, these administrators most likely are not teaching in clinical areas, where much student learning takes place. Nursing faculty in ADN programs who hold doctoral degrees, even those who are not in administrative positions, are often the more senior faculty members who may hold coordinator or other leadership positions which may take them away from clinical teaching responsibilities.

Prior research that compared terminal degree status of faculty and licensure pass rates did not discriminate between the type of degree held by the educators (Bushardt et al., 2012; Novak, 2009; Stevens, 1996). There was no significant relationship between faculty who held the EdD degree and NCLEX-RN pass rates. It was hypothesized that the presence of nursing faculty members who held a doctorate of education in a program would show a positive effect on that program's NCLEX-RN average pass rate. This hypothesis may not have been supported because most education doctoral degrees do not have a nursing education focus. While some educational strategies are applicable to a wide variety of learning environments, others are intended for more traditional programs of study. Much of the learning in nursing programs occurs outside of

traditional classrooms in simulation laboratories and clinical facilities. A doctoral degree

program in education must be carefully chosen by the nurse who is seeking to build on strong

clinical knowledge and become a well-prepared nurse educator.

There was no significant relationship between faculty who held the PhD degree and

NCLEX-RN pass rates. No hypothesis was made about this relationship. It is possible for

nurses to have a PhD in Nursing or a PhD in Nursing with a focus in Nursing Education. It is

also possible for some to have a PhD in a related field. This study did not attempt to

discriminate between the specific types of PhD degrees held by faculty members. Finally, there

was no significant relationship between faculty who held the DNP degree and NCLEX-RN pass

rates. The DNP, a practice-based doctoral degree, is the doctoral degree of choice for ADN

program faculty who have the desire to focus on clinical education or practice, and who do not

have the desire to seek full-time, tenure-track faculty positions in the university system.

Currently, many universities will not consider the DNP as a terminal degree for tenure-track

positions. Although no hypothesis was made about the relationship between faculty who held

the DNP degree and NCLEX-RN pass rates, the lack of correlation between these two factors

was noted. Further research with larger numbers of faculty members who hold the different

types of doctoral degrees should be done before any definitive conclusions can be made.

Student-to-Faculty Ratio

What is the relationship between the program's average student-to-faculty ratio and the

student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN

subsections? There was no significant relationship between student-to-faculty ratios and

NCLEX-RN pass rates on either the correlation test or on linear regression. These data conflict

with other research studies that found a positive correlation between student-faculty ratios and licensure examination results (Bushardt et al., 2012; Stevens, 1996). In the current study, only full-time faculty members were considered, whereas previously reported studies may have used full-time, part-time, and adjunct faculty members. There was a wide range of values among the programs that participated (the range was 47; from 8 students for each full-time faculty member to 55 students for each full-time faculty member). This implies that some programs utilize a greater percentage of part-time and adjunct faculty members because all pre-licensure nursing programs must adhere to a limit to the student-to-faculty ratio permitted in the clinical setting. This variable would have been more meaningful if the survey had differentiated between student-to-faculty ratios in clinical versus classroom settings for full-time faculty because this would have given a clearer picture of how full-time faculty were being utilized in the different programs.

Percentage of Full-time Faculty

What is the relationship between the percentage of full-time faculty and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections? There was no significant relationship between the percentage of full-time faculty and NCLEX-RN pass rates, which supports the research conducted by Bushardt and colleagues (2012), who also found that the number of full-time faculty did not predict licensure examination pass rates. However, these results conflict with other research studies that found that the percentage of full-time faculty was significant in predicting licensure examination pass rates (Novak, 2009; Stevens, 1996). One possible explanation may be that the differences among these studies highlight the nature of using adjunct faculty to serve as clinical instructors; when

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they are selected carefully, oriented sufficiently, and mentored well, they can be a great asset to the program in which they teach. When this occurs, there may be no significant relationship between the percentage of full-time faculty and licensure examination pass rates because the full-time faculty and the adjunct faculty members are working well together to promote achievement of student outcomes. Professional programs may also be doing a better job orienting and mentoring their adjunct faculty members than in previous years.

Teaching Experience

What is the relationship between the average number of years of teaching experience and the student outcomes of NCLEX-RN pass rates and program performance on selected NCLEX-RN subsections? There was a positive relationship between teaching experience and NCLEX-RN pass rates. There is a "learning curve" to teaching nursing and a dedicated educator will improve with time. This is supported by the results of the study by Novak (2009) and Stevens (1996), both of whom found positive correlations between faculty teaching experience and licensure examination pass rates. A review of current open faculty positions in Florida revealed that most nursing programs prefer to hire educators with some experience in higher education, especially for full-time positions.

Implications

Nursing programs are mandated by state boards of nursing to produce graduates who are prepared to pass the NCLEX-RN and practice in a manner that will assure patient safety and promote health. Programs also have a mandate from the communities in which they operate to retain and graduate a high percentage of students who begin their programs, and that those

graduates are highly likely to pass the NCLEX-RN. To balance these often conflicting expectations, nurse educators must be experienced nurses so they have a strong grasp of the nursing concepts that must be conveyed to students. In addition, these nurses must be able to adequately communicate this knowledge and experience to facilitate student learning. When nurses are able to combine these attributes, they will be successful educators. The results of this study, as well as those from other research studies, indicate that some degree of graduate level educational preparation and experience will help nurses reach the goal of becoming an excellent educator.

Several implications have been noted from this study. Most notably, the results of the study suggest that it is beneficial for ADN programs to have full-time faculty members who have completed a minimum of nine credits of graduate-level education coursework. Content most typically included in the courses are curriculum development and evaluation, instructional design, assessment and evaluation, principles of teaching and learning, adult learning theories, and instructional technology (NLN, 2011b). Such coursework can help the nurse transition into the faculty role by forming a basic foundation of education principles on which to build strategies and increase understanding of methods that facilitate learning. The results of this study were striking in this area, and if it were to be repeated with similar results, there could be policy implications. Nursing program administrators may want to explore the feasibility of requiring new full-time faculty to begin such coursework within a set timeframe after employment. The strength of the findings regarding education coursework in this study suggests that if a program has faculty members who possess this variable but are new to the faculty role, any differences seen on NCLEX-RN pass rates between them and the faculty members who have years of teaching has essentially been eliminated. Armed with this knowledge, administrators of

ADN programs may consider including education coursework on the list of preferred qualifications for faculty positions.

Another implication of the finding regarding education coursework involves administrators of graduate education institutions. Institutions that are offering full degree programs for nurse educators may want to consider offering certificate programs with a nurse educator focus, which would give easy access to quality education coursework for nurses wishing to teach in ADN programs who are not yet ready for a full degree program.

This study suggests that completion of graduate-level education coursework develops faculty members' ability to teach students in the classroom and clinical settings and promote student acquisition of nursing knowledge and skills. Therefore, ADN program administrators may find it beneficial for their programs to encourage their faculty members to complete graduate-level education coursework. However, administrators may not achieve the same outcomes if they encourage their faculty members to earn doctoral degrees, consistent with the outcomes of this study and other research (Bushardt et al., 2012; Novak, 2009; Stevens, 1996). While there is a definite need for doctorally-prepared nurse educators, it may be that the terminal degree should not be required for those educators who are teaching basic skills and concepts in pre-licensure programs. Administrators must take into account the culture of their governing institutions and communities when making decisions about hiring doctorally-prepared faculty at the ADN level. The research findings to date suggest that faculty development funds and efforts may be more effectively spent on strong orientation programs, graduate education coursework, and mentoring programs (Blauvelt & Spath, 2008; Jones, 2008; Trautman, 2008). Because this study's findings highlighted the fact that doctoral degrees are still not prevalent among ADN faculty, a recommendation for a future study is to analyze the relationship between the

educational preparation and training of faculty who hold the Masters of Science in nursing (MSN) and program pass rates.

The results of this study also suggest that it is beneficial for ADN program administrators to have experienced faculty teaching in their programs. This finding is supported in the literature (Novak, 2009; Stevens, 1996). While administrators seek to fill openings with experienced nurse educators, novice educators should not be dismissed as undesirable because nursing faculty must continually be renewed. Rather, administrators should seek to have a well-balanced team of faculty.

Limitations, Delimitations, and Recommendations for Further Research

Several factors will limit the generalization of the results of this study. First, no survey instrument existed for this study. Data were obtained from ADN administrators using a survey developed by the researcher created for this study. Because the design was retrospective, the researcher was unable to control each program's recordkeeping related to faculty members who may or may not have been teaching at the same institutions at the time the survey was completed.

Second, the survey was sent only to ADN program administrators in one southern state. Although both public and private/proprietary programs were surveyed, the addition of other states in other geographical areas would add more diversity to the educator group. However, this was also a delimitation because the nursing program regulatory framework is unique to Florida. The state senate stripped much regulatory control of nursing programs from the Florida Board of Nursing (FBN) in 2009 and loosely placed regulatory control in the hands of the senate body, leaving only the power to approve new pre-licensure programs and monitor program outcomes, as measured by retention rates and NCLEX-RN pass rates, with the FBN (Florida Senate, 2014).

Because there are myriad factors that affect NCLEX-RN pass rates, attempting to control a major outside influence such as regulatory control of the nursing programs seemed prudent at this stage of the process of investigating faculty characteristics and how they influence NCLEX-RN pass rates.

Third, the sample size was comparatively small. A large sample is preferred, although it is not uncommon for sample sizes to be less than 100 (Polit & Beck, 2010). All ADN programs in Florida that met the inclusion criteria were invited to participate regardless of their size, funding source, or accreditation status. A related delimitation was the intentional exclusion of pre-licensure baccalaureate degree nursing programs in Florida. There is a dearth of research on the relationship between the preparation of nursing faculty and program outcomes. Knowing that myriad factors affect NCLEX-RN pass rates, and knowing that there are significant differences between the fundamental mission of the State University System of Florida and that of the Florida College System, attempting to control these outside variables by focusing on one type of program in the first investigation of this relationship seemed prudent. Future studies may need to include all types of pre-licensure programs in multiple states and regions in order for the research to be more generalizable.

Fourth, many programs that participated in the study did not respond to the survey questions about the selected subsections of the NCLEX-RN. This finding may be due, in part, to the fact that data related to the NCLEX-RN subsections are not provided to programs. This information is only available by purchase in a detailed report that describes graduate performance on several dimensions of the NCLEX-RN compared against other programs both regionally and nationally. Programs have the option to purchase a yearly subscription for this report, to purchase an occasional report to check the status, or to not purchase the reports at all.

Conclusion

There is a growing awareness that nurses have much to offer in the nation's rapidly changing healthcare system. Along with this awareness is the emerging realization that nurses must advance their level of education to meet these changing needs. The dual goals of more nurses and an increased number of nurses transitioning to higher degrees require increased numbers of prepared nurse educators. This study attempted to begin the exploration of the factors which would best prepare a nurse educator to help a program be successful.

Nursing program administrators are often faced with the task of hiring new faculty. Providing them with evidence about the best combination of faculty characteristics and how that contributes to student outcomes would be helpful in their decision-making process about the new faculty job description. There was a positive relationship between faculty completing graduate-level education coursework and NCLEX-RN pass rates, but there was no relationships between those with doctorates and NCLEX-RN pass rates. This suggests that some degree of knowledge about how to teach is beneficial for nurse educators. This finding is important for program administrators to keep in mind. If a faculty group has many clinical experts but there is no one on the team with knowledge about curriculum development, evaluation, student-centered learning, or other educational principals, there may be some issues related to achieving student outcomes.

This study's findings also supported previous research regarding the relationship between faculty experience and program pass rates on licensure examinations. There is little debate that nursing program administrators prefer more experienced faculty. Becoming a nurse educator requires more than just stepping out of the clinical arena and into the classroom.

The purpose of this study was to examine the relationship between the educational preparation of nursing faculty and student outcomes of program pass rates and performance on key components on the NCLEX-RN in ADN programs in Florida. Based on the data in light of the purpose of this study, two conclusions are noted for the setting of ADN programs in Florida. Educational preparation in the form of graduate-level education coursework will help pave the way for a smoother transition into the role of nurse educator. Teaching experience then brings the wisdom needed to help build a highly effective team of nurse educators that produces graduate nurses who are prepared to provide safe, effective care, which is the goal of every pre-licensure nursing program.

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APPENDIX A

LETTER OF SUPPORT FROM FLORIDA COUNCIL OF NURSING ADMINISTRATORS

July 18, 2013

Mrs. Charlotte Kuss
Doctoral Candidate
College of Education and Capstone College of Nursing
The University of Alabama

Dear Mrs. Kuss,

The members of the Florida Council of Nursing Education Administrators are pleased to support your research efforts as you seek to better understand the correlation between the educational preparation of nursing faculty and student outcomes of first time pass rates on NCLEX-RN. As nurse educators, we are always interested in improving student outcomes, and desire to see our knowledge base strengthened through evidence.

We look forward to working with you, and ask that you consider sharing your findings with the group at one of our meetings when you have completed your work. I have attached a roster of all members who are deans/directors of all Associate Degree Nursing programs (public, private, and proprietary) as that is your target population for your study.

If I can be of further assistance to you please let me know. Best to you as you complete your research.

Sincerely,

4042 Park Oak Boulevard, Suite 100 – Tampa, FL 33619   813.246.7638

APPENDIX B

IRB APPROVAL

August 21, 2013

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

Charlotte Kuss
Capstone College of Nursing
The University of Alabama
Box 870358

Re: IRB # EX-13-CM-088: "The Relationship between Educational
          Preparation of Nursing Faculty and Program Pass Rates on the National
          Council Licensure Examination for Registered Nurses"

Dear Ms. Kuss,

The University of Alabama Institutional Review Board has granted approval for
your proposed research.

Your application has been given exempt approval according to 45 CFR part
46.101(b)(2) as outlined below:

*(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude,
achievement), survey procedures, interview procedures or observation of public
behavior, unless:*

    *i.   information obtained is recorded in such a manner that human subjects can
be identified, directly or through identifiers linked to the subjects; and*

    *ii.   any disclosure of the human subjects' responses outside the research could
reasonably place the subjects at risk of criminal or civil liability or be
damaging to the subjects' financial standing, employability, or reputation.*

This approval expires on August 20, 2014. If the study continues beyond that
date, you must complete the IRB Renewal Application. If you modify the
application, please complete the Modification of an Approved Protocol form.
Changes in this study cannot be initiated without IRB approval, except when
necessary to eliminate apparent immediate hazards to participants. When the study
closes, please complete the Request for Study Closure form. <u>Please use the IRB-
approved consent language.</u>

Should you need to submit any further correspondence regarding this application,
please include the assigned IRB application number.

Good luck with your research.

Sincerely,

358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
FAX (205) 348-7189
TOLL FREE (877) 820-3066

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APPENDIX C

COVER LETTER

Dear ADN Program Administrator,

My name is Charlotte Kuss, and I am on faculty in the associate degree nursing program at Northwest Florida State College and a doctoral student at the University of Alabama in Tuscaloosa. I am conducting a research study on the educational preparation of nursing faculty. The research study will involve completion of an online survey via Qualtrics that will take approximately 15 to 30 minutes to complete, depending on the number of full-time faculty that you have in your program.

If you are the primary administrator of the ADN program at your college, you are invited to participate in the research study. There are no direct benefits to you from taking part in the study. However, findings from the study may lay the groundwork for future research, assist future graduate program administrators in determining the kinds of programs to develop, potential graduate students in making informed decisions about the kind of graduate education to pursue, and nursing program administrators in determining the best faculty to hire. There are no foreseeable risks to you for participating in the study. All of the information obtained from the study will be treated as confidential and your identity and responses will remain anonymous.

More information about the study will be forthcoming within one week via your e-mail. Thank you for your consideration of this research study.

Sincerely,
Charlotte Kuss, EdD(c), MSN, RN, CNE

APPENDIX D

INVITATION TO PARTICIPATE IN INTERNET SURVEY

Dear ADN Program Administrator,

My name is Charlotte Kuss, and I am on the faculty of the associate degree nursing program at Northwest Florida State College and a doctoral student at the University of Alabama in Tuscaloosa. I am conducting a research study on the educational preparation of nursing faculty. The research study will involve completion of an online survey via Qualtrics that will take approximately 15 to 30 minutes to complete, depending on the number of full-time faculty that you have in your program.

If you are the primary administrator of the ADN program at your college, you are invited to participate in the research study. There are no direct benefits to you from taking part in the study. However, findings from the study may lay the groundwork for future research, assist future graduate program administrators in determining the kinds of programs to develop, potential graduate students in making informed decisions about the kind of graduate education to pursue, and nursing program administrators in determining the best faculty to hire. There are no foreseeable risks to you for participating in the study. All of the information obtained from the study will be treated as confidential and your identity and responses will remain anonymous. Once you click on the survey link provided in this email, you completely leave your identifiable account and enter the survey software as an anonymous user. Because of this protection, a reminder email will be sent to you in approximately two weeks whether you have already completed the survey or not.

If you are not the primary administrator of the ADN program at your college, please forward this email to the person who can best complete this survey. Please forward the reminder email to that person as well.

Here is the link for the Qualtrics survey:

https://qtrial.qualtrics.com/SE/?SID=SV_01bLJOz2qsiDGXX

Thank you! I truly appreciate your participation!
Charlotte Kuss, EdD(c), MSN, RN, CNE

APPENDIX E

SURVEY

Is your program classified as public or private/proprietary?

○   Public

○   Private/Proprietary

What was your program's average NCLEX-RN first-time pass rates for the years 2010, 2011, and 2012? If your program had no graduates during any of the years in question, please simply do not add data to those years.

	2010	2011	2012
NCLEX-RN pass rate	☐	☐	☐

Please indicate whether or not your program was fully approved by the Florida Board of Nursing (FBN) during the following years:

	2010	2011	2012
My program was fully approved by the FBN during these years:	☐	☐	☐

What was your program's yearly average on the following subsections of the NCLEX-RN for the years 2010, 2011, and 2012? Again, if your program had no graduates during any of the years in question, please simply do not add data to those years.

	2010	2011	2012
Management of Care	☐	☐	☐
Pharmacological & Parenteral Therapies	☐	☐	☐
Physiological Adaptation	☐	☐	☐

How many nursing faculty taught FULL-TIME in your program at any time during the academic years of 2008-09 through 2011-12? (This time frame covers the years when most of the graduates who took the NCLEX-RN during the specified dates in the first item would have been enrolled in the nursing program.)

☐

How many full-time nursing faculty left the program during the time period from 2008-09 through 2011-12?

☐

How many full-time faculty were hired during the time period from 2008-09 through 2011-12?

[ ]

For EACH full-time nurse educator that taught in the program during the specified time period above (2008-09 through 2011-12), please provide this information:
("Education coursework" means a minimum of nine credits of graduate-level (master's or doctoral) education coursework completed, not including graduate-level research or statistics courses.)

	Highest/type degree earned:	Education coursework completed? (See definition of "Education coursework" above.	Currently enrolled in an education program? If yes, indicate type:	# of years teaching experience (in an ADN or pre-licensure BSN program) as of 2011-2012 or at the time s/he left your program:
Educator #1				
Educator #2	Choices include: BSN MSN DNP PhD EdD Other		Choices include: No MSN DNP PhD EdD Other	
Educator #3		Choices include: Yes No		
Educator #4				
Educator #5				
Educator #6				
Educator #7				
Educator #8				
Educator #9				
Educator #10				

Do you have more full-time nursing faculty on which to report?

[ ]

(If yes, survey will take respondent to another set of the above questions. This cycle will repeat for a total of 50 educators.)

How many nursing faculty taught FULL-TIME in your program during the 2011-2012 academic year? (You can find this information in your Fall 2012 OPPAGA Program Survey response.)

[ ]

How many nursing faculty taught PART-TIME in your program during the 2011-2012 academic year? (You can find this information in your Fall 2012 OPPAGA Program Survey response.)

[ ]

What was your program's total student enrollment for the 2011-2012 academic year? (Please include all options/tracks leading to ADN. You can find this information in your Fall 2012 OPPAGA Program Survey response.)

[ ]

How many students graduated from your program during the 2011-2012 academic year? (Please include all graduates from all options/tracks leading to ADN. You can find this information in your Fall 2012 OPPAGA Program Survey response.)

[ ]

APPENDIX F

INFORMED CONSENT

Study title:
"The Relationship Between Educational Preparation of Nursing Faculty and Program Pass Rates on the National Council Licensure Examination for Registered Nurses"

Investigator: Charlotte Kuss, MSN, RN, CNE
                          Doctoral Candidate
                          The University of Alabama

You are invited to participate in a research study. The study is being done by Charlotte Kuss, who is a doctoral student at the University of Alabama. Ms. Kuss is being supervised by Dr. Marietta Stanton who is a professor of Nursing at the University of Alabama. The researcher received no funding to conduct this study.

What is this study about? What is the investigator trying to learn?
This study is being done to find out if there is a relationship between selected faculty characteristics and licensure examination pass rates, with a focus on the educational preparation of nursing faculty. The investigator is looking at the faculty characteristics in program groups, not as they apply to individual faculty members; therefore she hopes to discover if there is an optimal combination of faculty with different levels and types of degrees who are serving together in a program that maximizes student outcomes.

Why is this study important or useful?
This knowledge is important because there is a nursing shortage, a nursing faculty shortage, and an expectation placed on nursing programs to optimize admissions, retention, and licensure exam pass rates. New graduates must be ready to give safe care in a complex healthcare system. Therefore nursing faculty must not only be excellent nurses, but should also understand how to effectively pass that knowledge on to their students. The results of this study will help nursing program deans and directors determine the best faculty to hire, potential graduate students make informed decisions about the kind of graduate education to pursue, and graduate program administrators to determine the kinds of graduate programs to develop.

Why have I been asked to be in this study?
You have been asked to be in this study because you are an administrator of an associate degree nursing program in Florida, which is the target population for this study.

How many people will be in this study?
About 80 other people will be asked to take part in this study.
What will I be asked to do in this study?
If you agree to be in this study, you will be asked to complete an online survey.

How much time will I spend being this study?
The survey should take approximately 15-30 minutes to complete, depending on the number of full-time faculty that teach in your program.

Will being in this study cost me anything?
The only cost to you from this study is your time.

Will I be compensated for being in this study?
You will not be compensated for being in this study.

What are the risks (dangers or harms) to me if I am in this study?
There are no perceived identifiable risks associated with the study.

What are the benefits (good things) that may happen if I am in this study?
There are no direct benefits to you. However, your participation in this study is likely to help us learn more about the relationship between the educational preparation of nursing faculty and the important program outcome of first-time pass rates on NCLEX-RN.

How will my privacy be protected?
You have received an email invitation to participate in the study through your password protected campus email account. If you decide to participate in the study, you can complete the survey when you are alone and no one else can see how you are answering questions. The web link for this study has no information that connects back to your email address. Therefore, no one (not even the researcher) will know which administrators completed the survey. Because of this protection, reminder emails will be sent to all administrators who received an invitation to participate in the study. If you have already completed the survey or wish to decline participation, please ignore the email reminder. The surveys are completely anonymous. No individuals will be identified.

How will my confidentiality be protected?
You will not be asked for your name or any other information that might identify you. In addition, the web link for this survey has no information that connects back to your email address. Therefore, none of the data will contain any identifying information. Despite these precautions, the information gathered from the survey will be password protected and only the researcher will have the password. All data will only be reported as group data. All information will be kept confidential. The completed surveys will only be seen by the researcher and possibly the dissertation chairperson and research committee. After the researcher completes her dissertation, the survey will be deleted from the survey software. Any data that is downloaded to a flash drive for statistical analysis will be kept in a locked drawer in the researcher's office. The data will be erased from the flash drive after a period of three years.

What are the alternatives to being in this study? Do I have other choices?
The alternative to being in this study is not to participate.

What are my rights as a participant in this study?
Taking part in this study is voluntary. It is your free choice. You can refuse to be in it at all. If you start the study, you can stop at any time.

The University of Alabama Institutional Review Board ("the IRB") is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?
If you have questions, concerns, or complaints about the study right now, please ask them. If you have questions, concerns, or complaints about the study later on, please call the investigator, Charlotte Kuss, at 850-585-5769 (mobile) or 850-729-6400 (work).
If you have questions about your rights as a person in a research study, call Ms. Tanta Myles, the Research Compliance Officer of the University, at 205-348-8461 or toll-free at 1-877-820-3066.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at http://osp.ua.edu/site/PRCO_Welcome.html or email the Research Compliance office at participantoutreach@bama.ua.edu.

After you participate, you are encouraged to complete the survey for research participants that is online at the outreach website or you may ask the investigator for a copy of it and mail it to the University Office for Research Compliance, Box 870127, 358 Rose Administration Building, Tuscaloosa, AL 35487-0127.

In order to participate, you must consent to the survey.

Completion of the attached survey implies that you have read this consent form, that you have contacted the investigator with any questions and your questions have been answered to your satisfaction, and that you consent to take part in this research study.

I consent to participation in this survey. (You can print out a copy of this consent form for your own records.)

APPENDIX F

E-MAIL REMINDER/THANK YOU

Dear ADN Program Administrator,

This email is being sent as a friendly reminder to please consider participating in the Qualtrics online survey regarding the educational preparation of nursing faculty, which is my research study for my doctoral dissertation. If you wish to participate, please follow the link below to the survey. If you have already done so, thank you for your participation and please disregard this email. If you decline to participate in the study, please disregard this email as well.

Here is the link for the Qualtrics survey:

https://qtrial.qualtrics.com/SE/?SID=SV_01bLJOz2qsiDGXX

Thank you! I truly appreciate your participation!
Charlotte Kuss, EdD(c), MSN, RN, CNE