ABSTRACT

DEMOGRAPHIC CHARACTERISTICS AS PREDICTORS FOR EARLY PROGRAM SUCCESS, ON-TIME COMPLETION, AND NCLEX-RN SUCCESS IN A BACHELOR OF SCIENCE IN NURSING PROGRAM

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This study examines the extent to which selected demographic characteristics (nontraditional student, English as a second language [ESL], male student, and first-generation student) predict early program success, successful on-time completion, and NCLEX-RN success in baccalaureate nursing education for a sample of students at a midwestern university. To determine the relationships among study variables, correlational analysis was used. Logistic regression was utilized to examine the relationship of the predictive variables (nontraditional student, ESL student, male student, and first-generation student) to the outcome variables (early program success, successful on-time completion, and NCLEX-RN success). In addition, descriptive statistics, including measures of central tendency (mean, median, and mode), variation (standard deviation), and frequency distributions, were utilized to analyze the data collected for five cohorts of students from 2009-2015.

The results indicated that both nontraditional students and ESL students are less likely to experience early program success and successful on-time completion than their non-ESL and traditionally aged peers, and first-generation students are less likely to experience on-time completion than their non-first-generation peers. In addition, the results

of the study indicated that nontraditional students are more likely to experience NCLEX-RN success than their traditionally aged peers and male students are less likely to experience NCLEX-RN success than their female counterparts.

The findings of this study contribute to nursing education literature and assist in filling a gap in the literature regarding the relationship between student demographic characteristics and nursing program success. Given the shortage of seats in nursing schools nationwide, this study can help to identify at-risk students early for the purpose of developing interventions intended to promote early program success, successful on-time completion, and NCLEX-RN success.

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DEDICATION

To my husband, Jay,

my pillar of strength, source of encouragement, and cheerleader

throughout this doctoral journey.

To my daughters, Jessica and Amanda;

I will be eternally grateful for your relentless patience and understanding

as I pursued my dream.

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CHAPTER 1

INTRODUCTION

The United States is projected to encounter a historically unprecedented nursing shortage within the next 20 years. Shortages of registered nurses are expected from both the supply and demand sides of the equation.

From the demand side of the equation, an increase in the demand for registered nurses is projected as the need for health care in general increases. The most substantial increase in the demand for healthcare services in the United States began in 2014 as the Patient Protection and Affordable Care Act of 2010 expanded access to health insurance to as many as 32 million Americans (Auerbach, Staiger, Muench, & Buerhaus, 2012). In addition, growth in the overall population of the United States, the aging of the baby-boomer generation, as well as the heightened demand for high-technology medicine by the general public have led to an increased demand for healthcare services. In turn, this increase in demand for healthcare services has led to an additional need for healthcare workers, namely registered nurses and primary care physicians (Auerbach et al., 2012; Health Resources Services Administration [HRSA], 2014).

On the supply side of the equation, the nursing shortage is fueled by an aging nursing workforce, a shortage of nurses prepared at the baccalaureate level, as well as a substantial shortage of nursing faculty (Auerbach et al., 2012). According to the National

Council of State Boards of Nursing (NCSBN) (2013), 55% of registered nurses are presently aged 50 and older, indicating that the pool of registered nurses is aging. Further, projections indicate that one million registered nurses will reach the age of retirement by 2029 (HRSA, 2014). According to the Council on Physician and Nurse Supply (2008) of the University of Pennsylvania, 30,000 new graduate nurses, or a 30% increase in present levels, will be needed each year to meet projected healthcare needs in the United States.

As the nursing profession seeks to remedy the nursing shortage through expanding enrollments in schools of nursing nationwide, two-thirds of nursing programs cite insufficient faculty and clinical preceptors as the primary reason for the failure to expand enrollments (American Association of Colleges of Nursing [AACN], 2011). In 2012, schools of nursing in the United States denied admission to 79,659 qualified applicants nationwide primarily due to faculty shortages; thus the nursing shortage continues (AACN, 2011).

In addition to the pressure to expand enrollments nationwide, retention of students to graduation remains a concern. The standard for retention in nursing programs set by the Commission on Collegiate Nursing Education (CCNE) (2013) is 70%. Baccalaureate nursing programs in the United States fall far short, with some programs reporting retention rates as low as 50% (Newton & Moore, 2009; Peter, 2005).

Nursing program attrition is problematic on various levels. Not only is the nursing shortage exacerbated by a reduced pool of new graduate registered nurses annually, but nursing students, schools of nursing, and stakeholders in health care experience the negative consequences of nursing program attrition (AACN, 2010). As tuition dollars lost through

attrition represent substantial financial cost to the institution of higher education, attrition and/or failure from a nursing program exact a financial and social cost to the student. In addition, the profession of nursing continues to suffer the effects of the nursing shortage as students do not complete their course of study to practice, ultimately, as registered nurses.

The importance of thoughtful admission processes, as well as availability of services designed to support at-risk students, cannot be overstated. Given the substantial number of qualified students turned away from nursing programs each year, admission and retention policies designed to support student success can ensure that available seats are allocated to students who are likely to complete the nursing program, pass the board examination, and ultimately ease the nursing shortage in the United States by practicing as registered nurses.

Shortage of Nurses Prepared at the Baccalaureate Level

Although an impending shortage of registered nurses in general exists in the United States, nurses prepared at the baccalaureate level are in short supply as well (AACN, 2011). Historically, the United States has experienced a series of nursing shortages that peaked following World War II (Buerhaus, Staiger, & Auerbach, 2008). As a result, three distinct levels of educational preparation were developed to serve as entry into the nursing profession: the baccalaureate degree, the associate degree, and the hospital diploma. Each level of education permits a candidate to take the same state board exam, commonly referred to as the National Council Licensure Examination-Registered Nurse (NCLEX-RN) and, upon receiving a passing score, to be conferred with the same Registered-Nurse Credential (NCSBN, 2011). The original intention behind the creation of multiple entries

to practice was to increase the number of registered nurses quickly to ease the shortages at the time.

Although it would appear on the surface that entry to practice at multiple levels would provide increased numbers of registered nurses in the United States, the AACN (2011) found that the opposite is the case. In fact, registered nurses with baccalaureate preparation are four times more likely to pursue graduate education than are nurses who are associate-degree or hospital-diploma prepared. Additionally, educational preparation at the baccalaureate level provides the basis for graduate study, which is necessary for practice in advanced nursing roles such as nurse practitioner, clinical nurse leader, nurse anesthetist, or nursing faculty (AACN, 2008).

Baccalaureate preparation prepares the candidate for a broader scope of practice, enhanced professional identity, and, most importantly, improved patient outcomes (Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Aiken, Clarke, Sloane, Lake, & Cheney, 2008; AACN, 2008; Estabrooks, Midodzi, Cummings, Ricker, & Giovanetti, 2005; Tourangeau et al., 2006). Healthcare quality and patient safety are enhanced when registered nurses are prepared at the baccalaureate level (Aiken et al., 2003; Aiken et al., 2008; Estabrooks et al., 2005; Tourangeau et al., 2006). Aiken et al. (2003) conclude that the 30-day mortality rate would be 19% lower in hospitals with a ratio of 60% baccalaureate-prepared nurses over hospitals in which 20% of the nurses hold a baccalaureate degree.

A host of national organizations have endorsed the baccalaureate degree as entry to practice in the nursing profession (American Organization of Nurse Executives, 2005; Benner, Sutphen, Leonard, & Day, 2009; Institutes of Medicine [IOM], 2011; Robert

Woods Johnson Foundation [RWJF], 2007). The IOM and the RWJF (2007) called for an increase in baccalaureate-prepared nurses to 80% of all new graduate nurses by the year 2020. According to the AACN (2011), the federal government has mandated preparation of registered nurses at the baccalaureate level as the minimum for entry to practice. Registered nurses who practice in the U.S. Army, U.S. Navy, U.S. Air Force, and the Veterans Administration, as well as commissioned officers in the U.S. Public Health Service, must hold a baccalaureate degree to serve. Finally, according to a Harris poll (as cited in AACN, 2011), 76% of the public believes nurses should have a baccalaureate degree to practice.

Attrition in Nursing Education

Within the literature, the causative factors of nursing program attrition have been studied as a means to inform admission decisions within schools of nursing nationwide. Specifically, ESL students; nontraditional students; first-generation college students; personality type; aptitude; self-efficacy; full-time work; and the competing roles among family, work, and school have been studied to explain attrition and inform admissions decisions in schools of nursing (Fowler & Norrie, 2009; Jeffreys, 2004, 2007; McCarthy, Harris, & Tracz, 2014; McLaughlin, Moutray, & Muldoon, 2008; Mulready-Shick, 2013; Newton & Moore, 2009; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Peterson, 2009; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996; Wells, 2003).

Although the bulk of the literature attempts to identify a single student characteristic to explain attrition and ultimately inform admission decisions, Newton and Moore (2009)

and Fowler and Norrie (2009) suggest that nursing program attrition is multifactorial. Further, the variables commonly studied in the literature have been considered as environmental or demographic in nature and should be studied separately from the admissions process. Newton and Moore, as well as Fowler and Norrie, advocate for quantitative admission policies grounded in academic achievement with subsequent identification of at-risk students for the purpose of assisting students most likely to suffer attrition.

Interventions designed to assist at-risk students have proven successful in decreasing attrition (Higgins, 2004; Peter, 2005; Symes, Tart, & Travis, 2005). Rather than waiting for the results of exit surveys, at-risk students should be identified early for the purpose of designing functional supports to enhance retention (McLaughlin et al., 2008; Tinto, 1993).

Demographic Variables

As the population of the United States becomes increasingly diverse, it becomes crucial for recruitment to draw from a rich population of students from all ethnic, racial, and gender groups. The Sullivan Commission (2004) report and the IOM (2011) clearly advocate for a nursing workforce that reflects the racial, ethnic, and gender characteristics of the population in which it serves. The profession of nursing is overwhelmingly Caucasian and female; thus, it is an ethical imperative that at-risk nursing students are identified early for the purpose of the prevention of attrition.

Demographic variables have not received a great deal of attention in the literature, but a few studies have been published examining the relationship of demographic variables to student attrition (Crow, Handley, Morrison, & Shelton, 2004; Jeffreys, 2004; Lewis & Lewis, 2000; Shelton, 2012). According to Wells (2003), as the profile characteristics of college students have become more diverse in nature, attention to demographic factors in student retention has increased. Characteristics of average nursing students are evolving, with nontraditional students becoming an increasingly larger demographic (Jeffreys, 2007; Tinto, 2012; Wells, 2003).

The literature reports that nontraditional students, ESL students, male students, and first-generation students experience nursing education in various ways. Following is a description of the experience of nontraditional students, first-generation students, male students, and ESL students in nursing education.

Nontraditional Nursing Students

Although the literature notes that nontraditional students may take their studies more seriously and thus succeed in nursing education at a higher rate, multiple competing financial, family, and personal demands place the nontraditional student at risk for attrition (Bean & Metzner, 1985; Jeffreys, 2004, 2007; Tinto, 1993; Wells, 2003).

For the purpose of this study, age (25 years or older) is the defining characteristic for the nontraditional student, as age is a variable common to the largely heterogeneous nontraditional student population (National Center for Education Statistics [NCES], 2002). College students 25 years or older tend to experience family responsibilities, work

responsibilities, and other competing circumstances that may interfere with the completion of the nursing program (Bean & Metzner, 1985; Jeffreys, 2004; NCES, 2002). Jeffreys (2004) included male nursing students as well as ESL students in the definition of the nontraditional student. These demographic variables were examined separately from nontraditional status in the present study.

ESL Nursing Students

ESL nursing students represent a subgroup of students who often struggle in nursing programs as well as on the national board exam, commonly referred to as NCLEX-RN in the United States. The literature reports attrition rates as high as 85% among ESL nursing students (Gilchrist & Rector, 2007). As the numbers of ESL students continue to increase, nursing programs nationwide must serve a more linguistically diverse student population with varying levels of English proficiency. ESL students are prone to early withdrawal and low levels of educational attainment (Curry, 2004). In addition, ESL nursing students have been reported to experience difficulty in passing national board exams, such as the NCLEX-RN. Bosher and Bowles (2008) report a 40% lag in first-time NCLEX-RN pass rates between ESL and native English speakers, regardless of grades received during the nursing program.

The IOM (2011) advocate greater diversity in the nursing workforce to decrease healthcare disparities and improve the overall health of the population of the United States. If nursing education is committed to meeting the challenge advanced by the IOM, then

greater attention must be paid to the challenges faced by ESL nursing students (Mulready-Shick, 2013).

Male Nursing Students

The literature reports that male students experience nursing education differently from their female counterparts (Anthony, 2004). Men in nursing education face a myriad of challenges, including social isolation, gender-related stereotypes, gender bias in teaching methods and text materials, bias in the clinical arena, and a substantial lack of male role models and mentors (Anthony, 2004; Cude & Winfrey, 2007; O'Lynn, 2007). In addition, the literature suggests that the attrition rate for males in nursing education exceeds that of their female counterparts (McLaughlin, Muldoon, & Moutray, 2010; Stott, 2007). Considering the projected nursing shortage, it is imperative that a concerted effort be made to not only recruit men into the profession of nursing but to retain them to graduation (Stott, 2007).

First-Generation Students

First-generation students are defined as students from families in which neither parent possesses more than a high school education (Pascarella et al., 2004). Although attainment of a college degree is generally seen as key in achieving social mobility in the United States, first-generation students face a myriad of challenges in attaining higher education. First-generation students commonly lag behind in academic preparation prior to enrollment; in basic knowledge regarding the college process, including the application and

financial aid process; and in degree attainment expectations (Rodriguez, 2003; Terenzini et al., 1996). In addition, first- generation students are more likely to belong to racial and ethnic minority groups (Terenzini et al., 1996).

First-generation students often lack the cultural or social capital found in their non-first-generation peers (Jenkins, Belanger, Connally, Boals, & Duron, 2013; Lundberg, Schreiner, Hovaguimian, & Slavin Miller, 2007; Tramonte & Willms, 2010). Cultural or social capital refers not only to knowledge but also to academic and social skills imperative in acclimating to the academic community. Lack of cultural or social capital often results in less social support, increased stress, decreased life satisfaction, an experience of alienation and depression, lack of belonging, and lowered self-efficacy, which may lead to increased frustration and failure for first-generation student (Jenkins et al., 2013).

Student Success in Nursing Education

NCLEX-RN Success

Student success has been defined in a number of ways in the literature, including success in the first semester or the last semester, student graduation, and/or grade point average (GPA), but the bulk of the research continues to define student success as receiving a passing score on the board examination required for registered nurse licensure (NCLEX-RN; Bondmass, Moonie, & Kowalski, 2008; Carrick, 2011; Hyland, 2012; Lavin & Rosario-Sim, 2013; March & Ambrose, 2010; McDowell, 2008; Pressler & Kenner, 2012; Rogers, 2009; Seldomridge & DiBartolo, 2004; Simon, McGinniss, & Krauss, 2013).

The NCLEX-RN examination is a computerized adaptive test (CAT) designed to test knowledge, skills, and abilities essential to the safe and effective practice of nursing at the entry level. Candidates must receive a passing score in order to be licensed to practice as a nurse in the United States (NCSBN, 2014). In addition, NCLEX-RN is the benchmark by which nursing program quality is evaluated. Nursing schools, accrediting bodies, and state boards of nursing monitor NCLEX-RN first-time pass rates to evaluate program effectiveness (National League for Nursing [NLN], 2012b; Norton et al., 2006; Spurlock, 2013). In fact, state boards of nursing require that nursing education programs maintain an established NCLEX-RN first-time pass rate, which varies among states, to remain in operation within the state (Spurlock, 2013). Thus, it is imperative to identify those students at risk for failing the NCLEX-RN, not only for the welfare of the students but also to maintain the health of the nursing program.

Early Program Success

Early program success is defined as passing all courses with a grade of C or better at the end of the first semester of a four-semester prelicense nursing program and having no course withdrawals. Early program success has been studied less often in the literature (Newton, Smith, & Moore, 2007; Newton, Smith, Moore, & Magnan, 2007; Potolsky, Cohen, & Saylor, 2003). This phenomenon reveals a substantial gap in the literature. As attrition occurs most often at the end of the first semester of nursing school, primarily due to in the increased rigor common to nursing education and/or the adjustment to clinical

experiences, early identification and intervention are crucial to nursing student success (Hopkins, 2008; Jeffreys, 2004).

Successful On-Time Completion

Successful on-time completion is defined as graduation from a prelicensure nursing program in four consecutive semesters without any course failures, course repeats, withdrawals, drop-outs, or stop-outs. In addition to early program success, relatively few studies regarding nursing program completion or graduation are cited in the literature (Jeffreys, 1998; Simmons & Haupt, 2003; Simmons, Haupt, & Davis, 2004; Symes, Tart, & Travis, 2005). Although the bulk of literature examines NCLEX-RN success, it is of critical importance that program completion be studied. The paucity of recent literature regarding program completion represents a gap in the literature as well. As nursing program completion is required prior to taking the board exam (NCLEX-RN), it is critical to identify at-risk students as early in the process as possible.

Purpose of the Study

The purpose of the study is to examine the extent to which selected demographic characteristics predict early program success, successful on-time completion, and NCLEX-RN success in a baccalaureate nursing program. The information garnered from the study can fill the gap in the literature left by the paucity of studies examining the relationship of demographic variables to early program success, on-time completion, and NCLEX-RN success. Given the shortage of seats in nursing schools nationwide, it is imperative to

identify at-risk students early for the purpose of developing interventions intended to promote early program success, on-time completion, NCLEX-RN success, and ultimately entrance into the nursing profession.

Research Questions

1. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict early program success within a baccalaureate nursing program?

2. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict successful on-time completion within a baccalaureate nursing program?

3. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict NCLEX-RN success within a baccalaureate nursing program?

Conceptual Framework

As the profession of nursing advocates for health promotion and disease prevention worldwide, levels of preventative care have been developed in the field of epidemiology specifically for this purpose. Leavell and Clark (1965) developed the original concept of primary, secondary, and tertiary levels of prevention for the purpose of global health promotion and disease prevention. In epidemiology, primary prevention refers to actions that prevent disease processes or disability in the general population. Immunizations

against common childhood diseases such as polio serve as an example of primary prevention. Through immunization, populations are protected from acquiring polio as well as the long-term debilitating effects of the disease (Treas & Wilkinson, 2014).

Secondary prevention refers to the screening and diagnosis of disease states as well as prompt treatment. Interventions in secondary prevention are commonly performed in hospitals, clinics, and long-term care facilities. Mammography for breast cancer screening or colonoscopy for the detection of colon cancer in combination with prompt treatment for disease qualifies as secondary prevention (Treas & Wilkinson, 2014).

Prevention of long-term complication and deterioration in permanent disease is the focus of tertiary prevention. Rehabilitation services after a cerebral vascular accident or stroke would be categorized as tertiary prevention (Treas & Wilkinson, 2014).

Wells (2003), in the epidemiological approach to nursing student attrition, utilizes primary, secondary, and tertiary prevention as a metaphor to delineate the process of nursing school attrition into easily identifiable phases. For example, primary prevention generally refers to interventions designed to prevent disease and disability in healthy populations. Primary prevention as applied to nursing education would include thoughtful admission policies designed to recruit and admit those students adequately prepared for the rigor of nursing education. In the same way that immunizations prevent disease and disability, thoughtful admission policies serve as primary prevention by admitting those students least likely to fail at the outset. Logically, it follows that admitting those least likely to fail would result in higher rates of retention and, thus, primary prevention.

In addition to thoughtful admission policies, Wells (2003) suggests the following strategies in primary prevention. First, public awareness must be raised regarding the realities of nursing education and the nursing profession as a whole. Accurate information at the outset would reduce the number of students who leave nursing education due to unrealistic and over-romanticized perceptions of the nursing profession. Further, faculty development programs in primary prevention should be developed to include diversity and retention. Such faculty development opportunities would potentially increase awareness of the importance of faculty-student relationships in the retention of nursing students.

Secondary prevention generally includes those activities in the purview of disease diagnosis and disability prevention. Wells (2003) suggests that secondary prevention when applied to nursing student attrition would include identification (diagnosis) and interventions (treatment) to assist at-risk students. Policies used to identify students at risk for attrition as well as interventions such as structured academic assistance programs, peer and faculty mentoring programs, and increasing accessibility of available resources would all qualify as activities in secondary prevention of student attrition. In the same way that antibiotics are used to treat bacterial infection, interventions designed to identify and assist students at risk for attrition serve as secondary prevention in nursing program attrition.

Wells (2003) suggests the following interventions in secondary prevention. First, student satisfaction surveys could be conducted as screening devices to identify students who are at risk for attrition. In addition, such a survey could be used to identify barriers to student success. When results of the student surveys have been analyzed, interventions

specific to student satisfaction issues as well as barriers to success can be implemented to prevent student attrition.

Tertiary prevention or rehabilitation occurs after permanent disease or disability has been identified. Wells (2003) applies the concept of tertiary prevention to nursing student attrition through interventions that occur after failure or student leaving occurs. Activities in tertiary prevention are rehabilitative or healing in nature. Interventions at the tertiary level may occur at the program or individual student level. For example, at the individual student level, tertiary prevention may take the form of exit interviews or alternative career counseling. At the program level, tertiary prevention may take the form of qualitative exit interviews, focus groups, career counseling, and/or utilization of robust program assessment. Much in the same way that rehabilitative services after a client experiences a stroke improve functional capacity, exit interviews, focus groups, and program assessment serve to improve individual and aggregate outcomes after student failure.

In summary, Wells's (2003) epidemiological approach to nursing school attrition addresses three primary areas of concern. First, primary prevention is concerned with actions taken before student admission, such as nursing program admission policy, continuing education of nursing faculty regarding diversity of student populations, and creating realistic expectations of the nursing education at the outset. Second, secondary prevention is concerned with the identification of at-risk students as well as the development of appropriate interventions designed to reduce attrition. Finally, assessment both at the individual student and program levels may be identified as tertiary prevention. Ultimately, the results of the study inform attrition/retention challenges in nursing

education. Colleges and universities must be vigilant in identifying, monitoring, and intervening with those students who are at risk of failure (Glynn, Sauer, & Miller, 2003; Tinto, 1993).

Significance of the Study

As the nursing shortage in the United States reaches critical levels, schools of nursing face pressure to contribute increasingly larger numbers of new graduate nurses to the registered-nurse workforce. Early identification of at-risk nursing students enables faculty to design and implement interventions designed to promote early program success, successful on-time completion, NCLEX-RN success, and entrance into the nursing profession.

In addition, the study provides a broader understanding of the effect of selected demographic variables on early program success, successful on-time completion, and NCLEX-RN success within baccalaureate nursing education. Although the findings of the study are of particular interest to the admissions, policy, and standards committee at the study site, the results may be generalizable to similar baccalaureate programs in the United States. In addition, nursing programs may use the results of this study to develop interventions specifically designed to enhance early program success, successful on-time completion, and NCLEX-RN success of at-risk students. More specifically, early identification of at-risk students allows for remediation and development of interventions specifically designed to prevent attrition in this student population.

Definitions

Table 1 depicts important definitions for the study.

Table 1

Definitions

Term	Definition
At-risk student	A student who has been identified as having a lower probability of completing the nursing program.
Attrition	Dropping out of the nursing program (Jeffreys, 2004).
Course failure	Receiving a grade of D or F in any course. (Final course percentage below 77%.)
Early program success	Passing all courses with a grade of C or better at the end of the first semester of a four-semester prelicensure nursing program and having no course withdrawals.
English-as-a-second-language (ESL) nursing student	A nursing student for whom English is not the first language learned.
First-generation student	Students from families in which neither parent possesses more than a high school education (Pascarella et al., 2004; Tinto & the Pell Institute, 2004).
National Council Licensure Examination for Registered Nurses (NCLEX-RN)	A computerized adaptive test (CAT) designed to test knowledge, skills, and abilities essential to the safe and effective practice of nursing at the entry level. Candidates must receive a passing score in order to be licensed to practice as a nurse in the United States (NCSBN, 2014).
NCLEX-RN success	Receiving a passing score on the NCLEX-RN on the first attempt.
Nontraditional nursing student	A nursing student who is aged 25 years or older (NCES, 2002).
Successful on-time completion	Graduation from a four-semester nursing program in four consecutive semesters with no course failures, course repeats, withdrawals, drop-outs, or stop-outs.
Program completion	Completing the course of study to culminate in graduation.
Retention	Enrollment that is continuous, culminating in completion of the program of study.

Summary

A substantial nursing shortage is expected worldwide within the next 20 years. This nursing shortage is projected to occur from both the supply and demand sides of the equation. On the demand side, an aging population coupled with greater access to health

care granted through the Patient Protection and Affordable Care Act of 2010 has increased the demand for healthcare services. On the supply side, an aging nursing workforce points to increasing retirements over the next decade. Additionally, nurses prepared at the baccalaureate level and nursing faculty are presently in short supply. Shortages on both the demand and supply sides of the equation have placed pressure on schools of nursing to increase the number of new graduate nurses entering nursing practice. Given the increased demand for new graduate nurses, schools of nursing in the United States are unable to keep pace, despite the staggering number of qualified applicants turned away each year.

In summary, the paucity of recent literature regarding the extent to which selected demographic variables predict early program success, successful on-time completion, and NCLEX-RN success in baccalaureate nursing education represents a gap in the literature. It is critical to identify at-risk students as early as possible in the process. More specifically, early identification of at-risk students allows for remediation and development of interventions specifically designed to prevent attrition in this student population.

CHAPTER 2

REVIEW OF THE LITERATURE

The shortage of registered nurses in the United States has placed increased pressure on schools of nursing to increase annual enrollments and, of equal importance, to increase retention of students to graduation (AACN, 2011; Jeffreys, 2004). Nursing program attrition presents a number of challenges. Although attrition in schools of nursing decreases the number of new graduate nurses annually, attrition also exacts a social, financial, and psychological cost to the student, the school of nursing (SON), and the nursing profession. In addition, new graduate nurses lost through attrition represent a decline in the number of workers available to meet the needs of an increasingly complex healthcare environment (AACN, 2012).

The body of research in nursing program retention is focused primarily on making thoughtful admission decisions as well as on identification of causative student characteristics to explain existing attrition. Although research concludes that admissions decisions in schools of nursing should be made based on quantitative cognitive factors such as GPA and standardized test scores (Fowler & Norrie, 2009; Newton & Moore, 2009), attrition remains a concern. Thus, the next step in the retention puzzle is to identify the causative factors or characteristics of those students who do not succeed. The identification

of these characteristics can help nursing educators to develop remediation and retention programs for the purpose of preventing nursing program attrition.

The purpose of this chapter is to describe the present state of the literature relevant to the stated research subject. The literature review examines the state of the literature regarding retention/attrition theory in higher education, which is followed by a discussion of retention/attrition theory specifically in nursing education. The literature review then addresses the state of the literature regarding the four variables in nursing education as stated in the research question: nontraditional students, ESL students, male students, and first-generation students. The literature review is organized into the following categories: (a) a brief history of nursing education, (b) theories and models of student retention/attrition in higher education, (c) theories and models of student retention/attrition specific to nursing education, (d) admission decisions in nursing education, (e) retention/attrition in nursing education, (f) nontraditional students in nursing education, (g) ESL students in nursing education, (h) male students in nursing education, and (i) first-generation students in nursing education.

A Brief History of Prelicensure Nursing Education

Historically, the profession of nursing has held quite a different image from its current image. As churches were established during the Christian era, nursing care was organized in religious orders charged with caring for the sick and vulnerable, including the poor, the aged, widows, orphaned children, and slaves and prisoners (Black, 2013). Care during this time was given as Christian charity. After the Reformation, health care moved

to the hospital environment, nursing assumed a more subservient role, and care of patients was relegated to "uncommon" women: prostitutes, prisoners, alcoholics, and addicts (Black, 2013). The hours were long, the pay was poor, and those providing care were considered to be menial servants. Because a clear understanding of germ theory had not yet been developed, care was given at great risk to oneself (Black, 2013).

Although Florence Nightingale has been well known for her work with soldiers in the Crimean War, she also changed radically the way nurses were educated worldwide. In 1860, following her return from the Crimean War, Florence Nightingale established the Nightingale Training School for Nurses at St. Thomas Hospital in London (Faison, 2012). Florence Nightingale established training of nurses in teaching hospitals associated with medical schools. Students were selected carefully and lived on the premises of the hospital. Early nurses were trained utilizing an apprenticeship model, which gave rise to diploma programs in nursing (Faison, 2012). Early nursing education focused on the teachings of Florence Nightingale, primarily the importance of hygiene and fresh air from Nightingale's publication, *Notes on Nursing: What It Is, and What It Is Not* (Kalisch & Kalisch, 1978).

In the United States, nursing education arose from a need for care of the sick and injured necessitated by the Civil War. According to Faison (2012), early nursing education in the United States was modeled after the teachings of Florence Nightingale, with the first nursing education programs in Boston and New York. All programs had affiliation with a hospital and offered a hospital diploma upon completion (Faison, 2012).

Prior to 1896, nursing practice in the United States was largely unregulated (Smith, 2009). To protect the public in the United States and Canada from untrained and

incompetent nurses, the Nurse's Associated Alumni Organization was formed. This organization later became the American Nurses Association (ANA). Shortly thereafter, the American Society of Superintendents of Training Schools was formed for the purpose of setting student admission policy and setting limits on the number of hours that student nurses were required to work on the hospital units as they completed their education (Smith, 2009). The American Society of Superintendents of Training Schools later became the NLN.

As a response to nursing shortages during WWII, federal funding began for nursing education. The Nurse Training Act of 1943 provided tuition assistance, uniforms, and stipends over a 30-month period to complete nursing training (Smith, 2009). The Nurse Training Act of 1964 provided funds for construction as well as student assistance, student loans, and grants to institutions of higher education to increase the number of registered nurses in the United States. Ultimately, the Nurse Training Act of 1964 moved the training of registered nurses from hospital-based diploma programs to higher education (Smith, 2009). More specifically, the Nursing Training Act of 1964 led to the unprecedented growth of associate-degree nursing programs in community colleges in the United States (Smith, 2009).

In 1965, the ANA advocated for the baccalaureate degree to serve as entry into practice in the nursing profession. The ANA position paper advocated for the baccalaureate degree as the entry into professional nursing practice in the United States; and the associate degree prepared nurses to practice under a new "registered associate nurse" title and called for the elimination of the hospital-based diploma programs (Smith, 2009). Of the three

goals presented in the ANA position paper of 1965, the third goal has been nearly met, with only 4% of new graduate nurses holding a hospital diploma as their entry to nursing practice. Four decades have passed since the ANA position paper of 1965 advocated for the baccalaureate degree as entry to professional nursing practice, yet three modes of entry into nursing practice exist without differentiation in title or duties among these modes (Smith, 2009).

According to the RWJF (2013), associate-degree registered nurses comprise 53% of new graduate registered nurses in the United States. Associate-degree programs generally are located in community colleges and require at least two years of study in science and nursing, combined with clinical experience. At the end of study, graduates are awarded an associate degree in nursing (ADN; Robert Woods Johnson Foundation [RJWF], 2013). The largest number of nursing education programs are housed in associate-degree education, with 1,060 programs in the United States (NLN, 2012a).

Baccalaureate-prepared nurses comprise 43% of new graduate registered nurses in the United States (RWJF, 2013). Baccalaureate programs in nursing are generally university-based programs that combine liberal arts, science, and nursing content with clinical experience (RWJF, 2013). At the completion of their study, graduates are awarded a bachelor of science in nursing degree (BSN). At the present time, there are 677 baccalaureate nursing programs in the United States (NLN, 2012a).

Finally, although the hospital diploma was once the primary from of nursing education in the United States, only 4% of new graduate registered nurses hold hospital diplomas as their academic credential (RWJF, 2013). Hospital diploma programs are

generally located in teaching hospitals and utilize an apprenticeship model (RWJF, 2013). Upon completion, graduates are awarded a hospital diploma. Presently, there are 63 hospital diploma programs in the United States (NLN, 2012a).

Theories and Models of Student Retention/ Attrition in Higher Education

Much of the research on retention in higher education focuses on the first-year college experience. According to Faison (2012), nursing education in BSN programs are generally two years in length and located in the upper biennium of senior colleges or universities. Students focus on liberal arts, science, and math prerequisite courses in the first two years of study (Faison, 2012). Given the timing of nursing education, it would appear at the outset that much of the research in higher education retention would not apply to the population of interest. According to AACN (2013), entrance into the nursing program often requires a separate application process. Thus, admission to nursing education may be direct from the freshman year or may be achieved through a separate application process to the upper biennium at the completion of prerequisite courses. In addition, it is common for students to complete prerequisites at another institution and transfer to a four-year institution for their nursing education (Jeffreys, 2004). On the surface, common retention research would appear not to apply to the population of study. Consistent with the work of Tinto (1993) and Bean and Metzner (1985), transfer students as well as resident students are adapting to a new college experience in the upper biennium nursing program. For the resident student, adaptation to the norms, values, and rules of the

SON presents a new higher education experience. For the transfer student, all of the above adjustments to higher education are necessary in addition to adaptation to a new institution.

Spady: Student Satisfaction

Spady (1970) developed the first model of student attrition, based on Durkheim's (1951) work on suicide. Durkheim postulated that values shared by a group, as well as the existence of friendship relationships, reduce the incidence of suicide. Drawing a link between suicide and student leaving behavior, Spady (1970) posits that a shared value system, social integration, and friendship relationships increase student satisfaction and commitment to the institution of higher education. Thus, a student with a higher level of satisfaction and commitment to the institution would be less likely to leave.

Astin: Student Involvement

The work of Alexander Astin (1975) began as a longitudinal study of college attrition. Astin examines environmental or demographic factors to evaluate the effect on retention in higher education. The results of the study indicate that environmental or demographic factors that affected retention positively correlated with increased student involvement. Conversely, environmental or demographic factors that affected retention negatively correlated with lack of student involvement. Most importantly, student residence correlated positively with retention. Astin (1975) postulates that students who live on campus are more likely to have increased involvement with faculty, student government, and participation in fraternities and sororities on campus. Students who live

on campus develop a stronger identification with the institution and undergraduate life in general.

According to Astin (1975), part-time campus employment correlates positively with student retention. Although it would seem to detract from time a student spends in study, part-time campus employment increases involvement in much the same way as residential living on campus. Conversely, retention declines for those who work off-campus in full-time employment. Full-time employment necessitates allocation of time and energy unrelated to the student experience; thus, students who work full tme experience decreased levels of student involvement and decreased retention.

Later, Astin (1999) examined the concept of student involvement. By involvement, Astin refers to the amount of physical and psychological energy that is allocated to the college experience. Thus, students who allocate considerable physical and psychological energy to their studies, to activities on campus, to their peers, and to developing relationships with faculty are more likely to persist to graduation. Further, personal development and student learning are directly proportional to the level of student involvement in the activity or, more generally, in the higher education experience. Finally, the success of any program is related directly to the ability of the program to increase student involvement. As the foundation for building effective educational programs, Astin (1999) views the last two points as key.

Astin (1999) posits that the theory of student involvement realigns the focus of higher education from the measuring of the effectiveness of teacher activities to responsibility of the student in attainment of learning outcomes. It changes the focus from

what and how the content is delivered by the educator to motivation of the student to acquire the education. Where earlier work in retention (Chickering, 1969; Hanson, 1982) examines the outcomes in student development, Astin (1999) examines how the outcomes were met, namely through student motivation/ involvement.

It is important to note that Astin (1999) refers to time as the most precious resource. It is how students allocate time that determines the outcome of their education. Retention is enhanced when students allocate time to building relationships with peers and faculty. In addition, the amount of time and energy allocated to study greatly enhances the retention odds for the student. As with most resources, Astin asserts that time and energy are finite in nature. Students have only so much time and energy to devote to competing demands. Educators must understand that students must allocate time to family, friends, work, and outside interests. These competing demands also take time away from the college experience. Astin (1999) refers to student time and energy as a "zero-sum game" (p. 587).

Astin (1999) suggests that, for educators to assist students who may be struggling academically, the amount to time and energy allocated to various activities in the life of the student must be examined. From this examination, the level of involvement on the part of the student can be ascertained. Careful examination of the cause of academic difficulty can determine if poor study habits, competing responsibilities, or lack of motivation is the cause of academic difficulty for the student.

Tinto: Integration into the College Experience

Although Astin (1999) examines retention through the lens of student development and involvement in the college experience, Tinto (1993) postulates that integration into the college experience is a key factor in student retention. Grounded in the anthropological work of Van Gennep (1960) and the work of Spady (1970), Tinto (1993) advances that students must leave their familiar understanding and experience a transition leading to integration into the college experience. During this transition, "the person begins to interact in new ways with the members of the new group into which membership is sought" (Tinto, 1993, p. 93). Thus, retention is related directly to the ability on the part of the student to fully adapt to the norms and values of the new institution when distancing themselves from their lives before higher education.

Tinto (1998) viewed academic and social integration as independent but complementary concepts. Earning high grades must be integrated into the norms and values of the institution academically, but it is equally important to develop relationships with peers and faculty. Tinto asserts that both academic and social integration are important to persistence in higher education. Further, students who are either academically or socially integrated into the college experience are more likely to persist to graduation. More importantly, students who are both academically and socially integrated are even more likely to persist. It can also be said that attributes of the student may determine the ease with which integration occurs. Berger and Milem (1999) assert that students who succeed in integration into the higher education environment already possess beliefs, behaviors, and values common to the college experience.

Although Astin's (1999) model of student involvement and Tinto's (1998) model of academic and social integration are similar, Tinto's model provides a theoretical base that allows for further quantitative research in retention (Metz, 2002). According to Metz, it is the concept of integration that forms the conceptual framework around which empirical research in retention has been built. Although Tinto's (1998) model has been placed "near paradigmatic status" (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007, p. 13), studies have shown limited support. Braxton, Sullivan, and Johnson (1997) examined 40 studies to ascertain a link between academic integration and student persistence. Nineteen of the studies failed to show that academic integration was positively correlated with student persistence. Social integration has enjoyed more robust support in the literature (Kuh et al., 2007); thus, institutions that encourage greater social integration into the college experience are more likely to experience greater student retention.

Tinto (1982) notes several areas in which the integration model may fall short. First, the model does not consider the financial pressures that students may experience that cause attrition. Second, it does not differentiate between students who transfer between institutions and those who experience permanent withdrawal from higher education. Finally, it fails to differentiate among demographic variables such as gender, race, ethnic origin, and socioeconomic status or between the two-year institution experience and the four-year institution experience.

Tinto (1998) examines the relative importance of academic and social integration. Tinto advances that "the academic and social systems of colleges overlay both classroom and college settings in such a way that experiences within and beyond the classroom both

impact upon student persistence" (p. 169). Tinto concludes that in two-year commuter schools, academic integration is more important than social integration as students experience the institution primarily through classroom and lab experience. In smaller residential four-year institutions, social integration appears to be more important. Finally, Tinto (1998) and Astin (1999) are consistent in stating that involvement matters most in the first year of college. Tinto (1998) advances that because attrition occurs most frequently in the first year of college, the first 10 weeks are crucial to integration into the higher education experience.

More recently, Tinto (2012) revisited the work of retention in higher education. According to Tinto, an increase in access to higher education, especially by those of lower socioeconomic status, as well as efforts in retention over the past three to four decades, has garnered only modest increases in student persistence to graduation. Tinto (2012) advances that institutions of higher education have failed to implement coherent policies regarding retention. "Institutions invest in a laundry list of actions, one disconnected from another. The result is an uncoordinated patchwork of actions whose sum impact on student retention is less than it could or should be" (Tinto, 2012, p. 5). Tinto advocates for an institutional framework that emphasizes clearly stated expectations of success (academic as well as financial), social support systems, continuous assessment, feedback of student performance, and student engagement both in and out of the classroom. Finally, Tinto regards the classroom as the primary point of engagement in higher education retention efforts, especially for the growing nontraditional student population.

Bean: The Concept of Fit

Bean (1983) expands upon the early work of Tinto (1982) and Astin (1975) by adding academic and environmental variables, student goals and intent, and student expectations to the theoretical work in retention/attrition research (Metz, 2002). Bean (1983) addresses the concept of "fit" with the institution. In the model, a student develops beliefs about the institution that shape attitudes and feelings of "fit" with the institution of higher education. In developing the model, Bean utilized work in the field of organizational behavior, linking student attrition or student leaving to leaving the workplace (Metz, 2002). Just as employees evaluate "fit" within an organization to form the basis for decisions to remain employed, students evaluate "fit" with the institution of higher education to determine persistence with the institution.

Bean and Eaton: A Psychological Approach

Later, Bean and Eaton (2000, 2002) take a psychological approach to persistence in higher education. They propose that traits of self-efficacy are strongly correlated with the ability to succeed in higher education. Those with higher levels of self-efficacy are more likely to succeed, regardless of the difficulty and challenges, but those with lower levels of self-efficacy are more likely to give up and leave the institution. Bean and Eaton also examine the effect of locus of control. They posit that students with an internal locus of control are more likely to persist but those with an external locus of control may give up due to a belief that fate has determined their outcome.

Pascarella and Terenzini: Faculty-Student Interaction

Pascarella and Terenzini (1980) developed a model that focuses on the informal communication or contact between students and faculty. Pascarella and Terenzini advance that informal communication between students and faculty influences educational outcomes. Further, Pascarella and Terenzini conclude that the amount of time students spend interacting with faculty both in and out of the classroom is instrumental in determining student intent to persist at the particular institution.

Bean and Kuh (1984) also examine the effect of faculty-student interaction. The focus of their study determines whether a relationship exists between GPA and informal faculty-student interaction. The study failed to find a significant relationship between GPA and informal faculty-student interaction. Later, Benda (1991) conducted a study of BSN-degree students specifically and failed to find a statistically significant relationship between faculty interaction and nursing student retention.

Theories and Models of Student Retention/ Attrition Specific to Nursing Education

Wells's Epidemiologic Approach to Attrition in Schools of Nursing

Wells (2003) developed an epidemiologic approach specific to attrition in schools of nursing. Wells challenges the application of Tinto's (1993) work to attrition in nursing programs. As an example, Wells cites the overall growth in numbers of nontraditional students in nursing education. Generally, nontraditional students are more likely to suffer

from stressors that are unrelated to integration into the college experience. For example, nontraditional students may experience stressors in the balance of work, nursing education, and family responsibilities. Thus, consistent with Bean and Metzner (1985) and Metzner and Bean (1987), Wells (2003) concludes that Tinto's (1993) work may not be completely applicable to the nursing student experience.

In an epidemiological approach to nursing student attrition, Wells (2003) utilizes primary, secondary, and tertiary prevention to delineate the process of nursing school attrition into easily identifiable phases. For example, primary prevention generally refers to interventions designed to prevent disease and disability in healthy populations. Primary prevention as applied to nursing education would include thoughtful admission policies designed to recruit and admit those students adequately prepared for the rigor of nursing education. In addition, Wells suggests raising public awareness regarding the realities of nursing education and the nursing profession in general. Accurate information and expectations at the outset could reduce the number of students who leave nursing education due to unrealistic expectations and/or an over-romanticized view of the nursing profession. Logically, it follows that admitting those least likely to leave would result in higher rates of retention, thus primary prevention.

Secondary prevention generally includes those activities in the purview of disease diagnosis and disability prevention. Wells (2003) suggests that secondary prevention when applied to nursing student attrition would include identification (diagnosis) and interventions (treatment) to assist at-risk students. Policies used to identify students at risk for attrition as well as design interventions, such as structured academic assistance

programs, peer and faculty mentoring programs, and increasing accessibility of available resources, would all qualify as activities in the secondary prevention of student attrition. In addition, Wells (2003) suggests conducting student satisfaction surveys early in nursing education to identify students who are at risk for attrition. Such surveys could identify barriers to student success and lead to increased access to faculty and resources necessary to success.

Tertiary prevention or rehabilitation occurs after permanent disease or disability is identified. Wells (2003) applies the concept of tertiary prevention to nursing student attrition through interventions that occur after failure or student leaving occurs. Activities in tertiary prevention are rehabilitative or healing in nature. Interventions at the tertiary level may occur at the program or individual student level. For example, at the individual student level, tertiary prevention may take the form of exit interviews or alternative career counseling. At the program level, tertiary prevention may take the form of qualitative exit interviews, focus groups, career counseling, as well as the utilization of robust program assessment. Much in the same way that, after a client experiences a stroke, rehabilitative services improve functional capacity, exit interviews, focus groups, and program assessment serve to improve individual and aggregate outcomes after student failure.

Jeffreys's Nursing Undergraduate Retention and Success (NURS) Model

Jeffreys (2004) developed the NURS model. Jeffreys's model advances that retention is a multifactorial issue of academic, environmental, and social integration factors. Consistent with the work of Tinto (1993), Bean and Metzner (1985), Bean and Eaton

(2000), and Bandura (1997), the model provides an organizing framework to examine the multidimensional factors inherent to retention specifically in undergraduate nursing students. Jeffreys (2007) posits that retention is an interaction of student profile characteristics, affective factors, academic factors, environmental factors, professional integration factors, academic outcomes, psychological outcomes, and outside surrounding factors. Further, the voluntary decision to persist or the involuntary result of failure occurs at the end of each nursing course (Jeffreys, 2007). Finally, the model assumes that students can benefit from support strategies designed to enrich socialization into the institution as well as into the profession of nursing.

Jeffreys's work is consistent with previous retention theory regarding nontraditional students (Bean & Metzner, 1985; Metzner & Bean, 1987). First, Jeffreys (2007) asserts that student support strategies should be designed with empirical evidence and specific student goals in mind. Further, Jeffreys advances that environmental variables are more important than academic variables for this student population. Although consistent with previous work in social integration (Tinto, 1993), Jeffreys (2004) utilizes the concept of professional integration or socialization into the nursing profession as a means to discuss student interaction with the college environment. At the center of the NURS model, variables of professional integration and socialization include faculty advisement, peer and faculty mentoring programs, membership in professional organizations, and attendance at professional functions.

Leading to the development of the NURS model, Jeffreys (2002) published a study regarding the multifactorial problem of attrition in nursing education. This study utilized a

pretest/posttest of participants in an enrichment program led by peer mentor/tutors. Utilizing descriptive reduction techniques, the study concludes that environmental factors (family and finances) exert the greatest influence on attrition. Jeffreys postulates that at-risk students may be those who overestimate their academic preparation and underestimate their environmental and social supports.

Shelton: A Model of Nursing Student Retention

Specifically addressing nursing school attrition, Shelton (2012) developed a model to explain attrition among students in programs of nursing. The model is based on the work of Tinto (1993) and Bandura (1997). The model proposes that interaction among student background variables, internal psychological processes, and external supports determine student persistence. Student background variables are defined by Shelton (2012) as factors that have previously affected academic performance. These include but are not limited to gender, cognitive variables, financial considerations, family educational level, family responsibilities, marital status, and employment. Further, the variables chosen by Shelton (2012) were identified as academic risk factors for nursing student attrition in a variety of studies (Jeffreys, 2007; Sayles, Shelton, & Powell, 2003; Seago, Wong, Keane, & Grumbach, 2008; Wells, 2003).

Shelton's (2012) model also identifies internal psychological processes important to nursing student retention. These include academic self-efficacy, ability, goals, and goal commitment. The variables chosen as internal psychological processes were identified by Tinto (1993) and Bandura (1997). Internal psychological processes influence the decision

to seek admission and enroll and to persist and achieve within the program, as well as the student's perception of the benefits of continuation in the program.

External supports are also considered in Shelton's (2012) model. These include support from family, peers, and employers, as well as academic supports. Drawing on the work of Bean and Metzner (1985), Shelton described external supports as either psychological or functional. According to Shelton, psychological supports include caring and encouragement, and functional supports help students complete tasks and achieve goals. Thus, functional support promotes integration into the nursing school experience as advanced by Tinto (1993), and psychological support promotes student self-efficacy as advanced by Bandura (1997). Several studies have shown that students who receive both functional and psychological support persist to graduation (Ramsburg, 2007; Rees, 2006; Shelton, 2003). In contrast, Peterson (2009) failed to establish a significant relationship among self-esteem, self-efficacy, and academic success.

Admission Decisions in Nursing Education

When examining the multifactorial nature of attrition in nursing education, it is important to evaluate the effect of admissions decisions on student attrition. The literature overwhelmingly prescribes a quantitative approach to admission decisions. The quantitative approach generally utilizes a combination of prenursing GPA and standardized testing. A variety of standardized tests are available that may be utilized to assist in nursing admission decisions. The American College Test (ACT) by ACT Inc. and the Scholastic Aptitude Test (SAT) by the College Board, as well as the Test of Essential Academic Skills

(TEAS) by Assessment Technologies Institute, the Health Education Systems Incorporated (HESI) exam, and Educational Resources Inc. (ERI) are commonly utilized. TEAS, HESI, and ERI are tests designed to assist specifically in nursing school admissions (Newton Smith, Moore, & Magnan, 2007).

Multiple studies have indicated that first-semester success may be predicted through the standardized testing of nursing school candidates (Hopkins, 2008; Newton, Smith, Moore, & Magnan, 2007; Sayles et al., 2003; Wolkowitz & Kelley, 2010). Traditionally, standardized testing has been utilized to gauge student readiness for the rigor of nursing program content as well as a predictor for eventual success on the NCLEX-RN. Newton, Smith, Moore, and Magnan (2007) report that the TEAS entrance examination is more predictive of first-semester success than is GPA. Additionally, Newton, Smith, Moore, and Magnan (2007) conclude that the TEAS exam provides valuable information regarding core knowledge that GPA alone does not.

Standardized subscores may also have a role in admission decisions (Hopkins, 2008; Sayles et al., 2003; Wolkowitz & Kelley, 2010). Each of the standardized tests reports subject-area subscores. Generally, subscores are reported in the areas of reading, math, science, and English. Consensus in the research has not been reached as to the specific predictive value of subscores. Hopkins (2008) and Sayles et al. (2003) indicate that high reading subscores on standardized tests are predictive of success in nursing school. In contrast, Wolkowitz and Kelley (2010) indicate that science subscores are predictive of success. Performance in mathematics has also been studied. Although Hopkins (2008) indicates that mathematics scores are predictive of success, Sayles et al. (2003) do not draw

the same conclusion. Finally, although reading and verbal ability have traditionally been considered important, Wolkowitz and Kelley (2010) reveal a correlation in early nursing-school success with high scores in science, followed by reading, English, and, last, math.

GPA has also been studied as it relates to admission decisions. Seldomridge and DiBartolo (2004) advance that a minimum entrance GPA of 2.5/4 is associated with success in passing nursing board exams (e.g., NCLEX-RN). In addition, a grade of C or better in pathophysiology is predictive of success in nursing school. Newton, Smith, Moore, and Magnan (2007) conclude that prenursing GPA is statistically significant in predicting early nursing-school success, but Hopkins (2008) concludes that quantitative admission policies that include standardized test scores as well as GPA are predictive of early nursing-school success.

In a study conducted by Ukpabi (2008), results of standardized admission tests (e.g., TEAS, HESI, NLN) were utilized to identify at-risk nursing students. In addition, standardized testing was utilized to develop academic support services for at-risk students. Ukpabi (2008) concludes that standardized testing provides statistically significant indicators to identify those students who are at risk for failing. The results of the study are applicable to attrition from the nursing program as well as NCLEX-RN success.

Korvick, Wisener, Loftis, and Williamson (2008) evaluated the success of first-semester nursing students in a single nursing program. In the retrospective quasi-experimental study, the researchers found that prerequisite GPA for students who held a baccalaureate degree in another discipline prior to entry into the nursing program correlated with success in the program. Further, the researchers found that when students who did not

hold a baccalaureate degree prior to entry but maintained a B or better average in prerequisite courses were isolated from lower performing students, the B GPA correlated with first-semester success. However, Ukpabi (2008) does not cite a correlation between prerequisite GPA and success.

McLaughlin, Moutray, and Muldoon (2008) examined the role of personality and self-efficacy in admission decisions. The results of the study conducted in the United Kingdom revealed that students who displayed an extrovert personality type were more likely to withdraw from the nursing program. In addition, those students who displayed neuroticism were more likely to remain in the nursing program. Finally, the researchers concluded that self-efficacy was a statistically significant predictor of final grade in the nursing program. Thus, students who displayed positive self-esteem and self-efficacy performed favorably in nursing school. However, McLaughlin et al. (2008) do not discuss the ethical implications of screening nursing school applicants by personality type. Interestingly, in the United States, the admission process favors extroverts and, thus, may be unintentionally selecting students who are less likely to complete the program (McLaughlin et al., 2008).

Critical thinking, as well as aptitude, has been examined in the literature. Ellis (2006) examined critical thinking in nursing students and concludes that higher critical-thinking scores on standardized tests correlate significantly with early nursing-program success. Newton and Moore (2009) examined aptitude in prenursing courses as indicators of success. The Newton and Moore study indicates that prenursing scholastic aptitude serves as an indicator of early success (first semester) but does not predict later retention in

nursing. As the study was done utilizing a convenience sample of one cohort of students, more research would be needed to draw strong conclusions from the study.

Attrition in Nursing Education

According to Tinto (1993), attrition is multifactorial, including both social and academic factors, which coalesce to form the student experience. Tinto (1993) posits that it is the duty of an institution to identify and intervene to assist those students who are at risk for failure. An extensive amount of research has been conducted in an effort to identify causative factors in nursing student attrition. Specifically in nursing education, minority status, first-generation college student status, and competing roles between family and school have been studied in an effort to explain attrition (Fowler & Norrie, 2009; Jeffreys, 2004; Wells, 2003). In an effort to quantify the elusive variable to explain nursing school attrition, Fowler and Norrie (2009) developed an at risk fot attrition tool. Fowler and Norrie (2009) posit that such a prediction tool could be utilized to identify at-risk nursing students and lead, ultimately, to interventions specifically targeted toward individual student success. Ultimately, Fowler and Norrie (2009) conclude that academic ability, as well as financial and family support, impact positively on student success, but financial concerns, excessive workload both in and out of the classroom, and lack of support on the part of family and faculty impacted negatively on student success.

Although the Fowler and Norrie (2009) study was large, some limitations exist for generalization to the population in question. First, the study was done in the United Kingdom with a population that was overwhelmingly Caucasian and British; thus, direct application to the United States may not be possible. Second, the tool developed as a

function of the study seemed cumbersome; thus, practical use of the tool came into question.

Both Fowler and Norrie (2009) and Newton and Moore (2009) present a similar conclusion. Although the bulk of research in the area of attrition in nursing schools in the United States continues to focus on the identification of a specific student characteristic to explain student leaving, such as ESL status, nontraditional student status, self-efficacy, and minority status, Newton and Moore (2009), as well as Fowler and Norrie (2009), define these characteristics as environmental or demographic. Such environmental or demographic characteristics influence existing student aptitude; thus, admission decisions should be made quantitatively, followed by identification of at-risk students for the purpose of developing appropriate interventions to prevent student attrition. Rather than waiting for the results of exit surveys, at-risk students should be identified early for the purpose of designing functional and psychological supports to enhance retention (McLaughlin et al., 2008). Fowler and Norrie (2009) suggest that future research should delve into the development of theory directly applicable to admission and retention policy rather than continue to search specific student characteristics to explain attrition. Fowler and Norrie (2009) advocate for a "holistic, proactive, systematic, proportionate, and sustained approach" (p. 1198) to reduce attrition.

Nontraditional Students in Nursing Education

According to Tinto (2012), the traditional student is defined as the student who enrolls as a full-time residential student immediately following high school. Traditional

students constitute a mere one quarter of the student population in higher education. Further, Tinto advances that many students live and work off-campus and, thus, attend part time. Many nontraditional students experience college exclusively from the classroom as they attend classes and leave campus quickly to attend to their various responsibilities outside of higher education. For this population of students, retention efforts must be focused in the classroom (Tinto, 2012).

Using results from the NCES, Jenkins (2012) points out that of the 17.6 million students enrolled in higher education, only 15% would be what would be considered to be traditional students attending a four-year institution and living on campus. Further, he notes that 37% are enrolled part time and 32% are working full time. In addition, over 33% are over 25 years of age and 25% are over 30 years of age. Finally, nontraditional students are more than twice as likely as traditional students to leave higher education in the first year.

Bean and Metzner (1985) developed a conceptual model to explain nontraditional undergraduate student attrition. The model proposed that nontraditional students differ from traditional students in that they are more directly affected by external environmental factors and less affected by social integration. Although the models and theories proposed by Astin (1975, 1999), Tinto (1993), and Pascarella and Terenzini (1980) discuss the importance of involvement, integration, and faculty engagement on student retention, Bean and Metzner (1985) posit that nontraditional students do not value social integration in the same way that traditional students do. Therefore, the older models do not apply.

Bean and Metzner (1985) advance that nontraditional students experience higher education differently. Nontraditional students experience competing demands for their time and energy. Nontraditional students experience less interaction with faculty, less interaction with peers, less participation in extracurricular activities, less use of campus resources. Environmental variables were defined as financial pressures, hours of employment, outside encouragement, family responsibilities, and opportunity for transfer. Bean and Metzner (1985) posit that environmental variables are more important than academic performance to the persistence decision of the nontraditional student.

According to Jeffreys (2004), a nontraditional student is defined as a student who meets at least one of the following criteria: is 25 years or older, is enrolled part-time, is male, is a member of a racial or ethnic minority group, speaks English as a second language, has dependent children, received a general equivalency diploma (GED), and/or requires remedial courses. Jeffreys (2007) conducted a multisite study utilizing the NURS model as an organizing framework for the study. The study was specifically designed to ascertain factors that support or restrict retention in nontraditional nursing students. The NURS model is a nursing-education-specific framework developed to examine the multidimensional factors affecting retention and persistence to graduation.

The 1,156 respondents were primarily associate-degree, commuter students and represented each category of nontraditional students. Utilizing descriptive reduction techniques, the data were analyzed to ascertain those variables that support as well as hinder retention. The results revealed that family emotional supports, as well as friends inside and outside of class, were greatly supportive to nontraditional students. Conversely,

hours of student employment, financial status, employment responsibilities, family responsibilities, and family crises were greatly restrictive to nontraditional students.

Consistent with the work of Bean and Metzner (1985), Jeffreys (2007) defines environmental factors as factors that affect academic performance and persistence separate from higher education. Examples of environmental factors include financial concerns; family and work responsibilities, including childcare arrangements; transportation concerns; and emotional support systems available to the student. Also consistent with the work of Bean and Metzner (1985), the NURS model reveals that persistence decisions made by nontraditional students seemed to be more greatly influenced by environmental factors than persistence decisions made by traditional students.

For the purpose of this study, age (over the age of 24 years) at the time of admission to the nursing program is the defining characteristic for a nontraditional student. Consistent with the NCES (2002, 2015), age is a variable common to the largely heterogeneous nontraditional student population. Defining the nontraditional college student in this way encompasses challenges common to the nontraditional student experience, including family responsibilities, work responsibilities, and other competing circumstances that may interfere with completion of the nursing program (Bean & Metzner, 1985; Jeffreys, 2004).

Most recently, Fettig and Friesen (2014) utilized a qualitative design through semistructured interviews of 10 nontraditional graduates of a midwestern nursing program. Participants in the study reported that collaboration and learning occurred through social integration, friendship relationships, and caring connection to fellow students in the program. Consistent with the work of Tinto (1993), Fettig and Friesen (2014) conclude that

peer-group interactions contribute to the learning and socialization process for nontraditional nursing students. In addition, Fettig and Friesen (2014) conclude that faculty members are responsible for creating an atmosphere of inclusion in their institutions to prepare graduates for professional practice in diverse healthcare environments.

ESL Students in Nursing Education

As the United States population becomes more diverse in nature, representation of racial and ethnic minorities within the healthcare workforce has failed to keep pace. Although minority populations constitute 37% of the United States population, only 19% of registered nurses belong to such racial/ethnic minority groups (Budden, Zhong, Moulton, & Cimiotti, 2013). To break down the ethnic/minority composition of the registered nurse workforce further, 83% of the registered nursing workforce are Caucasian, 6% are African American, 6% are Asian, 3% are Hispanic, 1% is American Indian/Alaskan Native, 1% is Native Hawaiian/Pacific Islander, and 1% declared as other (Budden et al., 2013). According to US Census Bureau (2012) data, ethnic and racial minority groups are projected to become the majority by 2043; thus, the improvement of healthcare quality and the elimination of healthcare disparities require a diverse population of clinicians who exhibit the values of cultural competence at every level within the healthcare system (AACN, 2014b; Sullivan Commission, 2004).

ESL nursing students represent a subgroup of students who often struggle in nursing programs as well as on national board exams (e.g., NCLEX-RN) in the United States. Attrition rates as high as 85% for ESL nursing students have been reported in the literature

(Gilchrist & Rector, 2007). In addition, Bosher and Bowles (2008) report a 40% lag in first-time NCLEX-RN pass rates between ESL and native English speakers regardless of grades received when in the nursing program.

English Language Proficiency

The ability to communicate effectively cannot be overstated in its importance to the nursing student. Low-level English language proficiency has been identified as problematic for ESL nursing students. Difficulties with reading comprehension and speed of reading are common struggles of ESL nursing students (Sanner, Wilson, & Samson, 2002). ESL nursing students often translate from English to their native language and back to English, which affects the speed with which reading can be accomplished, particularly during high-stakes multiple-choice testing conditions (Simms-Giddens, 2002). In addition, ESL nursing students verbalized the burden of learning the English language and the additional language of nursing simultaneously.

ESL nursing students struggle traditionally with writing proficiency, citing technical vocabulary, grammar, and syntax as problematic in completing written assignments and nursing care plans (Donnelly, McKiel, & Hwang, 2009; Leki, 2003). Speaking and listening in a second language prove problematic as well. According to Sanner et al. (2002), ESL nursing students were self-conscious about speaking in class, which resulted in fewer questions asked in class and diminished social interactions with peers. In addition, they struggled with the dual demands of taking notes during the delivery of lecture content,

particularly in courses in which lectures were delivered at a high rate of speed (Amaro, Abriam-Yago, & Yoder, 2006).

English language difficulties pose challenges for ESL students in course exams as well as the NCLEX-RN, which both utilize the multiple-choice testing format (Bosher & Bowles, 2008; Olson, 2012). Worldwide, essay questions are routinely used to assess student progress; thus, multiple-choice testing is uncommon in the educational systems of many countries (Brown, 2008). According to Bosher and Bowles (2008), multiple-choice questions with long wordy scenarios challenge the language skills of ESL students rather than accurately assess nursing knowledge. Findings of the study support further research on the development of appropriate testing accommodations for ESL nursing students, including the removal of cultural bias from multiple-choice examinations (Bosher & Bowles, 2008).

Acculturation and the ESL Nursing Student

The issue of acculturation emerged as a common theme within the literature. Salamonson, Everett, Koch, Andrew, and Davidson (2008) studied the use of the English Language Acculturation Scale (ELAS). The ELAS was found to be a valid and reliable tool used to measure the English-language aspect of acculturation. Academic performance among ESL students was found to be related to levels of English language acculturation. Although causation was not proven, a connection and direction for further research was presented.

ESL nursing students also struggle with language in the clinical arena. When communicating in clinical environments, students expressed difficulty in introducing themselves to patients, making small-talk with patients, understanding patient requests, and understanding abbreviations and verbal reports from the nursing staff (Rogan, San Miguel, Brown, & Kilstoff, 2006). Often, ESL students reported that they experienced difficulty understanding directions given in the clinical arena and were embarrassed to ask questions (Bosher & Smalkoski, 2002). Perhaps most troubling, students reported the fear of making an error in patient care due to lack of English language proficiency (Donnelly et al., 2009).

Choi (2005) and Etowa, Foster, Vukic, Wittstock and Youden (2005) found that ESL students who had meaningful social interactions with fellow English-speaking students in their host country adjusted more effectively to nursing education. Although Choi (2005) focuses on interventions in the classroom, Etowa et al. (2005) focus on social interaction outside the classroom, such as collaborative partnerships in the community and social interactions with peers outside of the classroom. Both studies confirm the importance of English-language acculturation in nursing student success.

Retention and the ESL Nursing Student

A number of interventions have been studied in an effort to understand retention of this student population. Brown (2008) studied the use of monthly workshops and focus groups for the purpose of ESL student retention. Impressive results were reported as a result of the innovative program in retention. In the first year of the program, none of the

ESL students withdrew from the nursing program. In addition, a 40% decrease in overall attrition of ESL nursing students was the expected outcome of the program.

Gardner (2005a) published a descriptive study involving the successful Minority Retention Project, utilizing the Tinto (1993) theory of student retention. Interventions included a mentoring network, language partnerships with native English speakers, family night to garner support among student families, cultural exchange seminars and support groups for minority students.

In addition, Gardner (2005c) published a case study that outlined the factors contributing to success among ethnic, racial, and ESL minority students within nursing schools in the United States. The case study proposes a number of recommendations to promote success among this population of nursing students. These recommendations include encouraging students to become involved and invested in university culture, training in communication techniques, assertiveness training for students who originate from male-dominant cultures, development of a peer support group comprised of students from a variety of cultures, encouragement of immersion into American culture, and encouragement of cultural exchange among all students in the nursing program. The overriding theme in Gardner's (2005a, 2005b, 2005c) work is the importance of faculty engagement. According to Gardner (2005c), it is through caring and sensitive faculty committed to a supportive learning environment that success can be achieved.

Sanner and Wilson (2008) studied the lived experiences of ESL nursing students in an effort to ascertain the reasons for course failure. Interestingly, each student was able to identify possible causes of course failure directly related to ESL status, but each student

expressed that ESL status was not the overriding cause of course failure. Discrimination and stereotyping on the part of faculty and peers was, according to the students, the primary cause of course failure. Further, lack of patience on the part of peers and faculty in listening to the student accent contributed to feelings of discrimination and stereotyping.

Academic progress by ESL students requires additional time and effort in learning not only the English language but also the languages of health care and nursing specifically (Mulready-Shick, 2013). According to Mulready-Shick, although power relationships and dominance by faculty interfered with learning, students progressed, despite obstacles. Although the work by Gardner (2005a, 2005b, 2005c), Sanner et al. (2002), and Mulready-Shick (2013) provide a comprehensive view of the lived experiences of these particular student populations, more research is needed to generalize beyond the study groups.

According to the Institute of International Education (2010), 62% of the nearly 700,000 international students in the United States come from Asian countries. These students come to the United States primarily from China, Korea, India, Taiwan, Japan, and Vietnam. Asian ESL students face language and cultural barriers similar to those faced by their African and Hispanic ESL peers, including difficulty with testing, classroom culture, and volume of required reading (Scheele, Pruitt, Johnson, & Xu, 2011). Although the research is limited regarding the retention rates among Asian ESL students, Guhde (2003) and Xu and Davidhizar (2005) discuss the increased rates of attrition among this group of students as the numbers of international students from Asian countries continue to increase.

A number of studies have discussed the importance of effective communication in nursing education (Guttman, 2004; Malu & Figlear, 1998; Phillips & Hartley, 1990).

Educational approaches were offered in these studies to improve student outcomes, including assessment of English language proficiency prior to admission, remediation of English language skills for those who do not meet the stated criteria, and student orientation programs for ESL students that contain access to resources and support services specific to this student population. Two main strategies for remediation of English language proficiency have been suggested in the literature: referral to university language centers for individual or group study in language proficiency (Guhde, 2003) and/or development of nursing-specific workshops designed to assist ESL students in language skills specific to nursing education (Salamonson et al., 2008; Zhang & Mi, 2010).

Institutions of higher education face substantial challenges in addressing the issues facing the ESL nursing student population. As the numbers of ESL students continue to increase, nursing programs nationwide need to serve a more linguistically diverse student population with varying levels of English proficiency, prone to early withdrawal and low levels of educational attainment (Curry, 2004). The IOM (2011) advocate greater diversity in the nursing workforce to decrease healthcare disparities and improve the overall health of the population of the United States. If nursing education is committed to meeting the challenge advanced by the IOM, then greater attention must be paid to the challenges faced by ESL-identified nursing students (Mulready-Shick, 2013).

Male Students in Nursing Education

Nursing is a profession that can be described as overwhelmingly Caucasian and female. According to the RWJF (2010), although the Caucasian non-Hispanic population

constitutes 65.6% of the United States population, 83.2% of the registered nurse population is Caucasian. Further, females outnumber males by a ratio of over 15:1 in nursing (RWJF, 2010). Although men comprise 50% of the world population, only 9.6% of registered nurses in the United States are men. Although the percentage of nurses who are male has increased from 2.7% in 1970 to 9.6% in 2013 (United States Census Bureau, 2013), males continue to represent a relative small percentage of practicing registered nurses in the United States. Global comparisons reveal a similar trend. Males comprise 5.6% of Canadian nurses, 10.0% of registered nurses in the United Kingdom, and 18.0% of nurses in Germany (German Nurses Association, 2004; LaRocco, 2007; O'Lynn, 2007).

The literature regarding men in the nursing profession has examined the reasons for men's choice of nursing as a profession as well as the characteristics of men who choose to enter the profession (Aldag & Christensen, 1967; Boughn, 2001; Galbraith, 1991; Perkins, Bennett, & Dorman, 1993). Historically, men are socialized differently from women and experience differing expectations from family and peers regarding suitable career choices (Ellis, Meeker, & Hyde, 2006). Traditionally, nursing has been viewed as a female profession, and the image has not substantially changed over time (Meadus, 2000; Villeneuve, 1994).

Substantial barriers for men seeking entry into the profession of nursing have been reported in the literature. Sexual stereotypes have been reported in the literature; primarily, it is assumed that those who seek nursing as a career are homosexual (Hart, 2005; Meadus & Twomey, 2007). According to Meadus and Twomey (2011), such assumptions are based on the belief that nursing is a profession suitable only for women. Homophobia and the

perception of nursing as a female profession are primary reasons for the avoidance by men of the profession of nursing (Nelson, 2006). According to Meadus and Twomey (2011), men who choose nursing as a career are continually questioned regarding their sexual orientation and masculinity. In response, men experience a constant pressure to justify nursing as a career choice (Meadus & Twomey, 2011). Meadus and Twomey (2007) report that despite the obstacles common to men's entry into the nursing profession, men report satisfaction with their career choice and would recommend nursing to other men. Conversely, Bartfay, Bartfay, Clow, and Wu (2010) report that the majority of male nursing students would not recommend nursing as a career to a male family member.

The mass media also contributes to the negative stereotypes attributed to males who choose nursing as a profession. According to Bartfay et al. (2010), nurses who are male are portrayed in a variety of negative ways in the mass media. The entertainment industry portrays male nurses as "oddities, psychotic killers, and being gay or highly effeminate in character" (p. 5). Lack of positive male role models was cited by Meadus and Twomey (2007) as one of the most common barriers perceived by men to entering the nursing profession. Further, in a qualitative study, Bartfay and Bartfay (2007) quoted one respondent: "Males are never portrayed as heroes. . . . If you see a male nurse in the movies-TV, he's crazy, psychotic, or a serial killer" (p. 211).

The overall consensus in the literature advocates for increased recruitment efforts of males into the nursing profession (Bartfay et al., 2010; Meadus & Twomey, 2007; Sherrod & Rasch, 2006). As the nursing shortage grows in the United States and globally, it becomes crucial that recruitment draws from a rich population of students from all ethnic

and racial groups as well as from both genders. The Sullivan Commission (2004) clearly advocates for a nursing workforce that reflects the racial, ethnic, and gender characteristics of the population that it serves.

History of Men in Nursing

Many believe that the history of nursing began with Florence Nightingale during the Crimean War and that male nurses are a recent development in the profession. In fact, recordings of the work of male nurses date from the Byzantine period through the Biblical period and the Middle Ages (Williams, 2006). During the Black Death of the 1300s, it was the Alexian Brothers, a religious order also known as the "Fathers of good death," who took an oath to care for the sick (Wittock & Leonard, 2003). During the Crimean War, men worked as both nurses and soldiers. As men were called away from their nursing duties to fight in the war, women became more involved in the nursing of the sick (Meadus, 2000).

It was during the Crimean War that Florence Nightingale developed the profession as it is currently perceived. According to Fealy (2004), since the beginning of modern nursing, the good nurse is portrayed as a good woman or a good mother. Florence Nightingale believed that women possessed the innate characteristics of nurturing, care giving, and mothering necessary for the nursing role (Meadus, 2000). Poliafico (1998) asserts that Florence Nightingale's vision of nurses excluded men because "every woman is a nurse" (p. 40). According to Romem and Anson (2005), the arrival of Florence Nightingale paved the way for the present feminization of the nursing profession.

According to Mackintosh (1997), Nightingale used her influence as an educated and affluent woman to advance nursing as an acceptable profession for middle-class Victorian females during the 19th century. This ultimately fueled the feminization of the nursing profession. Nightingale shaped the perception of nursing dramatically for future generations by labeling nursing as "women's work" (Cash, 1997) and leading the transformation of the profession of nursing into "a profession for single women of impeccable moral standards" (Bostridge, 2002, p. 2). Finally, Nightingale vehemently opposed men in the profession of nursing, asserting that "their horny hands were detrimental to caring" (Anthony, 2004, p. 45).

As a result of the ultimate feminization of the nursing profession, men were denied admission to all nursing schools as well as the Army and Navy nursing corps as recently as the early 20th century (Poliafico, 1998). As the feminine image of nursing continued to develop, men no longer pursued nursing as a career, and their contributions to the profession were forgotten (Meadus, 2000). According to Boivin (2002), not until the Korean War were males allowed again to serve as nurses in the military. Since the Korean War, the number of males practicing as nurses in the military has steadily increased, with 35% of active-duty Army nurses and 28% of reservist nurses being male (United States Army, 2011).

The history of nursing as relayed in nursing education is almost exclusively a history of the accomplishments of women in the profession. Men worked in the profession long before the days of Florence Nightingale, yet the accomplishments of men in the

profession have been long ignored. According to Okrainec (1990), this leaves men believing that their presence in the profession is somehow abnormal.

The Experience of Male Nursing Students

The literature reports that males experience nursing school differently from their female counterparts (Anthony, 2004). Studies suggest that the attrition rate for males in nursing education exceeds that of their female counterparts (McLaughlin et al., 2010; Stott, 2007). Men in nursing education face a myriad of challenges, including social isolation, gender-related stereotypes, gender bias in teaching methods and text materials, bias in the clinical arena, and a substantial lack of male role models and mentors (Anthony, 2004; Cude & Winfrey, 2007; O'Lynn, 2007).

Meadus and Twomey (2011) assert that gender barriers exist in nursing education in the United States. Cushner, McClelland, and Safford (2006) define gender bias as "behavior that results from the underlying belief in sex role stereotypes" (p. 1). Not only is gender bias abundant in nursing textbooks, but it is also found in the language of the classroom and the clinical experience (Anthony, 2004; Keogh & O'Lynn, 2007; O'Lynn, 2004; Stott, 2004). Male nursing students report gender stereotyping by nursing staff in clinical experiences when they are perceived as "muscle" to lift or move patients or to control potentially violent situations (Meadus & Twomey, 2011).

O'Lynn (2004) conducted a quantitative study utilizing a tool, the Inventory of Male Friendliness in Nursing Programs, to evaluate the perceived gender barriers for men in nursing programs in the United States. The findings revealed barriers such as lack of male

faculty, male mentors, or male nurses available in the clinical setting. In addition, the 111 students surveyed reported a lack of content regarding the history of men in nursing and the appropriate use of touch for the male nurse. Keogh and O'Lynn (2007) replicated the study utilizing the Inventory of Male Friendliness in Nursing Programs. This time, they surveyed 100 men in nursing programs in Ireland, and the findings were consistent with the initial O'Lynn (2004) study.

An Australian study (Kermode, 2006) utilized a web-based survey of several university nursing programs to examine attitudes of sexism in general among nursing students. The results revealed that male nursing students reported increased levels of sexism and discrimination in their nursing program experience. Although Kermode (2006) examined the experiences of male nursing students, Crigger, Luckman, and Galusha (2007) examined attitudes and behaviors of discrimination perceived by both male and female nursing students. Of the 265 students surveyed, male students, as compared to female students, described their experience in nursing school as discriminatory and sexist.

Ierardi, Fitzgerald, and Holland (2010) and Ellis et al. (2006) utilized qualitative methodology to explore the lived experience of the male nursing student. Ierardi et al. explored the experiences of seven male students in an associate-degree nursing program and identified four themes: wanting to care for others, leaving another career to pursue nursing, having a positive experience in the nursing program, and being mistaken for physicians. Ellis et al. reported four themes as well: survival, differences (gender), nursing-school requirements, and career goals. Of the eight themes outlined in the above

studies, two themes clearly indicate a gender bias in the lived experiences of students studied.

Bell-Scriber (2008) utilized a case-study approach to explore the classroom experience of male nursing students from the perspective of both nursing students and nursing faculty. Bell-Scriber describes the classroom experiences of four male students, four female nursing students, and seven nursing faculty in the study. The study found that male students experienced a "cooler" climate in nursing school, perpetuated by covert gender stereotyping and nonsupportive behavior by female nursing faculty. Dyck , Oliffe, Phinney, and Garrett (2009) studied the classroom experiences of six male nursing students and six female nursing instructors. Dyck et al. identified three themes: nursing as a real man, masculinities in a feminine place, and diversity between masculine and feminine. O'Lynn (2004) asserts that male nursing students experience gender bias and discrimination when they overhear anti-male comments advanced by nursing faculty.

Meadus and Twomey (2011) explored the lived experience of male nursing students in three nursing programs in Canada. Five themes emerged as a result of the qualitative study: choosing nursing, becoming a nurse, caring within the nursing role, gender-based stereotypes, and visible/invisible. Meadus and Twomey (2011) report that male nursing students experience more visibility in the classroom due to their small numbers. For male students, the classroom produces anxiety and a constant fear of being chosen by instructors in class due to their enhanced visibility (Meadus & Twomey, 2011).

Contributions to the literature abound regarding the male student and completion of the maternal-newborn clinical rotation (Cude, 2004; Cude & Winfrey, 2007; Evans, 2002;

Grady, Stewardson, & Hall, 2008; Sherrod, 1991). The maternal-newborn clinical rotation is especially problematic for male nursing students for a variety of reasons. First, staff members, as well as patients, perpetuate the belief that the maternal-newborn clinical setting in particular is inappropriate for men (Cude, 2004). Second, male nursing students report the difficulty in misinterpretation of touch as sexual by patients as well as staff (Evans, 2002; Grady et al., 2008). According to Meadus and Twomey (2011), male nursing students compared the maternal-newborn clinical experience to "stepping on glass" or "fish out of water." According to Meadus and Twomey (2011), the idea that caring in nursing is purely a female construct supports unfairly the patriarchal attitudes that marginalize men in the profession of nursing.

The findings of the above studies illustrate the struggle of the male nursing student against the hegemonic ideal of masculinity to construct their identities as nurses (Meadus & Twomey, 2011). In the environment of growing shortages of nurses and increased attrition rates among male nursing students, it is imperative that a concerted effort be made not only to recruit men into the profession of nursing but to retain through graduation from a nursing program those who choose nursing as a profession (Stott, 2007).

First-Generation Students in Nursing Education

First-generation students are defined as students from families in which neither parent possesses more than a high school education (Pascarella et al., 2004). First-generation students lag behind in academic preparation prior to enrollment; in basic knowledge regarding the college process, including the application and financial aid

processes; and in degree attainment expectations (Stephens, Markus, Fryberg, & Johnson, 2012; Terenzini et al., 1996). In addition, Mehta, Newbold, and O'Rourke (2011) found that first-generation students are less involved in the college experience, possess fewer financial and social supports, and experience less academic satisfaction than their non-first-generation counterparts.

Beyond the demographics, research has focused on retention and persistence to graduation in first-generation students. According to the NCES (2012), students from college-educated families are more likely to graduate than are first-generation college students. Although 37.0% of students from college-educated families persist to graduation, 12.2% of first-generation students graduate (NCES, 2012). When low-socioeconomic status is added, only 7.5% of low-income first-generation students persist to graduation, compared to 41.1% of students who belong to neither category (NCES, 2012).

As summarized by Pascarella et al. (2004), the research has indicated that compared to their counterparts, first-generation students are less likely to complete the first year in a four-year institution. In addition, first-generation college students are less likely to persist toward a baccalaureate degree after three years. Finally, first-generation students who persist to graduation are less likely to be enrolled in graduate study five years after graduation.

Longwell-Grice and Longwell-Grice (2008) examined the effectiveness of Tinto's retention theories for first-generation, working-class students. The study found that first-generation students were reticent to seek faculty support in their studies. As Tinto (1998) advances a strong link between faculty support and student success, interventions to

enhance student-faculty interaction would be helpful for first-generation students. Collier and Morgan (2008) add that first-generation students must master the "student role" to ascertain what is expected of them in college. Cultural capital handed down from parents assists students in mastering this student role (Collier & Morgan, 2008).

Pascarella et al. (2004) conducted a longitudinal study of 18 four-year institutions of higher education to ascertain the differences between the experiences of first-generation college students and various counterparts. The study compared the experience of first-generation students to two groups of students. First, the study compared the experience of first-generation students to students with two parents who had completed, at minimum, baccalaureate degrees. Second, the study compared the experience of first-generation students to students with one parent who had completed some college up to and including a bachelor degree.

The results of the study revealed substantial differences in first-generation students and these counterparts. First-generation students were more likely to attend less selective colleges than their counterparts. In addition, first-generation students were less likely to live on campus, had less interaction with peers, were less involved in extracurricular activities, and worked more hours off-campus per week. By the third academic year, first-generation students completed fewer hours of coursework and had lower cumulative GPAs. Pascarella et al. (2004) point to lack of social capital, which places first-generation students at a disadvantage. Greater social capital enables students to forge appropriate relationships on campus to maximize the college experience.

Summary

The body of literature in nursing program attrition has focused traditionally on two areas: the importance of thoughtful quantitative admission decisions and the identification of specific student characteristics to explain attrition. Although admission decisions are largely quantitative in nature, consisting of some combination of GPA and standardized testing scores, attrition remains a concern. Given the scope of the impending nursing shortage, in combination with the competitive nature of nursing program admissions, it is critical to identify those students who can succeed in nursing education, pass the state board examination (i.e., NCLEX-RN), and ultimately practice as a registered nurse.

The literature regarding nursing student success has focused on success primarily on the state board examination (i.e., NCLEX-RN), with relatively little literature addressing early program success and successful on-time completion within the nursing program. Filling this gap in the literature regarding early program success and successful on-time completion can serve to inform the development of early intervention strategies to prevent attrition/student leaving.

The literature review examined retention theory in higher education both in general as well as specifically in nursing education. The early retention theories of Spady (1970), Astin (1975), Pascarella and Terenzini (1980), and Tinto (1993, 1998) examine the importance of peer friendships, student involvement, faculty relationships, and integration into the college experience regarding the phenomenon of attrition or student leaving. In addition, the work of Bean and Metzner (1985) was examined to illustrate the specific challenges of the nontraditional student in higher education.

Specific to nursing education, the work of Wells (2003), Jeffreys (2004, 2007), and Shelton (2012) was presented to illustrate the present state of the literature in nursing program attrition. Although Wells (2003) examined attrition/retention efforts at the program level utilizing an epidemiological approach, Jeffreys (2004, 2007) and Shelton (2012) studied student leaving at the individual student level utilizing early retention theory and psychological theory.

Finally, the experience of nontraditional students, ESL students, male students, and first-generation students have been examined to illustrate the challenges specific to these demographic groups in completing nursing education. The literature illustrates that students in these particular demographic categories experience nursing education differently. The United States is becoming more diverse in nature, and the Sullivan Commission (2004) advocates for a nursing profession that mirrors the diversity of the patients whom it serves. The profession of nursing is overwhelmingly Caucasian and female; thus it is an ethical imperative that at-risk nursing students are identified early for the purpose of the prevention of attrition. The results of this study can be utilized to identify at-risk nursing students for the purpose of developing interventions designed to reduce attrition in nursing education.

CHAPTER 3

METHODOLOGY

As the United States faces an impending nursing shortage, schools of nursing nationwide strive to meet the demand to produce greater numbers of new graduate nurses, not only by expanding enrollments but by reducing the number of students lost through attrition (AACN, 2011; Jeffreys, 2004).

Due to critical gaps in the literature regarding the extent to which demographic variables predict early program success, successful on-time completion, and NCLEX-RN success within prelicensure nursing education, additional research is warranted. Given the social and financial costs associated with nursing program attrition, it is imperative to identify at-risk students early for the purpose of developing interventions intended to promote early program success, successful on-time completion, and NCLEX-RN success, paving the way into professional nursing practice.

A nonexperimental, longitudinal, correlational design used historical data to determine the extent to which selected demographic characteristics predict early program success, successful on-time completion, and NCLEX-RN success for the study site. Early identification of at-risk students allows for remediation and the development of interventions designed specifically to prevent attrition in this student population.

The Research Site

The study was conducted at a small, independent, private, midwestern university. The university is accredited at the undergraduate, master's, and doctoral levels by the Higher Learning Commission (HLC). The HLC, in existence since 1895, is one of six regional independent accrediting bodies in the United States. The HLC is the accrediting body for the North Central Region of the United States, encompassing 19 states (HLC, 2014).

The SON offers programs at the prelicensure, RN-BSN completion, and master's levels. The prelicensure program, the RN-BSN completion program, and the master's program all hold additional accreditation through the CCNE. In 2010, the prelicensure program at the study site was accredited by the CCNE for a period of 10 years, the maximum accreditation. In 2012, the master's program received initial accreditation from the CCNE for a period of five years, the maximum initial accreditation. The CCNE is recognized by the U.S. Secretary of Education as a national accrediting body. The CCNE is an autonomous accrediting body of the AACN, charged with ensuring the quality of nursing programs in the United States. CCNE accreditation demonstrates a commitment to effective educational programming as well as quality improvement in baccalaureate, graduate, and nurse residency programs (CCNE, 2014). The first-time NCLEX-RN pass rate for the study site has remained above the benchmark set by the SBN in each year of the proposed study.

The Study Sample

The study data were collected for five cohorts of students who enrolled in the prelicensure nursing program at the research site from 2009-2013, with the final cohort graduating in the spring of 2015. The combined number of students in the five cohorts under study was 399 students. The study sample consisted of nursing students in a prelicensure nursing program delivered in a two-year, upper biennium, face-to-face program. At the research site, online or blended prelicensure programs were not offered; thus, data were not collected for online or blended formats. The program experienced growth over the study period, enrolling 56 students in the fall of 2009 and increasing enrollment to 105 students in the fall of 2013. Students were admitted once per year, for the fall semester only.

The study site provided a diverse student population containing nontraditional students, first-generation students, male students, and ESL students who reportedly perform below the Caucasian, female, traditionally aged students. Thus, these demographic groups were chosen for the focus of the present study.

Ethical Considerations

The Institutional Review Boards (IRBs) of both Northern Illinois University and the study site granted approval of the study. Written permission of the director of the SON at the study site was granted as well. As extant data were used for the study, informed consent was neither applicable nor required. Raw data from the Admissions, Policy, and Progression Committee of the SON at the research site was organized utilizing an Excel

spreadsheet designed specifically for the purpose. To ensure confidentiality, student names were assigned unique identifiers, different from their student identification numbers at the research site. Names were removed from the Excel spreadsheet immediately after the data were compiled.

Research Questions

The following research questions are repeated from Chapter 1 for the convenience of the reader.

1. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict early program success within a baccalaureate nursing program?

2. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict successful on-time completion within a baccalaureate nursing program?

3. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict NCLEX-RN success within a baccalaureate nursing program?

Study Variables

Outcome Variables

Early Program Success

Early program success is defined as having passed all courses with a grade of C or better at the end of the first semester of a four-semester prelicensure nursing program and having no course withdrawals. Students were evaluated as unsuccessful if they received one or more course grades of D or F or if course withdrawal occurred. Early program success was operationalized as a dichotomous variable: 1 = successful, 0 = unsuccessful.

For the first semester of the prelicensure nursing program at the research site, students enroll in the following didactic courses: NUR 3000, Introduction to Professional Nursing; NUR 3100/Z, Fundamentals of Nursing I; and NUR 3260/Z, Health Assessment, Education, and Promotion. Courses with a Z designation contain a lab and/or clinical component. Data analysis for early program success included grades from courses NUR 3000, NUR 3100/Z, and NUR 3260/Z.

On-Time Completion

On-time completion is defined as graduation from a prelicensure nursing program in four consecutive semesters with no course failures, course repeats, withdrawals, drop-outs or stop-outs. After successful completion of the first semester, students enroll in courses in a specified order based on their cohort membership. Students enroll in the following

courses in the nursing program: NUR3000, Introduction to Professional Nursing; NUR3100(Z), Principles of Nursing I; NUR3260(Z), Health Assessment; NUR3110(Z), Principles of Nursing II; NUR3160, Pharmacological Concepts; NUR3400(Z), Psychiatric and Mental Health Nursing; NUR4200(Z), Global Community Outlook; NUR4300(Z), Medical Surgical Nursing I; NUR4050, Nursing Research; NUR4500(Z), Nursing Care of the Family; NUR4600, Leadership and Management; and NUR 4800(Z), Medical Surgical Nursing II. Successful on-time completion was operationalized as a dichotomous variable: 1 = successful, 0 = unsuccessful.

NCLEX-RN Success

NCLEX-RN success is defined as passing the national board exam for nursing (NCLEX-RN) on the first attempt. The NCLEX-RN examination is a CAT administered by the NCSBN and designed to test knowledge, skills, and abilities essential to the safe and effective practice of nursing at the entry level. Candidates must receive a passing score in order to be licensed to practice as a nurse in the United States (NCSBN, 2014). NCLEX-RN success is operationalized as a dichotomous variable: 1 = successful, 0 = unsuccessful.

Predictor Variables

Male Student

This variable is a dichotomous variable operationalized as 1 = male, 0 = female. Student gender was obtained from the admission application.

ESL Student

This variable is defined as a nursing student for whom English is not the first language learned. It is a dichotomous variable operationalized as 1 = ESL student, 0 = non-ESL student. ESL status was obtained from the SON assessment data.

Nontraditional Nursing Student

This variable is defined as a nursing student who is aged 25 years or older (NCES, 2002). It is a dichotomous variable operationalized as 1 = nontraditional student, 0 = traditional student status. Age of all students was obtained from the admission application.

First-Generation Student

This variable is defined as a student from a family in which neither parent possesses more than a high school education (Pascarella et al., 2004; Tinto & the Pell Institute, 2004). It is a dichotomous variable operationalized as 1 = first-generation student, 0 = not a first-generation college student. First-generation student status was obtained from SON assessment data.

Control Variables

Test of Essential Academic Skills (TEAS)

This variable is defined as the score from the standardized nursing entrance examination, TEAS, developed by Assessment Technologies Institute. It is a continuous variable. TEAS scores were obtained from SON assessment data.

Admission Grade Point Average (GPA)

This variable is defined as the GPA upon enrollment into the SON. It is a continuous variable, computed on a 4.0 scale. GPA data was obtained from the SON admission data.

Transfer Status

A transfer student is defined as a student who is enrolled in the SON having acquired 15 or more semester hours of prerequisite coursework at another institution of higher education. Transfer status data was obtained from the SON admission data.

Sample Profile Characteristics

Profile characteristics, including age, gender, and racial/ethnic representation, were collected for the SON, the university, and nationally. Additional cognitive profile characteristics were collected for the SON and the university, including admission GPA and TEAS scores.

Summary of Study Variables

Table 2 depicts the variables included in the study.

Table 2

Summary of Study Variables

Characteristic	Type	Dichotomous/ Continuous	Level	Coding
Nontraditional student	Predictor	Dichotomous	Nominal	1 = Nontraditional 0 = Traditional
ESL student	Predictor	Dichotomous	Nominal	1 = ESL 0 = Non-ESL
Male gender	Predictor	Dichotomous	Nominal	1 = Male student 0 = Female
First-generation student	Predictor	Dichotomous	Nominal	1 = First-generation 0 = Non-first-generation
Early program success	Outcome	Dichotomous	Nominal	1 = Successful 0 = Unsuccessful
On-time completion	Outcome	Dichotomous	Nominal	1 = Successful 0 = Unsuccessful
NCLEX-RN success	Outcome	Dichotomous	Nominal	1 = Successful 0 = Unsuccessful
Admission GPA	Control	Continuous	Scale	N/A
TEAS score	Control	Continuous	Scale	N/A
Transfer student	Control	Dichotomous	Nominal	1 = Transfer Student 0 = Non-transfer

Data Collection

Data were collected for five independent cohorts of students at the research site. Cohort membership was based on the academic term of entry into the nursing program at the research site. Table 3 depicts the cohort names and date of program entry for each of the five cohorts in the study.

Table 3

Cohort Name and Date of Program Entry

Cohort Name	Program Entry
Cohort 1	Fall 2009
Cohort 2	Fall 2010
Cohort 3	Fall 2011
Cohort 4	Fall 2012
Cohort 5	Fall 2013

The first of four data collection points occurred at the beginning of the first semester of study for each of the named cohorts. Student rosters, demographic data, and study-specific data were collected for each of the five cohorts studied. Table 4 provides detail regarding the data collection points for each named cohort included in the study.

Table 4

Summary of Data Collection Points

	Data Collection 1	Data Collection 2	Data Collection 3	Data Collection 4
Cohort 1	Fall 2009	December 2009	May 2011	August 2011
Cohort 2	Fall 2010	December 2010	May 2012	August 2012
Cohort 3	Fall 2011	December 2011	May 2013	August 2013
Cohort 4	Fall 2012	December 2012	May 2014	August 2014
Cohort 5	Fall 2013	December 2013	May 2015	August 2015

The second data collection point occurred at the end of the first semester for each of the five cohorts of students. The data collected was early program success, defined as passing all courses with a grade of "C" or better with no course withdrawals. Data were collected from the Admissions, Policy, and Progression Committee at the research site, a

standing committee charged with the responsibility of collecting data regarding student progression on an annual basis.

In the third data collection point, successful on-time completion data were collected for each of the five named cohorts of students. Successful on-time completion is defined as completing the program to graduation in four consecutive semesters with no course failures or withdrawals. Data in the third data collection point was collected from the Admission, Policy, and Progression Committee at the research site.

In the fourth data collection point, state board examination (NCLEX-RN) data were collected for each of the named five cohorts of students. NCLEX-RN success is defined as passing the state board examination (NCLEX-RN) on the first attempt. Data in the fourth data collection point were collected from the Program Assessment Committee at the research site.

Hypotheses

The following null hypotheses are provided for the study:

$H_0$1: Male student does not predict early program success in prelicensure nursing education for the sample at the research site.

$H_0$2: Male student does not predict successful on-time completion in prelicensure nursing education for the sample at the research site.

$H_0$3: Male student does not predict NCLEX-RN success for the sample at the research site

$H_0$4: Nontraditional student status does not predict early program success in prelicensure nursing education for the sample at the research site.

$H_0$5: Nontraditional student status does not predict successful on-time completion in prelicensure nursing education for the sample at the research site.

$H_0$6: Nontraditional student status does not predict NCLEX-RN success for the sample at the research site.

$H_0$7: ESL student status does not predict with early program success in prelicensure nursing education for the sample at the research site.

$H_0$8: ESL student status does not predict successful on-time completion in prelicensure nursing education for the sample at the research site.

$H_0$9: ESL student status does not predict NCLEX-RN success for the sample at the research site.

$H_0$10: First-generation student status does not predict early program success in prelicensure nursing education for the sample at the research site.

$H_0$11: First-generation student status does not predict successful on-time completion in a prelicensure nursing education for the sample at the research site.

$H_0$12: First-generation student status does not predict NCLEX-RN success for the sample at the research site.

Data Analysis

Descriptive statistics include measures of central tendency (mean, median, and mode), variation (standard deviation), and frequency distributions. To determine the

relationships among study variables, correlational analysis was used. Ultimately, logistic regression was utilized to examine the relationship between the predictive variables (nontraditional student, ESL student, male student, and first-generation student) and the outcome variables (early program success, successful on-time completion, and NCLEX-RN success) and odds ratios were computed. A level of significance of .05 was chosen for the analysis. Analyses were carried out using IBM Corporation (2014) SPSS Statistics 23 for Windows and SAS Institute Incorporated (9.4 M2) for Windows statistical packages (2014).

Summary

A nonexperimental, longitudinal, correlational design used historical data to determine the extent to which selected demographic characteristics predict early program success, successful on-time completion, and NCLEX-RN success at the study site.

The IRBs from both the study site and Northern Illinois University granted approval for the study. The data set utilized for the study was collected after written approval was obtained through the registrar of the study institution as well as the director of nursing at the study site. Ethical issues regarding confidentiality of research subjects, the setting of the study, the study limitations, and the data collection plan have been discussed. Data were collected for the study at four data collection points: at admission, after the completion of the first semester of study (early program success), after the final semester (successful on-time completion), and after taking the national board exam (NCLEX-RN success).

CHAPTER 4

RESULTS

The purpose of this study was to examine the extent to which selected demographic characteristics of nursing students in a prelicensure nursing program predict early program success, successful on-time program completion, and NCLEX-RN success. This chapter details the results of the data analysis. Descriptive statistics include measures of central tendency (mean, median, and mode), variation (standard deviation), and frequency distributions. To determine the relationships among study variables, correlational analysis was used. Logistic regression was used to examine the relationship of the predictive variables (nontraditional student, ESL student, male student, and first-generation student) to the outcome variables (early program success, successful on-time completion, and NCLEX-RN success). Analyses were carried out using IBM SPSS Statistics 23 for Windows (IBM Corporation, 2014) and SAS Institute Corporated (9.4 M2) for Windows statistical packages (2014).

The data utilized for the study were collected after written approval was obtained through the registrar of the study institution as well as the director of nursing at the study site. The IRBs from both the study site and Northern Illinois University granted approval for the study.

Research Questions

The following research questions are repeated from Chapter 3 for the convenience of the reader.

1. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict early program success within a baccalaureate nursing program?

2. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict successful on-time completion within a baccalaureate nursing program?

3. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict NCLEX-RN success within a baccalaureate nursing program?

The Study Sample

The study sample consisted of nursing students enrolled in a prelicensure nursing program delivered in a two-year (four-semester), upper biennium, face-to-face program. All individuals enrolled in the prelicensure nursing program between Fall 2009 and Fall 2013 at the study site were included in the study. At the research site, on-line or blended prelicensure programs are not offered; thus, data from students in such programs were not collected. Students are enrolled once per year, in the fall only. The program has experienced growth over the study period, admitting 56 students in the fall of 2009 and

increasing to 105 students admitted in the fall of 2013. The combined number of students in the five cohorts included in the study was 399.

Data were collected for five independent student cohorts at the research site. Cohort membership is based on the academic term of entry into the nursing program at the research site. Table 5 provides cohort frequency and relative frequency information for the sample (N = 399).

Table 5

Frequency Distribution of Cohort Membership for Sample (N = 399)

Cohort	Program Entry	Frequency	Percent
Cohort 1	Fall 2009	56	14.04
Cohort 2	Fall 2010	63	15.79
Cohort 3	Fall 2011	83	20.80
Cohort 4	Fall 2012	92	23.06
Cohort 5	Fall 2013	105	26.32

Demographic Profile of the Sample

University-wide, students were predominantly Caucasian (66.49%), with Hispanic students representing the largest group of minority students (17.09%), and followed by Black/African American students (8.33%) in the next largest group of minority students. The remaining distribution of ethnicity university-wide is displayed in Table 6. More specifically, enrollment in the SON at the study site indicated that enrollment during the study period was predominantly Caucasian (N = 273, 68.42%). Hispanic populations represented the largest group of minority students (N = 61, 15.29%), with Asian/Pacific Islander students in the next

largest group (N = 36, 9.02%). The remaining breakdown of ethnicity of the study group is displayed in Table 6. According to the AACN (2014a), national enrollment in baccalaureate prelicensure nursing programs is predominantly Caucasian (71%), with minority populations at 29%. A chi-square goodness-of-fit test (X^2[3, N = 399] = 1.289, p = .256) indicates that the sample ethnic distribution does not differ significantly from the national ethnic distribution in baccalaureate nursing programs.

Table 6

Gender and Ethnicity Distribution of Sample in Comparison to School of Nursing (SON), University, and National Distributions

		SON[1]		**University[2]**		**National[3]**	
		Frequency	Percent	Frequency	Percent	Frequency	Percent
Total Enrollment		399	100.00	3002	100.00	180,942	100.00
Gender	Female	359	89.97	1,913	63.72	160,315	88.60
	Male	40	10.03	1,089	36.28	20,627	11.40
Ethnicity	White	273	68.42	1,996	66.49	128,469	71.00
	Hispanic	61	15.29	513	17.09	15,199	8.40
	Asian/Pacific Islander	36	9.02	62	2.07	15,018	8.30
	American Indian/ Alaskan Native	1	0.25	7	0.23	1,085	0.60
	Black/African American	11	2.80	73	2.43	3,981	2.20
	Two or more races	5	1.30	95	3.16	0	0.00
	Unknown						

[1]Reflects enrollment figures for the study period Fall 2009-Fall 2013.
[2]Reflects enrollment figures Fall 2012.
[3]AACN (2014a)

Predictor Variables

Gender

From the sample of students enrolled at the study site, a total of 359 (89.97%) were female, and 40 (10.03%) were male. According to the AACN (2014a), nationally, baccalaureate prelicensure nursing programs were composed of 88.6% female students and 11.4% male students. A chi-square goodness-of-fit test ($X^2[1, N = 399] = .748$, $p = .387$) indicates that the sample gender distribution does not differ significantly from the national gender enrollment in baccalaureate nursing programs. Table 6 illustrates the gender profile, university-wide, for the SON, and also nationally, during the study period.

Age: Nontraditional College Students

Student age was computed upon admission to the SON. The oldest student enrolled in the SON during the study period was 56.14 years of age, and the youngest student was 19.27 years old. The mean age of all students enrolled during the study period was 23.94 ($SD = 6.22$) years, the median age was 21.04 years, and the modal age was 20 years. The range was 36.27 years. During the study period, the average age of first-year students university-wide was 18 years, and the average age of undergraduates ranged from 22-24 years.

For the purpose of this study, a student age of 25 years or older was the defining characteristic for the nontraditional student (NCES, 2002). During the study period, enrollment of nontraditional students in the SON varied by year, constituting from 19% to

29% of the sample. Over the span of the study, a total of 99 nontraditional students were enrolled, or approximately 25% of the total sample. University-wide, transfer students ranged from 22%-24% of the enrollment during the study. Table 7 illustrates the age profile on admission of students enrolled in the SON during the study period.

For the purposes of this study, student age at admission was converted to a dichotomous variable (traditional vs. nontraditional student). Students determined to be 25 years of age or older on August 1 immediately preceding admission to the SON were coded as nontraditional students. Students determined to be under the age of 25 years were coded as traditional students. Dichotomous coding of the predictor variable eliminates the effect of age outliers in the dataset.

ESL Students

Across the study period, the percentage of students who were ESL students in the SON ranged from 25.30% - 31.43%. The total number of ESL students enrolled (n = 114) represented 28.57% of the total number of students enrolled (N = 399). Table 8 shows the enrollment of ESL students during the study period.

First-Generation Students

Data for first-generation students were available for Cohort 5 of the study only. Of the 105 students enrolled in Cohort 5 in the SON during the study period, 63 students (60%) were classified as first generation. According to the United States Department of

Table 7

Descriptive Statistics for Age of Participants upon Admission to the SON by Cohort (N = 399)

Cohort	Frequency	Maximum	Minimum	Mean	Median	Mode	SD	Nontraditional[1]	
								Frequency	Percent
Cohort 1	56	45.70	19.92	23.85	20.95	**20**	5.72	14	25.00
Cohort 2	63	56.14	19.34	23.71	20.95	21	6.76	12	19.00
Cohort 3	83	49.26	19.48	24.26	21.11	20	6.60	24	29.00
Cohort 4	92	55.04	19.27	23.36	20.83	20	5.69	19	21.00
Cohort 5	105	48.46	19.83	24.39	21.29	21	6.36	30	29.00
Total	399	56.14	19.27	23.94	21.04	20	6.22	99	25.00

[1]Nontraditional students are students whose age is ≥ 25 years at time of admission to the SON (NCES, 2002).

Education's NCES (2013), nationally, first-generation college students represent 32% of all undergraduates. Based on the limited data available, first-generation college students at the study site represent nearly two times the national enrollment of first-generation students among all undergraduate students. Table 8 shows the enrollment of first-generation students in the SON and nationally during the study period.

Control Variables

The variables discussed below were employed as control variables.

Transfer Status

According to Faison (2012), nursing education in BSN programs are generally two years in length and located in the upper biennium of senior colleges or universities. Students focus on liberal arts, science, and mathematics prerequisite courses in the first two years of study (Faison, 2012). Thus, it is common for students to complete their prerequisite courses at another institution and subsequently complete their nursing education at the study site. As transfer-student status implies that students have received foundational education at another institution, transfer status may exert an influence on the outcome variables (early program success, successful on-time completion, and NCLEX-RN

Table 8

Frequency Distributions for ESL Student, Generational Status (Predictor Variables) and Transfer Status (Control Variable)

	Cohort 1		Cohort 2		Cohort 3		Cohort 4		Cohort 5		Total	
Variable	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
ESL Student												
ESL Student	16.00	28.57	18.00	28.57	21.00	25.30	26.00	28.26	33.00	31.43	114.00	28.57
Non-ESL	40.00	71.43	45.00	71.43	62.00	74.70	66.00	71.43	72.00	68.57	285.00	71.43
Total	56.00	100.00	63.00	100.00	83.00	100.00	92.00	100.00	105.00	100.00	399.00	100.00
Generational Status												
First-generation	NA	NA	NA	NA	NA	NA	NA	NA	63.00	37.5	63.00	37.5
Not first-generation	NA	NA	NA	NA	NA	NA	NA	NA	105.00	62.5	105.00	62.5
Total	NA	NA	NA	NA	NA	NA	NA	NA	168.00	100.00	168.00	100.00
Transfer status												
Transfer student	31.00	55.36	35.00	55.56	39.00	46.99	41.00	44.57	61.00	58.10	207.00	51.88
Non-transfer student	25.00	44.64	28.00	44.44	44.00	53.01	51.00	55.43	44.00	41.90	192.00	48.12
Total	56.00	100.00	63.00	100.00	83.00	100.00	92.00	100.00	105.00	100.00	399.00	100.00

Note. NA = data not available for this cohort.

success). Without controlling for transfer status, it would be difficult to ascertain if early program success, successful on-time completion, and NCLEX-RN success were associated with the predictor variables or whether the location of the acquisition of prerequisite courses determined student success. As a result, transfer status was chosen as a control variable for the study.

Overall, during the study period, 51.88% of the students enrolled in the SON had transferred into the program from another school to complete their nursing studies. Early in the study period, transfer students composed approximately 55% of all nursing students. In Years 3 and 4 of the study, transfer students declined by nearly 10% to between 44.57% and 46.99% of the overall total. Finally, in Year 5 of the study, transfer status climbed to 58.1% of the 105 students enrolled in Cohort 5 of the study. University-wide, transfer student enrollment among all degree-seeking undergraduate students ranged from 16%-19% during the study period. Table 8 depicts the enrollment of transfer students in the SON during the study period.

Academic Achievement Control Variables: GPA and TEAS

Admission to the SON is based on GPA at the time of application to the nursing program and the student score on the TEAS by ATI. These two variables are equally weighted in the admission process at the study institution. The TEAS examination is a standardized, nationally normed entrance examination given to predict academic readiness for the rigor of prelicensure nursing education. Newton et al. (2007) report that the TEAS entrance examination was more predictive of first-semester success than was GPA and

conclude that the TEAS exam provides valuable information regarding core knowledge that is not provided by GPA alone.

Standardized testing is commonly employed in the admissions process. A variety of available standardized tests may be utilized to assist in nursing admission decisions. The ACT by ACT, Inc., and the SAT by the College Board, as well as the TEAS by ATI, the HESI exam, and ERI, are commonly utilized. TEAS, HESI, and ERI are tests designed to assist specifically in nursing school admissions (Newton, Smith, Moore, & Magnan , 2007).

As academic achievement may exert an influence on the demographic factors included in the study, admission GPA and TEAS values were chosen as control variables for the study. Without controlling for academic achievement factors, it would be difficult to ascertain if early program success, successful on-time completion, or NCLEX-RN success was influenced by the predictor variables or if academic achievement (GPA and TEAS) ultimately determines success in nursing education.

GPA

GPA was computed on a 4-point scale and was based on all college courses taken since finishing high school or completing the requirements for a GED. A GPA of 2.75/4.00 scale is required for admission to the SON. For the purpose of this study, GPA represents the grade point average upon admission to the SON at the study site. The mean GPA for the study sample was 3.39 (*SD* = 0.33). Over the course of the study, GPA remained relatively stable, with a slight upward trend from 3.32 (*SD* = 0.32) at the beginning of the study and 3.42 (*SD* = 0.35) at the end of the study. Table 9 depicts the GPA of enrolled

students during the study period. For the purposes of this study, GPA, a continuous variable, was converted to a *z*-score.

Table 9

Distribution of Control Variables: Admission GPA and TEAS Scores

	Admission GPA				**TEAS Percentile Rank**				
Cohort	Mean	Maximum	Minimum	SD	Mean	Median	Maximum	Minimum	SD
Cohort 1	3.32	4.00	2.78	0.32	67.50	74.00	97.00	25.00	21.26
Cohort 2	3.42	4.00	2.78	0.30	73.83	75.00	99.00	31.00	16.24
Cohort 3	3.39	4.00	2.76	0.33	77.01	80.00	99.00	24.00	17.60
Cohort 4	3.37	4.00	2.75	0.32	74.53	80.00	98.00	31.00	15.57
Cohort 5	3.42	4.00	2.77	0.35	76.32	77.00	99.00	40.00	13.74
Totals	3.39	4.00	2.75	0.33	74.53	77.00	99.00	24.00	16.77

Note: $N = 399$

TEAS

At the study site, the TEAS is utilized in the admission process in the SON. The TEAS is given in the January preceding admission to the SON. The test has experienced four iterations over the course of the study. Raw scores from each new test are not comparable to previous versions; therefore, percentile rank was chosen to compare scores among cohorts. The mean TEAS percentile rank for the entire sample was 74.53, and the median percentile rank was 77 ($SD = 77$). Over the course of the study, admission to the SON has become increasingly competitive; thus, the TEAS percentile rank has experienced an upward trend, with standard deviations moving closer together, indicating that the scores are closer to the mean. Table 9 depicts TEAS percentile rank for the students enrolled in the SON during the study period.

Outcome Variables

Early Program Success

Operationally, early program success is defined as passing all courses with a grade of C or better at the end of the first semester of a four-semester prelicensure nursing program and having no course withdrawals. Students who are unsuccessful failed to complete a course, withdrew from any or all of the courses, or received a grade below a C in any nursing course. In the first semester, students enroll in NUR3000, Introduction to Professional Nursing; NUR3100(Z), Principles of Nursing I; and NUR3260(Z), Health Assessment. Of the 399 students enrolled in the SON during the study period, 335 (83.96%) students experienced early program success, but 64 (16.04%) students did not. During the first three years of the study, early program success steadily increased to a high of 89.16% and declined to 81.90% in the last two years of the study. Table 10 depicts trends in early program success in the SON over the study period.

Successful On-Time Completion

Operationally, successful on-time completion is defined as graduation from the four-semester/two-year nursing program in four consecutive semesters without any course failures, course repeats, withdrawals, drop-outs, or stop-outs. Students who were

Table 10

Frequency Distributions for Outcome Variables

Variable	Cohort 1		Cohort 2		Cohort 3		Cohort 4		Cohort 5		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Early program success												
Yes	43.00	76.78	53.00	84.13	74.00	89.16	79.00	85.87	86.00	81.90	335.00	83.96
No	13.00	23.21	10.00	15.87	9.00	10.84	13.00	14.13	19.00	18.10	64.00	16.04
Total	56.00	100.00	63.00	100.00	83.00	100.00	92.00	100.00	105.00	100.00	399.00	100.00
Successful on-time completion												
Yes	39.00	69.64	48.00	76.19	64.00	77.11	63.00	68.47	74.00	70.48	288.00	72.18
No	17.00	30.36	15.00	23.81	19.00	22.89	29.00	31.52	31.00	29.52	111.00	27.82
Total	56.00	100.00	63.00	100.00	83.00	100.00	92.00	100.00	105.00	100.00	399.00	100.00
NCLEX-RN success												
Pass	45.00	93.75	54.00	98.18	60.00	83.33	63.00	84.00	69.00	95.83	291.00	90.37
Fail	3.00	6.25	1.00	1.81	12.00	16.67	12.00	16.00	3.00	4.17	31.00	9.63
Total	48.00	100.00	55.00	100.00	72.00	100.00	75.00	100.00	72.00	100.00	322.00	100.00

unsuccessful failed to complete a course, withdrew from any or all of the courses, or received a grade below a C in any nursing course. Students enroll in the following courses in the nursing program: NUR3000, Introduction to Professional Nursing; NUR3100(Z), Principles of Nursing I; NUR3260(Z), Health Assessment; NUR3110(Z), Principles of Nursing II; NUR3160, Pharmacological Concepts; NUR3400(Z), Psychiatric and Mental Health Nursing; NUR4200(Z), Global Community Outlook; NUR4300(Z), Medical Surgical Nursing I; NUR4050, Nursing Research; NUR4500(Z), Nursing Care of the Family; NUR4600, Leadership and Management; and NUR 4800(Z), Medical Surgical Nursing II. Of the 399 students enrolled in the SON during the study period, 288 (72.18%) students completed the nursing program on time, but 111 (27.81%) students did not. During the first three years of the study, successful on-time completion increased to a high of 77.11% and fluctuated in the last two years of the study between 68.47% and 70.48%. Table 10 shows successful on-time completion in the SON during the study period.

NCLEX-RN Success

NCLEX-RN success is defined as attaining a passing score on the NCLEX-RN on the first attempt. After successful graduation from an approved SON, candidates must receive a passing score to be licensed to practice as a registered nurse in the United States (NCSBN, 2014). In addition, program quality, accreditation, and state approval to operate are determined based on the first-attempt NCLEX-RN pass rate of the SON. In addition,

NCLEX-RN failure ultimately delays entry into the nursing profession, affecting the individual student as well as the nursing profession as a whole.

NCLEX-RN first-attempt pass rates have fluctuated over the course of the study period, ranging from a high of 98.18% in 2011 to a low of 83.33% in 2014. Over the course of the study period, the SON implemented a variety of interventions designed to improve the NCLEX-RN first-attempt pass rate, culminating in a NCLEX-RN pass rate of 95.83% in 2015. Table 10 illustrates the trends in NCLEX-RN success over the study period.

Logistic Regression Analysis

Logistic regression was used to predict three outcomes (early program success, successful on-time completion, and NCLEX-RN success) utilizing four predictor variables (nontraditional student, ESL student, male student, and first-generation student). Binary logistic regression is used when the outcome variable or variables are categorical, with two possible outcomes (Dimitrov, 2013). In this study, the outcome variables (early program success, successful on-time completion, male student, and NCLEX-RN success) were categorical with success vs. nonsuccess as the two options.

Sample Size

As logistic regression was utilized to analyze the relationships between the predictor and outcome variables, it is expected that the smallest group of observations in each outcome variable would be at least 10 times as large as the number of predictor variables

(Plichta & Garzon, 2009). Based on this criterion, the sample size was determined to be adequate to analyze the effect of the predictor variables of nontraditional student, ESL student, and male student and the control variables of GPA, TEAS, and transfer status on the outcome variables of early program success and successful on-time completion. Regarding the outcome variable NCLEX-RN success, the sample size was determined to be adequate to analyze the relationship between the outcome variable and the predictor variables of nontraditional student, ESL student, and male student, utilizing traditional logistic regression. The Firth procedure utilizing SAS Institute Incorporated (9.4 M2) for Windows statistical package (2014), which facilitates the use of logistic regression when the sample size is small and/or one of the outcomes occurs rarely (as rare as 1%-2% of the total events), allowed for analysis in this situation (Firth, 1993; Heinze & Schemper, 2002; Wang, 2014).

Data for the predictor variable first-generation student was available for Cohort 5 only. Utilizing traditional logistic regression analysis, the sample size allowed for the examination of the relationship between the predictor variable (first-generation student) and the outcome variables (early program success and successful on-time completion) but did not allow for the inclusion of the control variables (GPA, TEAS, and transfer status) due to the sparse nature of nonsuccess. The Firth procedure utilizing SAS Institute Incorporated (9.4 M2) for Windows statistical package (2014), allowed this analysis (Firth, 1993; Heinze & Schemper, 2002; Wang, 2014).

In addition, traditional logistic regression analysis did not allow for the examination of the relationship between the predictor variable (first-generation student) and the outcome

variable (NCLEX-RN success) due again to the sparse nature of nonsuccess in Cohort 5 of the study. The Firth procedure utilizing SAS Institute Incorporated (9.4 M2) for Windows statistical package (2014), allowed this analysis (Firth, 1993; Heinze & Schemper, 2002; Wang, 2014).

Multicollinearity

When conducting binary logistic regression, it is important to check that excessive multicollinearity is not present among the predictor variables (Dimitrov, 2013). To assess multicollinearity among predictor and control variables, collineary diagnostic statistics can be computed. Tolerance values less than .10 and variance inflation factors (VIFs) greater than 10 suggest excessive multicollinearity among the predictor variables (Dimitrov, 2013). Table 11 lists the tolerance and VIF values for the predictor and control variables (Cohorts 1-5; $N = 399$). Table 12 lists the tolerance and VIF values for the predictor and the control variables (Cohort 5; $N = 105$).

Table 11

Tolerance and VIF Factors for Predictor and Control Variables (Cohorts 1-5; $N = 399$)

Variable	*Tolerance*	*VIF*
Nontraditional student	0.726	1.377
ESL student	0.964	1.037
Male student	0.928	1.078
GPA (*z*-score)	0.911	1.098
TEAS (*z*-score)	0.806	1.240
Transfer status	0.678	1.474

Table 12

Tolerance and VIF Factors for Predictor and Control Variables (Cohort 5; $N = 105$)

Variable	*Tolerance*	*VIF*
First-generation student	0.756	1.323
GPA (*z*-score)	0.869	1.151
TEAS (*z*-score)	0.756	1.322
Transfer status	0.786	1.273

Tolerance values for all predictor and control variables were greater than .10, and all VIFs were less than 10, which indicates that excessively high correlation among the predictor and control variables (multicollinearity) is not a concern.

Interpretation of the odds ratio provides information about the magnitude of observed relationships between the predictor variables (nontraditional student, ESL student, male student, and first-generation student) and the outcome variables (early program success, successful on-time completion, and NCLEX-RN success). The statistical significance level for the analysis was set at .05. Additionally, the 95% confidence interval for the odds ratio was examined to assess whether the possibility of even odds ($OR = 1.0$) was contained within the interval (Dimitrov, 2013).

Outcome Variable: Early Program Success

Binary logistic regression was utilized to predict the probability of the outcome variable (early program success) using four predictor variables (nontraditional student, ESL student, male student, and first-generation student). The analysis predicted the probability of early program success at the end of the first semester of study within the SON.

Predictor Variables: Nontraditional Student, ESL Student, and Male Student

Overall goodness-of-fit of the logistic regression model was evaluated by the Hosmer and Lemeshow test, and the predictive capacity of the predictor variables beyond the intercept-only model was assessed using the omnibus test of model coefficients (Dimitrov, 2013). The omnibus test of model coefficients indicated that the model with the predictors fit significantly ($\chi 2[3] = 8.49$, $p = .037$) better than the intercept-only model. The Hosmer and Lemeshow test also indicated a good fit of the model to the data ($X^2[3] = 0.06$, $p = .996$).

Table 13 provides the statistics for the logistic regression. The Wald chi-square statistic and the associated *p* values ($p < .05$) indicate that the predictor variable ESL student was a statistically significant predictor of early program success (Wald $X^2 = 8.369$, $p = .004$). The associated odds ratio for this effect indicated that the odds that non-ESL students would experience early program success were 1/0.442 = 2.263 times greater than for ESL students. The effects for nontraditional student and male student were not statistically significant (Wald $X^2 = 0.269$, $p = .604$, and Wald $X^2 = 0.108$, $p = .742$, respectively).

Table 13

Binary Logistic Regression Model Prediction of Early Program Success from Nontraditional Student, ESL Student, and Male Student ($N = 399$)

Predictor Variable	*B*	Standard Error	Wald $\mathbf{X^2}$ Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Nontraditional student	0.172	0.332	0.269	.604	1.188	0.620-2.278
ESL student	-0.817	0.282	8.369	.004	0.442	0.254-0.768
Male student	0.156	0.474	0.108	.742	1.169	0.462-2.960

Predictor Variables: Nontraditional Student, ESL Student, and Male Student, Controlling for GPA, TEAS, and Transfer Status

Overall goodness-of-fit of the logistic regression model was evaluated by the Hosmer and Lemeshow test, and the predictive capacity of the predictor variables beyond the intercept-only model was assessed using the omnibus test of model coefficients (Dimitrov, 2013). The omnibus test of model coefficients indicated that the model with the full set of predictors fit significantly ($\chi^2[6] = 66.034$, $p < .001$) better than did the intercept-only model. Also, the set of variables of interest (nontraditional student, ESL student, and male student) significantly predicted early program success ($X^2[3] = 8.443$, $p = .038$), controlling for GPA, TEAS, and transfer status. The Hosmer and Lemeshow test also indicated a good fit of the model to the data ($X^2[3] = 6.406$, $p = .602$).

Table 14 provides statistics for the logistic regression. Results of the logistic regression indicated that ESL student status was statistically significant (Wald $X^2 = 5.246$, $p = .022$). Thus, holding constant GPA, TEAS, and transfer status, the odds of non-ESL students experiencing early program success were 1/0.488 = 2.049 times greater than for ESL students. In addition, nontraditional student status was found to be marginally significant (Wald $X^2 = 3.327$, $p = .068$). Thus, holding constant GPA, TEAS, and transfer status, the odds of traditional students experiencing early program success were 1/0.432 = 2.315 times greater than for nontraditional students. The effects for male student were not statistically significant (Wald $X^2 = 0.005$, $p = .942$).

Table 14

Binary Logistic Regression Model Prediction of Early Program Success for Nontraditional Student, ESL Student, and Male Student, Controlling for GPA, TEAS, and Transfer Status (*N* = 399)

Variable	*B*	Standard Error	Wald X^2 Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Predictor variable						
Nontraditional student	-0.840	0.461	3.327	.068	0.432	0.175-1.065
ESL student	-0.718	0.313	5.246	.022	0.488	0.264-0.902
Male student	0.038	0.523	0.005	.942	1.039	0.373-2.895
Control variable						
GPA (*z*-score)	0.793	0.182	18.980	<.001	2.211	1.547-3.160
TEAS (*z*-score)	0.487	0.154	10.037	.002	1.627	1.204-2.198
Transfer status	0.824	0.423	3.790	.052	2.280	0.994-5.227

Predictor Variable: First-Generation Student

Overall goodness-of-fit of the logistic regression model was evaluated by assessing predictive capacity of the predictor variable beyond the intercept-only model using the omnibus test of model coefficients (Dimitrov, 2013). The omnibus test of model coefficients indicated that the model with the predictor did not fit significantly ($\chi^2[3] = 1.890$, $p = .169$) better than did the intercept-only model.

Table 15 provides the statistics for the logistic regression. In the model, first-generation college student status was not a statistically significant predictor (Wald $X^2 = 1.758$, $p = .185$). Therefore, the analysis did not detect an association between first-generation student and early program success in prelicensure nursing education.

As data for the predictor variable first-generation student were available for Cohort 5 only, the sample size was smaller ($N = 105$). Due to the small sample size, a Firth's (1993) penalized likelihood procedure utilizing SAS Institute Incorporated (9.4 M2) for Windows (2014) was performed to analyze the relationship between the outcome

Table 15

Binary Logistic Regression Model Prediction of Early Program Success from First-Generation Student (N = 105)

	B	Standard Error	Wald $\mathbf{X^2}$ Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Predictor variable						
First-generation student	-0.749	0.565	1.758	.185	0.473	0.156-1.431

variable (early program success) and the predictor variable (first-generation student) and control variables (GPA, TEAS, and transfer status). Utilizing the Firth's penalized likelihood procedure, no significant association was detected between the outcome and predictors (X^2 = 0.001, p = .980). Table 16 shows the results for Firth's penalized likelihood procedure.

Table 16

Binary Logistic Regression Model (Firth Procedure) Prediction of Early Program Success from First-Generation Student, Controlling for GPA, TEAS, and Transfer Status (N = 105)

Variable	*B*	Standard Error	Wald $\mathbf{X^2}$ Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Predictor variable						
First-generation student	-0.016	0.637	0.001	.980	0.984	0.282-3.431
Control variable						
GPA (*z*-score)	1.028	0.357	8.304	.004	2.795	1.389-5.622
TEAS (*z*-score)	0.722	0.334	4.676	.031	2.058	1.070-3.957
Transfer status	-0.406	0.631	0.414	.520	0.666	0.193-2.296

Predictor Variables: Nontraditional Student, ESL Student, and Male Student

Overall goodness-of-fit of the logistic regression model was evaluated by the Hosmer and Lemeshow test, and the predictive capacity of the predictor variables beyond

the intercept-only model was assessed using the omnibus test of model coefficients (Dimitrov, 2013). The omnibus test of model coefficients indicated that the model with the predictors fit marginally ($\chi^2[3)] = 7.690$, $p = .053$) better than the intercept-only model. The Hosmer and Lemeshow test indicated a good fit of the model to the data ($X^2[3] = 3.851$, $p = .427$).

Table 17 provides statistics for the logistic regression. The Wald chi-square statistic and the associated *p* values ($p < .05$) indicate the predictor variables that are significant predictors of successful on-time completion. Results showed that the predictor variable of ESL student was statistically significant (Wald $X^2 = 7.527$, $p = .006$). The associated odds ratio for this effect indicated that the odds that non-ESL students would experience successful on-time completion was 1/0.520 = 1.923 times greater than for ESL students. The effects for nontraditional student and male student were not statistically significant (Wald $X^2 = 0.138$, $p = .710$, and Wald $X^2 = 0.031$, $p = .860$, respectively).

Table 17

Binary Logistic Regression Model Prediction of Successful On-Time Completion for Nontraditional Student, ESL Student, and Male Student ($N = 399$)

Predictor Variable	*B*	Standard Error	Wald $\mathbf{X^2}$ Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Nontraditional student	0.099	0.266	0.138	.710	1.104	0.656-1.858
ESL student	-0.655	0.239	7.527	.006	0.520	0.325-0.829
Male student	-0.066	0.372	0.031	.860	0.936	0.452-1.939

Predictor Variables: Nontraditional Student, ESL Student, and Male Student, Controlling for GPA, TEAS, and Transfer Status

Overall goodness-of-fit of the logistic regression model was evaluated by the Hosmer and Lemeshow test, and the predictive capacity of the complete set of predictor variables beyond the intercept-only model was assessed using the omnibus test of model coefficients (Dimitrov, 2013). The omnibus test of model coefficients indicated that the model with the predictors fit significantly ($\chi^2[6] = 80.408$, $p < .001$) better than the intercept-only model. Additionally, the set of predictor variables of interest (nontraditional student, ESL student, and male student) significantly predicted on-time completion ($X^2[3] = 11.009$, $p = .012$) after controlling for GPA, TEAS, and transfer status. The Hosmer and Lemeshow test also indicated a good fit of the model to the data ($X^2[3] = 9.408$, $p = .309$).

Table 18 provides the statistics for the logistic regression. Results of the logistic regression indicated that the variable of ESL student was found to be statistically significant (Wald $X^2 = 4.342$, $p = .037$). Thus, holding constant GPA, TEAS, and transfer student, the odds of non-ESL students experiencing successful on-time completion were 1/0.570 = 1.754 times greater than for ESL students. In addition, nontraditional student status was found to be statistically significant (Wald $X^2 = 5.959$, $p = .015$). Thus, holding constant GPA, TEAS, and transfer status, the odds of traditional students experiencing successful on-time completion were 1/0.415 = 2.410 times greater than for nontraditional students. The effects for male student were not statistically significant (Wald $X^2 = 0.453$, $p = .501$).

Table 18

Binary Logistic Regression Model Prediction of Successful On-Time Completion from Nontraditional Student, ESL Student, and Male Student, Controlling for Transfer Status, GPA, and TEAS Score (N = 399)

Variables	*B*	Standard Error	Wald X^2 Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Predictor variable						
Nontraditional student	-0.880	0.360	5.959	.015	0.415	0.205-0.841
ESL student	-0.561	0.269	4.342	.037	0.570	0.336-0.967
Male Student	-0.283	0.420	0.453	.501	0.754	0.331-1.718
Control variable						
GPA (*z*-score)	0.638	0.140	20.711	<.001	1.892	1.438-2.489
TEAS (*z*-score)	0.521	0.135	14.919	<.001	1.684	1.293-2.194
Transfer status	0.945	0.330	8.213	.004	2.574	1.348-4.913

Predictor Variable: First-Generation Student

Overall goodness-of-fit of the logistic regression model was evaluated by assessing the predictive capacity of first-generation status beyond the intercept-only model using the omnibus test of model coefficients (Dimitrov, 2013). The omnibus test of model coefficients indicated that the model with the predictor did fit marginally significantly ($\chi^2[3] = 3.830$, $p = .050$] better than did the intercept-only model.

Table 19 provides the statistics for the logistic regression. In the model, first-generation student status was a marginally significant predictor (Wald $X^2 = 3.582$, $p = .058$). Thus, the odds of non-first-generation students experiencing successful on-time completion were 1/0.408 = 2.450 times greater than for first-generation students.

Table 19

Binary Logistic Regression Model Precition of Successful On-Time Completion for First-Generation Student (N = 105)

Predictor Variable	*B*	Standard Error	Wald $\mathbf{X^2}$ Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
First-generation student	-0.894	0.472	3.582	.058	0.408	0.162-1.032

Due to the small sample size, a Firth's (1993) penalized likelihood procedure utilizing SAS Institute Incorporated (9.4 M2) for Windows (2014) was performed to analyze the relationship between the outcome variable (successful on-time completion), the predictor variable (first-generation student), and control variables (GPA, TEAS, and transfer status). Utilizing Firth's penalized likelihood procedure, no significant association was detected between the outcome and predictors (Wald $X^2 = 0.242$, $p = .623$). Table 20 shows the results for Firth's penalized likelihood procedure.

Table 20

Binary Logistic Regression Model (Firth Procedure) Prediction of Successful On-Time Completion for First-Generation Student, Controlling for GPA, TEAS, and Transfer Status (N = 105)

Variables	*B*	Standard Error	Wald $\mathbf{X^2}$ Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Predictor Variable						
First Generation Student	-0.265	0.539	0.242	.623	0.479	1.185-3.683
Control Variable						
GPA (z-score)	0.947	0.292	10.562	.001	2.579	1.1456-4.566
TEAS (z-score)	0.737	0.289	6.481	.011	2.089	1.185-3.683
Transfer Status	0.202	0.524	0.149	.700	1.224	0.439-3.413

Outcome Variable: NCLEX-RN Success

Binary logistic regression was utilized to predict the probability of the outcome variable of NCLEX-RN success using four predictor variables (nontraditional student, ESL student, male student, and first-generation student). The analysis assessed the probability of first-attempt NCLEX-RN success after graduation from the SON.

Predictor Variables: Nontraditional Student, ESL Student, and Male Student

Overall goodness-of-fit of the logistic regression model was evaluated by the Hosmer and Lemeshow test, and the predictive capacity of the predictor variables beyond the intercept-only model was assessed using the omnibus tests of model coefficients (Dimitrov, 2013). The omnibus test of model coefficients indicated that the model with the predictors fit significantly ($\chi^2[3] = 8.677$, $p = .034$) better than did the intercept-only model. The Hosmer and Lemeshow test also indicated a good fit of the model to the data ($X^2[3] = 3.468$, $p = .325$).

Table 21 provides statistics for the logistic regression. The Wald chi-square statistic and the associated *p* values ($p < .05$) indicate the predictor variable nontraditional student was a statistically significant predictor of NCLEX-RN success (Wald $X^2 = 4.727$, $p = .030$). The associated odds-ratio for this effect indicated that the odds that nontraditional students would experience NCLEX-RN success was 3.919 times greater than traditional students. The effects for ESL student and male student were not statistically significant (Wald $X^2 = 0.572$, $p = .449$, and Wald $X^2 = 2.326$, $p = .127$, respectively).

Table 21

Binary Logistic Regression Model Prediction of NCLEX-RN Success from Nontraditional Student, ESL Student, and Male Student (N = 322)

Variable	*B*	Standard Error	Wald X^2 Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Predictor variable						
Nontraditional student	1.366	0.628	4.727	.030	3.919	1.144-13.424
ESL student	-.316	0.418	0.572	.449	0.729	.321-1.654
Male student	-.843	0.553	2.326	.127	0.430	.146-1.272

Predictor Variables: Nontraditional Student, ESL Student, and Male Student, Controlling for GPA, TEAS, and Transfer Status

Due to the small sample size, a Firth's (1993) penalized likelihood procedure utilizing SAS Institute Incorporated (9.4 M2) for Windows (2014) was performed to analyze the relationship between the outcome variable (NCLEX-RN success), predictor variables (nontraditional student, ESL student, and male student) and control variables (GPA, TEAS, and transfer status). Overall goodness of fit of the logistic model was evaluated by the Hosmer and Lemeshow test (Dimitrov, 2013). The Hosmer and Lemeshow test indicated a good fit of the model to the data ($X^2[8] = 6.3525$, $p = .608$).

Utilizing the Firth's (1993) penalized likelihood procedure, a significant association was detected between the outcome (NCLEX-RN success) and predictor variable (male student; Wald $X^2 = 5.487$, $p = .019$). Thus, holding constant GPA, TEAS, and transfer status, the odds that female students will achieve NCLEX-RN success is 1/0.252 = 3.964 times greater than the odds that male students will achieve this success. The effects for nontraditional student and ESL student were not statistically significant (Wald $X^2 = 0.376$,

p = .540, and Wald X^2 = 0.982, *p* = .321, respectively*).* Table 22 shows the results for Firth's penalized likelihood procedure.

Table 22

Binary Logistic Regression Model (Firth Procedure) Prediction of NCLEX-RN Success from Nontraditional Student, ESL Student, and Male Student, Controlling for GPA, TEAS, and Transfer Status (N = 322)

Variable	*B*	Standard Error	Wald X^2 Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Predictor variable						
Nontraditional student	0.441	0.669	0.376	.540	1.508	0.406-5.587
ESL student	-0.422	0.426	0.982	.321	0.655	0.284-1.511
Male student	-1.377	0.588	5.487	.019	0.252	0.080-0.799
Control variable						
GPA (*z*-score)	0.192	0.201	0.912	.340	1.212	0.817-1.798
TEAS (*z*-score)	0.399	0.186	4.593	.032	1.491	1.035-2.148
Transfer status	1.1027	0.507	4.736	.030	3.012	1.116-8.000

Predictor Variable: First-Generation Student

Due to the small sample size, a Firth's (1993) penalized likelihood procedure utilizing SAS Institute Incorporated (9.4 M2) for Windows (2014) was performed to analyze the relationship between the outcome variable (NCLEX-RN success), predictor variable (first-generation student), and control variables (GPA, TEAS, and transfer status). Overall goodness-of-fit of the logistic model was evaluated by the Hosmer and Lemeshow test (Dimitrov, 2013). The Hosmer and Lemeshow test indicated a good fit of the model to the data ($X^2[7]$ = 8.205, *p* = .315). Utilizing the Firth's (1993) penalized likelihood procedure, no significant association was detected between the outcome and predictors

(Wald $X^2 = 0.002$, $p = .961$). Table 23 shows the results for Firth's penalized likelihood procedure.

Table 23

Binary Logistic Regression Model (Firth Procedure) Prediction of NCLEX-RN Success from First-Generation Student, Controlling for GPA, TEAS, and Transfer Status (N = 72)

Variable	*B*	Standard Error	Wald $\mathbf{X^2}$ Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Predictor variable						
First-generation student	0.053	1.0811	0.002	.961	1.055	0.127-8.779
Control variable						
GPA (*z*-score)	0.324	0.455	0.507	.477	1.382	0.011-1.060
TEAS (*z*-score)	-2.247	1.176	3.648	.056	0.106	0.567-3.369
Transfer status	-0.882	1.087	0.659	.417	0.414	0.049-3.486

Analysis: Null Hypotheses

The findings of the study relate to the null hypotheses as follows:

$H_0$1: Male student status does not predict early program success in prelicensure nursing education for the sample at the research site.

Decision: Fail to reject the null hypothesis. The analysis did not detect an association between male students and early program success for the sample at the research site.

$H_0$2: Male student status does not predict successful on-time completion in prelicensure nursing education for the sample at the research site.

Decision: Fail to reject the null hypothesis. The analysis did not detect an association between male students and successful on-time completion for the sample at the research site.

$H_0$3: Male student status does not predict NCLEX-RN success for the sample at the research site.

Decision: Reject the null hypothesis. When controlling for admission GPA, TEAS, and transfer status, the odds of female students achieving NCLEX-RN success was 3.964 times greater than for male students (Wald $X^2 = 5.487$, $p = .019$).

$H_0$4: Nontraditional student status does not predict early program success in prelicensure nursing education for the sample at the research site.

Decision: Reject the null hypothesis. When controlling for admission GPA, TEAS, and transfer status, the odds of traditional students experiencing early program success is 2.315 times greater than for nontraditional students in prelicensure nursing education for the sample at the research site (Wald $X^2 = 3.327$, $p = .068$, marginally significant).

$H_0$5: Nontraditional student status does not predict successful on-time completion in prelicensure nursing education for the sample at the research site.

Decision: Reject the null hypothesis. When controlling for admission GPA, TEAS, and transfer status, the odds of traditional students experiencing successful on-time completion is 2.410 times greater than for nontraditional students for the sample at the research site (Wald $X^2 = 5.959$, $p = .015$).

$H_0$6: Nontraditional student status does not predict NCLEX-RN success for the sample at the research site.

Decision: Reject the null hypothesis. The odds of nontraditional students achieving NCLEX-RN success is 3.919 times greater than for traditional students in prelicensure nursing education for the sample at the research site (Wald $X^2 = 4.727$, $p = .030$).

$H_0$7: ESL student status does not predict early program success in prelicensure nursing education for the sample at the research site.

Decision: Reject the null hypothesis. The odds of non-ESL students achieving early program success is 2.263 times greater than for ESL students in prelicensure nursing education for the sample at the research site (Wald $X^2 = 8.369$, $p = .004$). Further, when controlling for admission GPA, TEAS, and transfer status, the odds of non-ESL students achieving early program success is 2.049 times greater than for ESL students (Wald $X^2 = 5.246$, $p = .022$).

$H_0$8: ESL student status does not predict successful on-time completion in prelicensure nursing education for the sample at the research site.

Decision: Reject the null hypothesis. The odds of non-ESL students achieving successful on-time completion is 1.923 times greater than for ESL students in prelicensure nursing education for the sample at the research site (Wald $X^2 = 7.527$, $p = .006$). Further, when controlling for admission GPA, TEAS, and transfer status, the odds of non-ESL students achieving successful on-time completion is 1.754 times greater than for ESL students (Wald $X^2 = 4.342$, $p = .037$).

$H_0$9: ESL student status does not predict NCLEX-RN success for the sample at the research site.

Decision: Fail to reject the null hypothesis. The analysis did not detect an association between ESL student status and NCLEX-RN success for the sample at the research site.

$H_0$10: First-generation student status does not predict early program success in prelicensure nursing education for the sample at the research site.

Decision: Fail to reject the null hypothesis. The analysis did not detect an association between first-generation student status and early program success in prelicensure nursing education for the sample at the research site.

$H_0$11: First-generation student status does not predict successful on-time completion in prelicensure nursing education for the sample at the research site.

Decision: Reject the null hypothesis. The odds of non-first-generation students achieving successful on-time completion is 2.450 greater than for first-generation students for the sample at the research site (Wald $X^2 = 3.582$, $p = .058$, marginally significant).

$H_0$12: First-generation student status does not predict NCLEX-RN success for sample at the research site.

Decision: Fail to reject the null hypothesis. The analysis did not detect an association between first-generation student status and NCLEX-RN success for the sample at the research site.

Summary

In this study, binary logistic regression was used to predict three outcomes (early program success, successful on-time completion, and NCLEX-RN success) using four predictor variables (nontraditional student, ESL student, male student, and first-generation student) and three control variables (GPA, TEAS, and transfer status). For the outcome variable of early program success, the predictor variable of ESL student was found to be statistically significant, both alone and when controlling for GPA, TEAS, and transfer student status, indicating that non-ESL students were more likely to experience early program success than were ESL students. In addition, the predictor variable of nontraditional student was found to be marginally significant when holding constant GPA, TEAS, and transfer student status, indicating that traditional students were more likely to experience early program success than were nontraditional students.

Regarding the outcome variable of successful on-time completion, the predictor of variable ESL student was statistically significant, both alone and when holding constant GPA, TEAS, and transfer student status, indicating that non-ESL students were more likely to experience successful on-time completion than were ESL students. In addition, the predictor of variable first-generation student was marginally significant, indicating that non-first-generation students were more likely to experience successful on-time completion than were first-generation students. Finally, when holding constant GPA, TEAS, and transfer status, the predictor variable of nontraditional student was statistically significant, indicating that traditional students were more likely to experience successful on-time completion than were nontraditional students.

Regarding the outcome variable of NCLEX-RN success, the predictor variable of nontraditional student was statistically significant, indicating that nontraditional students were more likely to experience NCLEX-RN success than their traditionally aged peers. In addition, the predictor variable of male student was statistically significant, indicating that female students were more likely to experience NCLEX-RN success than their male counterparts. Table 24 provides a summary of statistically significant results of the study.

Table 24

Binary Logistic Regression Model: Summary Table of Statistically Significant Results of Prediction of Early Program Success, On-Time Completion, and NCLEX-RN Success

Variables	*B*	Standard Error	Wald X^2 Statistic	*p*	Odds Ratio	95% C.I for Odds Ratio
Early program success						
ESL student	-0.817	0.282	8.369	.004	0.442	0.254-0.768
ESL student with control variables	-0.718	0.313	5.246	.022	0.488	0.264-0.902
Nontraditional student with control variables	-0.840	0.461	3.327	.068	0.432	0.175-1.065
On-time completion						
ESL student	-0.655	0.239	7.527	.006	0.520	0.325-0.829
ESL student with control variables	-0.561	0.269	4.342	.037	0.570	0.336-0.967
Nontraditional student with control variables	-0.880	0.360	5.959	.015	0.415	0.205-0.841
First-generation student	-0.894	0.472	3.582	.058	0.408	0.162-1.032
NCLEX success						
Nontraditional student	1.366	0.628	4.727	.030	3.919	1.144-13.424
Male student	-1.377	0.588	5.487	.019	0.252	0.080-0.799

Given the shortage of seats in nursing schools nationwide, this study can help to identify at-risk students early for the purpose of developing interventions intended to promote early program success, successful on-time completion, and NCLEX-RN success and to ease, ultimately, the nursing shortage in the United States.

CHAPTER 5

DISCUSSION

A nursing shortage in the United States is projected over the next 20 years due to factors emanating from both the supply and demand sides of the equation. From the demand side of the equation, three factors contribute to the projected shortage of registered nurses. These factors include an increased demand for healthcare services by an aging Baby Boomer population, an overall increase in the demand for high-technology services, and, most substantially, an increase in access to healthcare services afforded through the enactment of the Affordable Care Act of 2012. From the supply side of the equation, an aging nursing workforce, a shortage of nurses prepared at the baccalaureate level, as well as a shortage of nursing faculty exert a negative influence directly on the supply of registered nurses in the United States. In combination, the shortages of registered nurses from both the demand and supply sides of the equation coalesce to form what has been projected to become a critical shortage of registered nurses in the United States.

As a result of the projected impending nursing shortage, substantial societal as well as institutional pressure has been placed on schools of nursing nationwide to continually produce additional new graduate nurses. As schools of nursing work diligently to meet the increased demand for new graduate nurses, retention of students to graduation remains an issue (AACN, 2011; Jeffreys, 2004).

Nursing program attrition not only exacerbates the nursing shortage by reducing the number of new graduate nurses eligible to practice, ultimately, as registered nurses, but the negative consequences of attrition are experienced by students as well as stakeholders in the present healthcare environment (AACN, 2010). Institutions of higher education suffer the loss of tuition dollars, and students suffer an often substantial emotional and financial cost associated with attrition. Finally, the profession of nursing suffers the effects of an increasing nursing shortage. To remedy the situation, schools of nursing have been focused on thoughtful admission policies for the purpose of admitting students most likely to graduate in combination with retention initiatives designed to retain students to graduation.

This study attempts to fill a gap in the literature regarding the extent to which selected demographic variables predict early program success, successful on-time completion, and NCLEX-RN success. It is critical to identify at-risk students as early in the process as possible. More specifically, early identification of at-risk students can allow for remediation and development of interventions specifically designed to prevent attrition in this student population.

This chapter consists of a discussion of the study findings. The discussion is organized into the following sections: (a) research questions, (b) predictor variables (nontraditional student, ESL student, male student, and first-generation student), (c) implications for practice, (d) limitations, and (e) implications for future research.

Research Questions

The following research questions are repeated from the previous chapter for the convenience of the reader.

1. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict early program success within a baccalaureate nursing program?

2. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict successful on-time completion within a baccalaureate nursing program?

3. To what extent do selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict NCLEX-RN success within a baccalaureate nursing program?

Research Question 1: Early Program Success

Operationally, early program success is defined as passing all courses with a grade of C or better at the end of the first semester of a four-semester prelicensure nursing program and having no course withdrawals. Students who are unsuccessful failed to complete a course, withdrew from any or all of the courses, or received a grade below a C in any nursing course.

Of the 399 students enrolled in the SON during the study period, 335 (83.96%) students experienced early program success and 64 (16.04%) students were unsuccessful. During the first three years of the study, early program success increased steadily to a high

of 89.16% and declined to 81.90% in the last two years of the study. Early in the study, faculty members were focused on improving the retention rate of students early in the program. In response to the NCLEX-RN pass-rate drop in Year 3 of the study, faculty attention turned to NCLEX-RN improvement; thus, early program success was no longer a top priority, and attrition rates rose.

The results of the logistic regression analysis revealed a statistically significant relationship between the predictor variable of ESL student and the outcome variable of early program success, both alone and when controlling for academic factors (GPA and TEAS score) and transfer status. In addition, the predictor variable of nontraditional student was found to be marginally significant when holding constant admission GPA, TEAS, and transfer student status. Thus, the results indicate that ESL students as well as nontraditional students are less likely to experience early program success than are their peers. In regard to early program success, the logistic regression analysis did not reveal a statistically significant association between first-generation student or male student and the outcome variable.

Comparison of early program success nationally and/or among nursing programs presents difficulty. A consistent definition among schools of nursing regarding early program success simply does not exist. Nursing curricula varies greatly among schools of nursing, regionally and nationally, which contributes substantially to the lack of consistent definition. For example, early program success may be defined at varying points in the curriculum, such as the end of the first semester or the end of the second semester. In addition, schools utilizing a system other than the semester system define early program

success differently. Finally, nursing programs may use GPA or perhaps standardized testing to define early program success rather than the completion of specific nursing courses. Lack of a consistent definition of early program success makes comparison among nursing programs, regionally or nationally, difficult.

Lack of a consistent definition of early program success makes comparison with previous studies in the nursing literature difficult as well (Newton, Smith, & Moore, 2007; Newton, Smith, Moore, & Magnan, 2007; Potolsky et al., 2003). As attrition occurs most often at the end of the first semester of nursing school, primarily due to in the increased rigor common to nursing education and/or the adjustment to clinical experiences, early identification and intervention are crucial to nursing student success (Hopkins, 2008; Jeffreys, 2004). Without a consistent definition of early program success, it is difficult to develop evidence-based interventions to reduce attrition early in nursing education.

Research Question 2: Successful On-Time Completion

Operationally, successful on-time completion is defined as graduation from the four-semester/two-year nursing program in four consecutive semesters without any course failures, course repeats, withdrawals, drop-outs, or stop-outs. Students who were unsuccessful failed to complete a course, withdrew from any or all of the courses, or received a grade below a C in any nursing course.

Of the 399 students enrolled in the SON during the study period, 288 (72.18%) students completed the nursing program on time, but 111 (27.81%) students were unsuccessful. Further, 59 students completed the nursing program utilizing additional time

(14.8%), and 52 students (13%) either withdrew from the program or were academically dismissed. The overall graduation rate for the study site, including those students who graduated from the program utilizing additional time, was 87%.

The comparison of successful on-time completion and/or graduation rates regionally, nationally, and among specific nursing programs in the United States is difficult. Neither the AACN nor the NLN publish standardized calculations for graduation rates or standardized reports regarding nursing program graduation statistics. The last known report was published in 2012 by the NLN, indicating that, nationally, baccalaureate nursing programs graduated 81% of the students enrolled (NLN, 2012a).

The logistic regression analysis revealed a statistically significant result for the predictor variable of ESL student, both alone and when holding constant academic factors (GPA and TEAS scores), and transfer student status. Further, the logistic regression analysis revealed a marginally significant result for the predictor variable of first-generation student. Finally, the logistic regression analysis revealed a statistically significant result for the predictor variable of nontraditional student when holding constant academic factors (GPA and TEAS score) and transfer student status. Thus, the study revealed that ESL students, nontraditional students, and first-generation students are less likely to experience successful on-time completion than are their non-ESL, traditionally aged, and non-first-generation peers. Regarding successful on-time completion, the logistic regression analysis did not reveal a statistically significant association between the predictor variable of male student and the outcome variable.

Successful on-time completion or graduation has rarely been studied in the literature (Jeffreys, 1998; Simmons & Haupt, 2003; Simmons et al., 2004;Symes et al., 2005). This paucity in the literature makes comparison regionally, nationally, and/or among nursing programs difficult. Although the bulk of literature examines NCLEX-RN success, successful on-time completion may better inform student success, leading to interventions designed and implemented earlier in the program. Such interventions may indeed lead to improved rates of retention and subsequently increased rates of successful on-time completion within baccalaureate nursing education.

Research Question 3: NCLEX-RN Success

NCLEX-RN success is defined as attaining a passing score on the NCLEX-RN on the first attempt. After successful graduation from an approved SON, candidates must receive a passing score in order to be licensed to practice as a registered nurse in the United States (NCSBN, 2014). Program quality, accreditation, as well as state approval to operate as a SON are determined, in part, based on the first-attempt NCLEX-RN pass rate. Thus, it is reasonable to conclude that the NCLEX-RN that could reasonably be considered a high-stakes examination for students and SONs alike.

NCLEX-RN first-attempt pass rates at the study site fluctuated over the course of the study period, ranging from a high of 98.18% in 2012 for Cohort 2 to a low of 83.33% for Cohort 3 in 2013. Over the course of the study period, the SON implemented a variety of interventions designed to improve the NCLEX-RN first-attempt pass rate, culminating in a NCLEX-RN pass rate of 95.83% in 2015. These interventions included a thorough

curriculum evaluation, admissions evaluation, as well as implementation of a student progression plan utilizing standardized testing in selected nursing courses.

Over the study period, nationally, the NCLEX-RN pass rate ranged from 91.66% in 2011 to 84.93% in 2014 (NCSBN, 2015). According to the NCSBN, for the first two quarters of 2015, the national NCLEX-RN pass rate was 89.79%, indicating that the NCLEX-RN pass rate at the study site (95.83%) was above the national pass rate. Statewide, the NCLEX-RN pass rate for the state of Illinois ranged from 91% in 2012 to 84% in 2014 (Illinois Department of Financial and Professional Regulation (IDFPR), 2012, 2014). The state of Illinois NCLEX-RN pass-rate data were not available for 2015 at the date of this writing.

Results of the logistic regression analysis revealed a statistically significant result between the outcome variable of NCLEX-RN success and the predictor variable of nontraditional student, indicating that nontraditional students were more likely to experience NCLEX-RN success than were traditional students. Utilizing the Firth (1993) procedure, a statistically significant result between the outcome variable of NCLEX-RN success and the predictor variable of male student was revealed when holding constant academic factors (GPA and TEAS score) and transfer status. This result indicates that female students are more likely to experience NCLEX-RN success than are their male peers. In regard to NCLEX-RN success, the logistic regression analysis did not reveal a statistically significant association between the predictor variables of ESL student and first-generation student and the outcome variable.

Demographic Characteristics as Predictors for Success

ESL Students

Results of the logistic regression revealed a significant relationship between the predictor variable of ESL student and the outcome variable of early program success, both alone and when holding constant academic factors (GPA and TEAS), and transfer status. The results of the logistic regression also revealed a significant relationship between the predictor variable of ESL student and the outcome variable of successful on-time completion, both alone and when holding constant academic factors (GPA and TEAS), and transfer status. This indicates that for the students at the study site, ESL students are less likely to experience early program success and/or successful on-time completion than are non-ESL students.

Although the literature does not specifically address early program success or successful on-time completion, the findings are consistent with the literature regarding the experience of ESL students in nursing education. Attrition of ESL nursing students is multifactorial. Factors such as low-level English proficiency, acculturation, and the difficulty with timed multiple-choice examinations common to nursing education are cited as explanations for the greater attrition rate among ESL nursing students (Bosher & Bowles, 2008; Olson, 2012; Sanner et al., 2002; Simms-Giddens, 2002).

It was important to control for academic factors, namely GPA and TEAS standardized test scores, in order to rule out factors that might exert an influence on early program success, successful on-time completion, and NCLEX-RN success. In addition,

controlling for transfer status equalizes the playing field regarding where students received their prerequisite coursework. In regard to NCLEX-RN success, the logistic regression analysis did not reveal a statistically significant association between ESL student status and NCLEX-RN success.

Nontraditional Students

Results of the logistic regression analysis revealed a marginally significant relationship between the predictor variable of nontraditional student and the outcome variable of early program success when holding constant academic factors (GPA and TEAS) and transfer status. In addition, a statistically significant association was revealed between the predictor variable of nontraditional student and the outcome variable of on-time completion when holding constant academic factors (GPA and TEAS) and transfer status.

It is important to control for the academic factors and transfer status to ascertain whether the association between the predictor variable and the outcome variable is due to academic factors or transfer status rather than to the demographic factor of nontraditional student. The results of the study indicate that for students with the same GPA, TEAS, and transfer status, nontraditional students are less likely to experience early program success and successful on-time completion than are their traditionally aged peers.

Additionally, the results of the logistic regression analysis revealed a statistically significant relationship between the predictor variable of nontraditional student and

NCLEX-RN success. Results of the analysis revealed that nontraditional students were more likely to experience NCLEX-RN success than were their traditionally aged peers.

The literature regarding nontraditional students outlines the challenges specific to this student population. Starting with the work of Bean and Metzner (1985), the literature points to a different college experience for the nontraditional student. Specifically, nontraditional students face competing demands from school, family, and finances, which exert a negative influence on the time and energy available for engagement in academic endeavors. As a result of these competing demands, nontraditional students interact less with faculty and peers, utilize campus resources less often, and engage in extracurricular activities less often than their traditionally aged peers. Nontraditional students rank financial pressures, hours of employment, outside encouragement, family responsibilities, and opportunity for transfer higher than academic performance in the decision to continue in their educational pursuits (Bean & Metzner, 1985; Jeffreys, 2007). This statement alone illustrates the need for additional support services for nontraditional students to assist in persistence to graduation.

Consistent with the work of Tinto (1993), Fettig and Friesen (2014) report that social integration, friendship relationships, and caring relationships with fellow students in the program contributed to collaboration and learning for nontraditional nursing students. Fettig and Friesen (2014) conclude that faculty members are responsible for creating an atmosphere of inclusion in their institutions to prepare graduates for professional practice in diverse healthcare environments.

Consistent with the work of Bean and Metzner (1985), Jeffreys (2007), and Fettig and Friesen (2014), it is plausible for this study to conclude that nontraditional students face specific challenges unique to their nontraditional status, such as financial pressures, family obligations, and employment commitments, which may contribute substantially to the decision to persist, accounting for the lower rates of early program success and on-time completion. Interventions designed to ease the pressures specific to nontraditional students, such as faculty and peer mentoring, as well as additional access to university financial and employment resources, may be instrumental in the decision for the nontraditional student to persist to graduation.

Interestingly, the results of this study reveal that nontraditional students who persist to graduation pass NCLEX-RN at nearly four times the rate as their traditionally aged peers. This statement underscores the importance of early identification of at-risk nontraditional students.

First-Generation Students

Results of the logistic regression analysis revealed a marginally significant relationship between the predictor varibable of first-generation student and successful on-time completion. This finding is consistent with the literature regarding first-generation students. Pascarella et al. (2004) outline the challenges faced by first-generation students in the attainment of higher education. First-generation students share similar challenges to nontraditional students in that first-generation students are more likely to commute to campus, are less likely to interact with faculty and peers, tend to work more hours off-

campus, and are less likely to engage in extracurricular activities than are their non-first-generation peers. Pascarella et al. (2004) posit that a lack of social capital prevents first-generation students from forging the relationships on campus integral to success.

Tinto (1998) asserts that persistence in higher education is more likely for students who are academically and socially integrated into the higher education experience. First-generation students are less likely to interact with faculty and peers and are less likely to live on campus; thus, social integration poses a challenge for first-generation students. Berger and Milem (1999) conclude that students who integrate successfully into the college environment come into the experience with the beliefs, behaviors, and values (social capital) common to higher education. Collier and Morgan (2008) add that first-generation college students must master the "student role" to ascertain what is expected of them in college. It is the cultural capital handed down from parents that assists students in mastering this student role (Collier & Morgan, 2008).

Consistent with the work of Pascarella et al. (2004), it is plausible for this study to conclude that challenges specific to the first-generation student place such students at a disadvantage. Such challenges as commuter student status, off-campus work schedules, and financial pressures might exert an influence on student persistence, resulting in a delay in graduation (on-time completion).

The results of the logistic regression analysis did not reveal an association between the predictor variable of first-generation student and the outcome variables of early program success and NCLEX-RN success. Because data for first-generation student status was available for only the final cohort of the study, it is plausible to conclude that a larger

sample size is likely to be necessary to detect a relationship between the predictor variable of first-generation student and the remaining outcome variables.

Male Students

Results of the logistic regression analysis revealed a statistically significant association between the predictor variable of male student and the outcome variable of NCLEX-RN success, indicating that female students were more likely to experience NCLEX-RN success than were their male peers. The results of the logistic regression analysis did not reveal an association between the predictor variable of male student and the outcome variables of early program success and successful on-time completion.

Although a paucity in the literature exists regarding male students and NCLEX-RN success, the literature asserts that males experience nursing school differently than do their female counterparts (Anthony, 2006). Studies suggest that male students were more likely to experience attrition in nursing education than were female students (McLaughlin et al., 2010; Stott, 2007). Male students experience specific challenges in nursing education, including gender-based stereotypes, social isolation, teaching materials that contain gender bias, poor treatment in clinical areas, and a lack of male role models and/or mentors (Anthony, 2004; Cude & Winfrey, 2007; O'Lynn, 2007).

Although the results of the study did not detect an association between the predictor variable of male student and the outcome variables of early program success and successful on-time completion, it is important to examine the experience of male students in nursing education. Traditionally, male students have constituted a small percentage of students

within the nursing program at the study site. Of the 399 students included in the study, only 40 students (10.03%) were male. It is plausible to conclude that a larger sample size of male students was needed to detect a relationship between the predictor variable of male student and the outcome variables of early program success and successful on-time completion.

Implications for Practice in Nursing Education: Wells's Epidemiological Approach to Nursing Student Attrition

Wells (2003), in an epidemiological approach to nursing student attrition, utilizes primary, secondary, and tertiary prevention to delineate the process of nursing school attrition into easily identifiable phases. Primary prevention, as applied to nursing education, would include thoughtful admission policies designed to recruit and admit those students adequately prepared for the rigor of nursing education. The literature regarding primary prevention points consistently to a quantitative admission process based on some combination of GPA and standardized test scores as the gold standard in reducing attrition. Logically, it follows that admitting those least likely to fail would result in higher rates of retention, thus primary prevention.

In addition to thoughtful admission policies, Wells (2003) suggests the following strategies in primary prevention. First, public awareness must be raised regarding the realities of nursing education and the nursing profession as a whole. Accurate information at the outset would reduce the number of students who leave nursing education due to unrealistic and over-romanticized perceptions of the nursing profession. Further, faculty

development in primary prevention should include programs in cultural diversity and retention. Such faculty development opportunities would increase awareness of the importance of faculty-student relationships in retention of nursing students.

Utilizing the results of the present study, the importance of not only admitting those students most likely to succeed but also the importance of preparation in anticipation of admission cannot be overstated. Thus, an introductory seminar ("boot camp") to nursing education may prove successful. Such an intervention would include an introduction to the university, relevant nursing program policies, and available student resources, as well as study, test-taking, and stress-reduction strategies. Most importantly, the introductory seminar or "boot camp" concept could be conducted in an atmosphere designed to promote bonding and friendship relationships. Such an intervention would not only provide a realistic view of nursing education but would also provide the necessary tools for success in nursing education.

Wells (2003) suggests that secondary prevention, when applied to nursing student attrition, would include identification (diagnosis) and interventions (treatment) to assist at-risk students. Policies used to identify students at risk for attrition as well as interventions such as structured academic assistance programs, peer and faculty mentoring programs, and increasing accessibility of available resources would all qualify as activities in secondary prevention of student attrition.

Utilizing the concept of secondary prevention, a peer mentoring program could be developed to address the specific challenges faced by each individual demographic group. In this peer mentoring program, incoming students would be paired with a more

experienced student of the same demographic. For example, an incoming ESL student, nontraditional student, male student, or first-generation student could be paired with a senior student of the same demographic. Who would better know how to successfully navigate the specific challenges to the student than a student of the same demographic who has successfully completed the first year of the program?

A peer mentoring program would benefit the mentees and the mentors, as well as the SON. Mentees gains knowledge and experience from a role model (Giordana & Wedin, 2010) as well as access to the mentor's network. Mentors gain the experience of being needed, a sense of recognition for their talents, and leadership experience. In addition, the mentor gains an appreciation for mentoring relationships, which leads to seeking mentoring relationships after graduation. Overall, peer mentoring programs have been shown to decrease anxiety among nursing students and contribute positively to the learning environment (Locken & Norberg, 2005; Sprengel & Job, 2004). Finally, the SON may experience increased retention, increased morale, and development of leadership skills among the students (Colalillo, 2007; Dorsey & Baker, 2004; Giorana & Wedin, 2010).

In addition to peer mentoring, faculty mentoring of at-risk students could also be instrumental in decreasing attrition. Faculty mentors can provide students from diverse backgrounds with vital information to navigate higher education. First-generation students, specifically, face additional challenges in navigating the environment of higher education. Faculty mentors can provide emotional support and socialization into nursing education, as well as into the profession of nursing. In addition, faculty mentors can serve as role models in communication, leadership, and stress management (Wilson, Andrews, & Leners, 2006).

Access to university resources, such as financial aid, on-campus work opportunities, academic support services, and social and emotional support services, can be facilitated by a faculty mentor.

The literature supports utilization of the concept of secondary prevention to decrease attrition. Tinto (1993) posits that attrition is multifactorial, consisting of both social and academic factors that coalesce to form the student experience. Further, it is the duty of the institution to identify and intervene to assist those students who are at risk for failure (Tinto, 1993). Specifically in nursing education, minority status, nontraditional student status, and first-generation status, as well as competing roles between family and school, have been studied in an effort to explain attrition (Fowler & Norrie, 2009; Jeffreys, 2004; Wells, 2003).

Identification of at-risk students early in the process for the purpose of developing interventions to promote early program success, successful on-time completion, and NCLEX-RN success cannot be understated. Such academic support programs, peer and faculty mentoring, and increased access to campus resources designed to decrease attrition could ultimately contribute to an overall easing of the nursing shortage in the United States.

Wells (2003) applies the concept of tertiary prevention to nursing student attrition through interventions that occur after failure or student leaving occurs. At the individual student level, tertiary prevention may take the form of exit interviews or alternative career counseling. At the program level, tertiary prevention may take the form of qualitative exit interviews, focus groups, and career counseling, as well as the utilization of robust program assessment.

Application of results of this study to tertiary prevention could include the use of focus groups to examine the underlying causes of attrition in nursing education. Rich qualitative data from various demographic groups may reveal barriers to nursing program success, strategies proven successful, and opportunities for improvement. Focus groups could be conducted after the first semester of study (early program success) as well as at program completion (successful on-time completion). Such data could assist in further development of interventions to assist at-risk nursing students.

Continued robust program assessment in tertiary prevention can also reveal trends in student performance and opportunities for program improvement. Continued analysis of quantitative data and implementation of continuous quality improvement based on the results of such data analysis can further improve student outcomes. Given the results of the study, heightened activities in tertiary prevention may serve in making better informed admission decisions, developing evidence-based interventions to retain students to graduation, and reducing attrition.

Limitations

Although the intention of the study was to provide a broader understanding of selected demographic variables on early program success, successful on-time completion, and NCLEX-RN success within baccalaureate nursing education, generalizability is limited to similar baccalaureate nursing programs in the United States.

The data obtained for the study were gathered from students enrolled in five cohorts in one particular nursing program from 2009-2013, with the final cohort graduating in the

spring of 2015. The data did not include students from time periods before or after the stated time frame. The study did not include data from regional, state, or national groups of students.

In addition, data for first-generation students were available for Cohort 5 only, reducing the study sample for this predictor variable. Similarly, male students comprised only approximately 10% of the sample. A larger sample size would have provided greater statistical power to analyze relationships.

Unprecedented growth occurred in the nursing program at the research site during the time frame of the study. As a function of growth, curriculum changes were enacted and new faculty were hired to accommodate the growing number of enrolled students. Such growth may have exerted influence on early program success, successful on-time completion, and NCLEX-RN success at the research site. Finally, the composition of the Admission, Policy and Progression Committee, the Curriculum Committee, and the SON Assessment Committee changed during the time frame of the study. Subsequent policy changes enacted during times of growth and change may have exerted an influence on the outcome variables as well.

Implications for Future Research

The results of this study contribute toward the advancement of evidence-based nursing education. Evidence-based practice in the profession of nursing is essential to achieve optimum patient outcomes. In the same way, evidence-based nursing education is

paramount in attaining improved outcomes not only for the students entering the profession of nursing but also for the profession of nursing itself.

Although the intention of the study was to provide a broader understanding of selected demographic variables on early program success, successful on-time completion, and NCLEX-RN success within baccalaureate nursing education, additional studies are needed at various sizes and types of baccalaureate nursing programs (public, private, large, small, etc.). Larger studies conducted at various types of institutions could further inform the barriers common to nontraditional, ESL, male, and/or first-generation students in nursing education.

In the United States, nursing program admission is highly competitive, with 79,659 qualified applicants denied admission in 2012 (AACN, 2011). With the limited number of available seats in nursing programs, it is imperative that the students chosen for admission are those who are most likely to graduate and become registered nurses. The bulk of the research in nursing program admissions concludes that students should be admitted based on a weighted formula of GPA and standardized test scores. Although admission policy based on cognitive factors remains the gold standard, attrition remains at unacceptable rates in nursing education.

Additional studies are needed to examine nonacademic factors in baccalaureate nursing student attrition. A qualitative study that mirrors this study, examining the lived experience of nursing education for nontraditional, ESL, male, and first-generation students, could further research in attrition/retention. Such a study could enumerate the specific challenges students in these demographic groups experience in nursing education.

Further, utilizing the results of this study, qualitative work in this area could inform interventions to be designed and implemented to reduce attrition.

Quantitative studies examining additional demographic characteristics such as the predictive value of ACT/SAT scores, high school quality, and transfer student status could also serve to inform interventions to prevent attrition. In addition, psychological factors such as stress, coping skills, and anxiety could be studied to ascertain the contribution of such factors to attrition in nursing education.

Studies utilizing larger samples of nursing students, particularly first-generation and male nursing students, could make an important contribution to the literature. In the present study, first-generation student status was available for only the final cohort of the study. With a larger sample, an association between the predictor variable of first-generation student and the outcome variables of early program success and NCLEX-RN success might have been discovered. Finally, with male students comprising approximately only 10% of the sample population, an association could not be established between the predictor and outcome variables of early program success and successful on-time completion. A larger sample size might have provided greater statistical power to analyze relationships.

Given the results of the study indicating that male students are less likely to experience NCLEX-RN success, in combination with the paucity of studies on the subject, additional research is needed, specifically qualitative studies examining the lived experience of male nursing students and NCLEX-RN success. It would be important to examine the possibility of gender bias in the NCLEX-RN. Further, due to the small sample

size of male students in the present study, larger quantitative studies with additional male nursing students are needed.

Also needed are additional studies that examine the experiences of institutions with high retention rates (≥ 90%) and exemplary NCLEX-RN pass rates (≥ 90%) to identify successful policies and interventions to improve retention and NCLEX-RN pass rates nationwide.

A substantial challenge in the study of attrition/retention in nursing education is the lack of standardized definitions of important terms. Such terms as "attrition," "retention," "graduation rate," and "early program success" are defined in a myriad of ways in the literature. A standardized language would allow nurse educators and researchers to speak a common language to improve student outcomes. Research in the area of attrition/retention would be more meaningful if researchers were speaking in standardized terminology.

At the present time, a national database for nursing education statistics does not exist. Such a database would include data for every student and every nursing program in the United States. The AACN and the NLN maintain limited data but do not provide data on a national level. The population of baccalaureate nursing students is rather large. The possibilities of nursing research seem endless if a national database existed from which to draw sample data!

Summary

The purpose of this study was to examine the extent to which selected demographic variables (nontraditional student, ESL student, male student, and first-generation student) predict early program success, successful on-time completion, and NCLEX-RN success in baccalaureate nursing education. The predictor variables that were found to be significant were ESL student status, both alone and when holding constant academic factors (GPA and TEAS score), and transfer status for two outcome variables (early program success and successful on-time completion). The results indicated that ESL students are less likely to experience early program success and on-time completion than are their non-ESL peers.

In addition, the result of the predictor variable of nontraditional student was found to be statistically significant for all three of the outcomes variables (early program success, successful on-time completion, and NCLEX-RN success). The results indicated that nontraditional students are less likely to experience early program success and on-time completion than are their traditional peers, although nontraditional students who complete the nursing program experienced NCLEX-RN success at a greater rate than did their traditionally aged peers.

Further, the results of the predictor of variable first-generation student was found to be statistically significant for the outcome variable of on-time completion, indicating that first-generation students are less likely to experience on-time completion than are their peers. Finally, results of the predictor variable of male student revealed a statistically significant association for the outcome variable NCLEX-RN success, indicating that male

students are less likely to experience NCLEX-RN success than are their female counterparts.

Upon examination of the literature regarding attrition in nursing education, it is reasonable to conclude that nontraditional, first-generation, and ESL nursing students face specific and common challenges in the nursing education journey. Such challenges as family responsibilities, financial pressures, hours of work, and commuter difficulties are common to students in these demographic groups. In addition, the literature points to low levels of integration and engagement in the college experience that occur as a result of the additional challenges common to students who share nontraditional, first-generation, and/or ESL student status.

Continued research in the area of NCLEX-RN success and the experience of male nursing students is needed due to the paucity of research in the area. Male nursing students experience nursing education differently, which may exert an influence on NCLEX-RN success. Continued research in the area may inform interventions specifically designed to increase NCLEX-RN success in this student demographic.

Additional research in the area of attrition and retention can be used to further inform admission and retention policies. With additional research, admission policies within schools of nursing nationwide can be strengthened to ensure that, given the shortage of seats in nursing programs, available seats are allocated to those students with the best probability of graduating, achieving NCLEX-RN success, and practicing as registered nurses. In addition, progression policies and remediation efforts may be informed by additional research.

As the nursing shortage in the United States reaches critical levels, SONs face pressure to contribute increasingly larger numbers of new graduate nurses to the registered nurse workforce. It is imperative to utilize the results from this study to develop policy to identify at-risk nursing students as early in the nursing education journey as possible. Early identification of at-risk nursing students can enable the development and implementation of specific interventions designed to promote early program success, successful on-time program completion, NCLEX-RN success, and, ultimately, entrance into the nursing profession, thus easing the nursing shortage in the United States.

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APPENDICES

APPENDIX A

IRB PERMISSION LETTER

AURORA UNIVERSITY

March 9, 2015

Institutional Review Board
Northern Illinois University
DeKalb, Illinois 60115

Principal Investigator: Nancy Petges, MSN, RNC

Research Project Title: The Predictive Value of Demographic Factors on Early Program Success, On-time Completion, and NCLEX-RN Success in a Bachelor of Science in Nursing Program

To whom it may concern:

On behalf of Aurora University, School of Nursing, I am writing to grant permission for Nancy Petges, to conduct her dissertation research titled, " The Predictive Value of Demographic Factors on Early Program Success, On-time Completion, and NCLEX-RN Success in a Bachelor of Science in Nursing Program" at Aurora University. I understand that Nancy Petges will use extant data obtained from the School of Nursing to conduct her research.

Sincerely,

Barbara J Lockwood

Barbara Lockwood, Ph.D., RN, CNE
Director and Associate Professor, School of Nursing

AURORA UNIVERSITY

March 9, 2015

Institutional Review Board
Northern Illinois University
DeKalb, Illinois 60115

Principal Investigator: Nancy Petges, MSN, RNC

Research Project Title: The Predictive Value of Demographic Factors on Early Program Success, On-time Completion, and NCLEX-RN Success in a Bachelor of Science in Nursing Program

To whom it may concern:

On behalf of Aurora University, School of Nursing, I am writing to grant permission for Nancy Petges, to conduct her dissertation research titled, " The Predictive Value of Demographic Factors on Early Program Success, On-time Completion, and NCLEX-RN Success in a Bachelor of Science in Nursing Program" at Aurora University. I understand that Nancy Petges will use extant demographic data obtained from the Registrar's Office to conduct her research.

Sincerely,

Lisa M. Wisniowicz

Lisa Wisniowicz
Registrar, Aurora University

APPENDIX B

IRB APPROVAL LETTER

March 17, 2015

Nancy Petges:

This is to inform you that your research proposal, *The Predictive Value of Demographic Factors on Early Program Success, On-Time Completion, and NCLEX-RN Success in a Bachelor of Science in Nursing Program*, has been approved with a full review by the Institutional Review Board of Aurora University.

This approval is effective for one year from the date of this letter. If your project continues beyond that time or if you make modifications to the study, you will need additional approval through the IRB. Continuing review of the project, conducted annually, will be necessary until the completion of the study.

If your proposal requires consent forms, copies of the stamped consent form must be used in all of your data collection. You are responsible for retaining the signed consent forms for a minimum of three years after completion of the study. In addition, you are required to report to the IRB any unanticipated problems or risks to subjects and others. Best wishes for the success of your research project.

Henry W Kronner

_____

Dr. Henry Kronner, IRB Chair

Proposal #478

347 S. Gladstone Avenue, Aurora, IL 60506-4892

APPENDIX C

EXEMPTION DETERMINATION

Exempt Determination

31-Mar-2015

Nancy Petges

Counseling, Adult and Higher Education

RE: Protocol #*HS15-0104 "The predictive value of demographic variables on early program success, on time completion and NCLEX-RN success in a bachelor of science nursing program"*

**

Dear Nancy Petges,

Your application for institutional review of research involving human subjects was reviewed by Institutional Review Board #2 on *31-Mar-2015* and it was determined that it meets the criteria for exemption, as defined by the U. S. Department of Health and Human Services Regulations for the Protection of Human Subjects, 45 CFR 46.101(b), 4

Although this research is exempt, you have responsibilities for the ethical conduct of the research and must comply with the following:

Amendments: You are responsible for reporting any amendments or changes to your research protocol that may affect the determination of exemption and/or the specific category. This may result in your research no longer being eligible for the exemption that has been granted.

Record Keeping: You are responsible for maintaining a copy of all research related records in a secure location, in the event future verification is necessary. At a minimum these documents include: the research protocol, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to participants, all correspondence to or from the IRB, and any other pertinent documents.

Please include the *protocol number* (*HS15-0104*) on any documents or correspondence sent to the IRB about this study.

If you have questions or need additional information, please contact the Office of Research Compliance and Integrity at 815-753-8588.