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The Influence of Selected Academic and Demographic Characteristics on the Success of First-Year Students Enrolled in a Baccalaureate Nursing Program

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THE INFLUENCE OF SELECTED ACADEMIC AND DEMOGRAPHIC
CHARACTERISTICS ON THE SUCCESS OF FIRST-YEAR STUDENTS ENROLLED IN A
BACCALAUREATE NURSING PROGRAM

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by
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This dissertation is dedicated to my husband, Stephen T. Bond, Ph.D., whom I met as an undergraduate and with whom I have shared forty-two years of marriage. We have encouraged each other through undergraduate, Master's and now Doctoral programs. Participating in the same doctoral program and in some of the same classes has made this journey a memorable one.

This work is also dedicated to our daughters, Laura "Betsy" Bond Halphen and Stephanie Bond Hulett; our sons-in-law, Jason Halphen and Jeff Hulett, and our wonderful granddaughters Caroline and Lauren Halphen and to Baby Hulett, who is on the way. I also dedicate this to my parents, Joyce and H.H. Forbes, Jr. and to my sister, Deborah K. Forbes. My parents valued education and encouraged and supported my sister and me as we continued our education, and instilled an ethic of hard work which allowed us to succeed.

I also dedicate this to all of the nursing students whom I have had the pleasure of teaching for the past thirty-nine years.

I hope that through this achievement I might serve as a role model for my grandchildren and inspire them to value and pursue higher education.

ACKNOWLEDGMENTS

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ABSTRACT

The primary purpose of the study was to determine the influence of selected demographic and academic characteristics on success in nursing education among first year baccalaureate nursing students enrolled in a private college in the Southern region of the United States. The participants in the study were 102 baccalaureate students admitted to the nursing program in Fall, 2013. For the purpose of the study, success was defined as a grade of C or higher in two clinical nursing courses in the first year of the nursing program. Academic and demographic criteria were examined and compared using means, standard deviations, Independent t tests and a binary logistic regression analysis to determine the criteria which predicted success in the first year clinical nursing courses.

Findings indicated that none of the three grade point averages required for admission (Prerequisite GPA, Institutional GPA and Cumulative GPA) entered the binary logistic model as a predictor of success. The means of all three GPAs were higher than the GPA required for admission, yet of the 102 students admitted in Fall, 2013, only 69 students successfully completed the first year of clinical nursing courses. It was also found that grades in non-clinical nursing courses of Nursing Pharmacology, Nursing Assessment and Nursing Pathophysiology were related to the student's success, however only the Nursing Pharmacology course was found to significantly predict student success. The nature of this relationship was such that students who had completed the Pharmacology course with higher grades were more likely to be successful in the first two clinical nursing courses. Grades in this course significantly increased the researcher's ability to correctly classify nursing students on their ability to successfully complete the first year clinical nursing courses.

Based on these study findings, it was concluded that the GPA admission criteria should be raised to 3.0. In addition, students should be admitted to the non-clinical nursing courses on a provisional basis and required to complete the foundational courses of Nursing Pharmacology, Nursing Pathophysiology and Nursing Assessment with a B grade in order to gain full acceptance to the nursing program.

CHAPTER 1: SELECTED ACADEMIC AND DEMOGRAPHIC CHARACTERISTICS ON THE SUCCESS OF FIRST-YEAR STUDENTS ENROLLED IN A BACCALAUREATE NURSING PROGRAM

Introduction

The "baby boomer" generation, born between 1946 and 1964, has already begun to reach age 65 (Edlund, Lufkin, & Franklin, 2003). With improved healthcare and healthier lifestyles, it is estimated that by 2050 one in five people in the United States will be over the age of 65, with the average life expectancy increasing to 78.11 years of age (Front Matter, 2014). Evolving healthcare technology will contribute to longevity and assist the elderly to live longer, however, with the disabling effects of more complex and severe medical illnesses. With the deterioration of health, older persons seek more healthcare services, creating additional strain on the currently over-taxed healthcare system. A report by the Centers for Disease Control and Prevention (CDC) in 2006 identified that 38% of hospitalized patients were age 65 or older (Terry & Whitman, 2011). With these increasing numbers of complex and severe medical conditions, there will be a corresponding increase in the number of residents cared for in nursing homes or assisted living facilities. According to Wolf, it is expected that baby boomers "will expect more and tolerate less" (Wolf, 2003, p.32) because they are knowledgeable healthcare consumers. It is estimated that the annual cost of healthcare in retirement will be $650,000 per couple. Concern is growing regarding the fiscal impact of this rapidly increasing segment of the population. This impact will include the strain it will place on the healthcare system and entitlement programs such as Medicare and Social Security as the boomers qualify for medical, retirement and disability benefits (Wolf, 2003).

Adding to the strain on the healthcare system caused by aging baby boomers, the "United States Registered Nurse Workforce Report Card and Shortage Forecast" projects a countrywide

registered nurse shortage beginning in 2009 and extending through 2030 (Juraschek, S.P.,

Chang, X., Ranganathan, V. & Lin, V.W., 2012). This demand is projected to increase as the

demand on the healthcare system is impacted by the aging baby boomers. Nurses are an integral

part of the healthcare system and, at more than 3 million in number, make up the largest

component of healthcare professionals in the healthcare workforce in the United States,

providing the majority of direct patient healthcare within the complexity of the healthcare

environment (Institute of Medicine, 2011). It is speculated that there will not be enough

registered nurses to meet the healthcare needs of the aging baby boomers. The U. S. Bureau of

Labor Statistics (BLS) predicts a 22% increase in registered nurse positions by 2018. As the

baby boomer population grows, the RN workforce will shift from acute care settings to long term

and home healthcare (BLS, 2011). This shift will create a need for more nurses in acute and long

term care settings, critical care settings, home health and community settings (Edlund, et al,

2003).

Nursing has been plagued throughout history with cycles of workforce shortages and

over supply of registered nurses (Peterson, 1999). While nursing in the United States has

experienced workforce shortages in past decades, the nursing shortage faced today is predicted to

be long-term, and it is anticipated to worsen over the next decade with the nursing shortage

reaching critical levels. The research has predicted the shortage of registered nurses will grow to

1.1 million by 2022 (Wheeler, R., 2014). In 2007 and 2008, 100,000 nurses over the age of 50

were employed in hospitals. As the economy in the United States improved, and spouses are

again employed, many of these nurses are expected to leave the workforce to begin retirement.

This exit could be swift and profound (The Alabama Nurse, 2011). It is predicted that this

shortage will be felt in every state, with the nursing demand exceeding supply by 29% to 36%.

This demand is projected to increase as the demand on the healthcare system is impacted by the aging baby boomers. This shortage is expected to reach one million and will impact safe, quality healthcare delivery in the United States (Juraschek, et al, 2012).

In these years of high unemployment and low job growth, one of every five new jobs reported by the U.S. BLS was created in the healthcare sector. The American Association of Colleges of Nursing (AACN) speculates that registered nurses will be recruited to fill many of these new positions (AACN, 2011). The registered nurse workforce projects that employment of registered nurses will increase by 19% between 2012 and 2020, with the number of employed registered nurses increasing to 3.24 million, up from 2.21 million in 2012 (BLS, 2014). This projected growth is faster than the average for all occupations and is expected to increase due to healthcare demand. Due to the rapidly aging workforce and retirement of the existing nursing workforce in the next few years, additional nurses will be needed to fill the vacated positions, bringing the total number of additional registered nurse positions to 1.2 million by 2020 (AACN, 2012).

Peter I. Buerhaus, PhD, RN, FAAN, is the Valere Potter Professor of Nursing and Director for the Center for Interdisciplinary Health Workforce Studies in the Institute of Medicine and Public Health at Vanderbilt University Medical Center (Smith, A. P., 2007). In 2010 he was named chair of the National Health Center Workforce Commission created under the Patient Protection and Affordable Care Act. According to a report by Dr. Buerhaus in the July/August 2009 Health Affairs, the nursing shortage in the United States is expected to grow to 260,000 by 2050. This shortage is expected to be twice as large as any previous nursing shortage, large enough to incapacitate the healthcare system. Job opportunities will be best for the registered nurse with a Bachelor of Science in Nursing (BSN) due to the need to replace

retiring nurses and providing healthcare for the growing elderly population with chronic healthcare needs (BLS, 2014).

Dr. Patricia Benner issued a report in January 2010 for the Carnegie Foundation for the Advancement of Teaching which resulted in the Tri-Council for Nursing's policy statement underscoring the connection between education and quality care. The Tri-Council is made up of the American Nurses Association, the American Organization of Nurse Executives, the National League for Nursing and the American Association of Colleges of Nursing (Tri-Council for Nursing, 2010). In the policy statement the Tri-Council called for a more highly educated nursing profession to deliver quality and effective nursing care (Novotny, 2011). The reports by Dr. Buerhaus and Dr. Benner signal the importance to seek solutions for preparing more nurses with baccalaureate and higher degrees.

Several reasons account for the large size of nursing shortage projections. One reason is that the large numbers of registered nurses approaching retirement will increase over the next 2 to 3 years just as the demand for nurses in the workforce increases. Another reason is that the demand for nurses is expected to increase dramatically as the baby boomers enter the healthcare system as geriatric patients. This large segment of the population will add to the strain on the already burdened healthcare system. Peterson (1999) identified very similar reasons for the nursing shortage and suggests two important factors that contribute to the future supply of registered nurses: the aging nursing workforce in the clinical setting and the aging of the nurse faculty. The nursing workforce will be significantly reduced by the retirement of those nurses who are themselves baby boomers. Currently 900,000 of the 2.6 million working RNs are over the age of 50 and will retire in the upcoming years (The Alabama Nurse, 2011). The retirement of the nursing workforce will have a great impact on the remaining younger workforce for two

reasons: this group of nurses will retire with a vast knowledge of patient care that only

experience can provide, and many of the retiring nurses have served as mentors over the years,

guiding less experienced, younger nurses in nursing practice. With 60% of the current nursing

workforce in the baby boomer age group, hospitals will be increasingly impacted by the

retirement of these skilled nurses—a critical workforce in a complex and ever-changing hospital

environment. (Klug, 2009). Coupled with the shortage created by retiring nurses is the

projection by AACN (2016) that the registered nursing workforce will increase by 22% by 2018.

This shortage is predicted to increase to one million registered nurse positions by 2020

(Buerhaus, Auerbach & Staiger, 2009).

Numerous shortsighted solutions have addressed nursing shortages in the past but no long

term solutions have prevented this revolving cycle. Two long-term tasks of the nursing

profession have been identified by Dr. Buerhaus: "replace these aging baby boom RNs and

beyond that, increase the total supply of RNs to meet the increasing demand" (The Alabama

Nurse, 2011).

The role of the nurse has changed since the days of Florence Nightingale. Nurses fulfill

complex and unique roles in meeting the present and future healthcare needs. Nurses play a key

role in planning and providing safe, quality healthcare. Today the nursing role is multifaceted

and takes place in a variety of settings. Nurses function as educators, advocates, coordinators of

resources and healthcare policy activists (Edlund et al, 2003). "The nursing profession is

profoundly affected by a rapidly changing world. The challenges nurses face today relate to a

variety of factors: changes in demographics, unhealthy lifestyles of many Americans, the

continued environmental concerns, rapid change in the healthcare system, cost containment

pressures, advances in medical technology, bioterrorism, natural and man-made disasters,

cultural diversity within both nursing and the population, blurring of professional boundaries, increasing interdisciplinary collaboration, and issues within nursing itself" (Black, 2014, p. 421). Nurses are currently educated as critical thinkers and leaders in the healthcare system. Nurses practice in acute care hospitals, long-term care facilities, community and public healthcare centers as well as in academic settings. The nursing curriculum of tomorrow must focus on educating nurses "to provide comprehensive, team oriented, patient and population based nursing care and be capable of harnessing the ever changing medical technology in the process. Nurses' knowledge base must include the science of patient safety as well as nursing care directed at providing care to patients and families experiencing complex chronic illnesses, assisting the patient in engaging successfully in their own health management." (Murphy & Gosselin, 2012).

Baby boomers also comprise the largest segment of nursing faculty and their projected retirement will create a serious shortage in nursing education which will have a direct effect on the nursing shortage by restricting nursing program enrollment. There is currently a 6.6% nursing faculty vacancy rate with the average age of nursing faculty now 54.3 years and a wave of retirements is expected to peak in the next 10 years (Linderman, 2000). In a July 2006 report by Nursing Management Aging Workforce Survey, 55% of the current 32,000 nurse educators reported an intention to retire by 2020 (Hader et al., 2006). Coupled with the fact that nurses who pursue higher degrees do not choose careers in nursing education, these retirements will be an obstacle as baccalaureate nursing programs attempt to expand nursing programs in order to graduate greater numbers of students. Faculty shortage places limitations on student enrollments in all levels of nursing programs, which further impact the shortage of nurses in the workforce. An already existing faculty shortage is cited by nursing programs as a primary obstacle for

expanding admissions to all qualified school applicants. A nursing faculty shortage in 16 states

was reported in 2002 by the Southern Regional Board of Education (SREB). This 12% shortfall

of nursing educators was found to be a combination of new faculty positions as schools increased

enrollment and vacancies that occurred due to retirement. The survey also identified a shortage

in nurses with advanced preparation selecting to enter the nursing education workforce (SREB,

2002). A National League of Nursing /Carnegie Foundation National Survey of Nurse

Educators: Compensation, Workload and Teaching Practices (2010) reported that 48% of nurse

educators are age 55 and older with half the nurse faculty reporting plans to retire within the next

5 to 10 years (Kaufman, 2007). In an article by Roman (2008), it was predicted that "increasing

percentages of nurses will continue to seek higher education because the most exciting and

financially rewarding opportunities for nurses are to be found at the master's level and above.

This means the present faculty shortage will need to be addressed" in order to meet this need

(Roman, 2008, p. 39).

Adding to the growing faculty shortage is a decline in the number of academically

qualified nurses at the master's and doctoral levels entering nursing education rather than the

service or administrative sectors. This is due to the compensation disparity between academics

and clinical practice. The percentage of nursing students pursuing a master's degree also

dropped 27.5% from 1997 to 1998. One factor is that only 50% of the 9000 nursing faculty are

prepared at the doctoral level and qualified to teach in a master's program. This low number of

faculty will present a serious barrier to educating the nursing faculty needed for the future.

Another obstacle to expanding admissions to nursing school is the lack of available

resources for clinical practice. Schools must provide an opportunity for student practice and

evaluation of clinical skills in appropriate clinical sites. Limited clinical sites are most often found in the nursing specialty areas of psychiatric, pediatrics and obstetrics.

Recruitment efforts of students interested in the nursing profession have generally been successful. Ad campaigns along with state and federal funding for educational tuition have resulted in increased applications to nursing programs. Another reason for the increased application to baccalaureate programs is employer expectations. The Magnet Status acquired by hospitals requires that a high percentage of registered nurses be baccalaureate graduates. Also, the Institute of Medicine is promoting that 80% of the registered nurse workforce have a baccalaureate degree in nursing. The goal of increasing the educational level of the nursing workforce will move the nursing profession forward in the healthcare delivery system. The projected need for baccalaureate prepared nurses was identified by the BLS (2012) to be an occupation with the largest job growth potential through 2020 (AACN, 2011). The BLS projects that an additional 1.2 million nurses will be needed in the workforce (BLS, 2012). However, increasing enrollment in order to increase the workforce presents a challenge as students must complete the program and achieve licensure. As nursing programs increase enrollment of minimally qualified students in an attempt to address the nursing shortage, there is a risk of greater attrition rates. Instituting measures to improve retention may result in a lower National Council Licensure Examination-Registered Nurse (NCLEX-RN) pass rate for the nursing program.

In spite of increased applications to nursing programs, the American Association of Colleges of Nursing (AACN) reports that more than 75,000 qualified nursing admission applicants were denied admission to nursing schools in the United States due to lack of nursing faculty and clinical sites (AACN, 2011). The nursing faculty shortage, along with lack of

clinical sites and classroom space, often contribute to enrollment restrictions and is identified as a major reason for the limited enrollment. Nursing schools across the country are under pressure to increase enrollment and graduation rates. Undergraduate nursing students report fierce competition when applying to a nursing program, and once admitted, stress related to the challenging course of study as they prepare to work in the complex healthcare environment. It is therefore imperative that nursing schools determine pre-admission predictors of success in order to better recruit and retain qualified applicants to meet the healthcare needs of society**.**

Student success and retention are priorities for the baccalaureate nursing programs and are closely monitored by accrediting agencies such as the State Board of Nursing and the National League of Nursing Accrediting Commission. The responsibilities placed on the nursing admission committee of schools of nursing are to admit qualified students who will be successful in completion of the baccalaureate program. A need exists to identify demographic and academic variables that predict a student's first year academic success in a baccalaureate program. This study is important in instituting admission policies and criteria which have the potential for maximizing student retention and academic success in the first year nursing courses. Identification of the admission criteria could be utilized for early determination of students who are at risk of academic failure and in the development of appropriate strategies to meet the student's educational needs.

Purpose and Objectives

The primary purpose of this study is to determine the influence of selected demographic and academic characteristics on the success in nursing education among first clinical year baccalaureate nursing students at a private college in the Southern Region of the United States. The following specific objectives were established to guide this research:

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1. Describe currently enrolled students in a baccalaureate nursing program at a private college in the Southern region of the United States on the following selected demographic characteristics.

     a. Age;

     b. Gender;

     c. Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic, and White.

2. Describe currently enrolled students in a baccalaureate nursing program at a private college in the Southern Region of the United States on the following academic characteristics:

     a. Success in nursing defined as a grade of C or higher in the two first year clinical nursing courses;

     b. Grade on prerequisite nursing courses: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology;

     c. Grade in nursing courses: Introduction to Nursing; Nursing Pathophysiology; Nursing Pharmacology; and Nursing Assessment;

     d. The following selected academic measures: prerequisite nursing grade point average (GPA); institutional GPA; cumulative GPA; Composite ACT assessment score; and Test of Essential Academic Skills (TEAS).

3. Determine if a relationship exists between success in nursing and the following selected academic variables:

     a. Cumulative GPA;

     b. Institutional GPA;

c. Prerequisite nursing GPA;

d. ACT composite test score;

e. Test of Essential Academic Skills (TEAS);

f. Grade in prerequisite nursing courses including: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology;

g. Grade in nursing courses including: Introduction to Nursing, Nursing Pathophysiology, Nursing Pharmacology, and Nursing Assessment.

4. Determine if a model exists that significantly increases the researcher's ability to correctly classify nursing students on their success in nursing (defined as a grade of C or higher on the two first year clinical nursing courses) from the following demographic and academic measures:

a. Age;

b. Gender;

c. Race: American Indian; Asian; Black/African American, Hawaiian/Pacific Islander, Hispanic, and White;

d. Grade in prerequisite nursing courses including: College Writing; College Algebra; Introduction to Chemistry, Human Anatomy and Physiology, Human Anatomy and Physiology Laboratory, and Introduction to Psychology;

e. Grade in nursing courses including: Introduction to Nursing, Nursing Pathophysiology; Nursing Pharmacology; and Nursing Assessment;

f. Cumulative GPA;

g. Institutional GPA;

h. Prerequisite nursing GPA;

i. ACT composite assessment test score;

j. Test of Essential Academic Skills (TEAS).

CHAPTER 2: REVIEW OF RELATED LITERATURE

Role of the Nurse

Healthcare depends heavily on the availability of a nursing workforce of adequate number and educated at the baccalaureate level. The role of the nurse has changed since the days of Florence Nightingale. Today the nursing role is multifaceted and takes place in a variety of settings. As a profession, nursing is responsible and accountable for protecting the public though the healthcare system. Registered nurses are essential for public safety and in promoting quality healthcare. Nursing makes up the largest component of the hospital workforce and is an integral part of the healthcare system, providing direct patient care within the complexity of the healthcare environment (IOM, 2011). Nurses practice in acute care hospitals, long-term care facilities, and community and public healthcare centers as well as in academic settings. However, a nationwide shortage of nurses in the workforce currently exists and is projected to become epidemic as the "baby boomer" population enters the healthcare system as geriatric patients. It is speculated that baccalaureate nurses will be recruited to fill newly created positions in healthcare (AACN, 2012), thereby adding to the already existing nursing shortage. Research confirms that registered nurses are essential to patient safety. A shortage of registered nurses has been linked to overall quality in healthcare settings. The nursing shortage created by the new and expanding roles of nurses will result in understaffing of hospitals affecting the quality of direct patient care and may compromise patient outcomes.

In order to maintain competency, nurses must be committed to lifelong learning, technology as well as changes in science and knowledge. More nurses are seeking certification in an area of specialty nursing practice and higher education to maintain competence.

Nursing Shortage

Reports of nursing shortages date back to World War II (Nooney & Lacey, 2007). The growing population in the United States following WWII resulted in the growth of community hospitals creating a greater need for registered nurses (Goodin, 2003). The profession of nursing has experienced the latest cycle of periodic workforce shortages over the last three decades (Martiniano, McGinnis & Moore, 2011) with the exception of the "mid 1980s and the early 1990s" which is cited as a result of recession. It has been documented that during these times of economic recession that "many nurses re-entered the workforce, increased the number of hours worked, or deferred retirement plans" (Dolan, 2011, p. 11) indicating that this trend was a result of the recession and not an indication that the nursing shortage had ended. Dissatisfaction with the conditions of the work environment, along with a lack of professional autonomy, is blamed for the workforce shortages in the 1970s and again in the latter part of the 1980s (Goodin, 2003).

Throughout history nursing has experienced workforce shortages that are now considered cyclical. Historically, these shortages are predicted to reoccur with regularity (Egenes, 2012), with the current nursing shortage expected to grow to epic proportions. The current workforce shortage began in 1998 and is projected by Peter Buerhaus to reach 340,000 by 2020. This number is much lower than the 760,000 positions first reported, attributing the improved outlook to more students entering the nursing profession in their 20's and 30's (Roman, 2008). However, with many older nurses reentering the workforce, or delaying retirement, newer graduates may experience fewer available positions (Dolan, 2011).

Although the current nursing shortage was first projected to peak in 2002, the full impact is now projected to peak between 2015 and 2020 (Roman, 2008). The reality of another nursing workforce shortage is beginning to be experienced in various areas of the United States not only

by staff and healthcare institutions but also by the patients (Smith, 2002). "While the passage of the Patient Protection and Affordable Care Act has the potential to expand access to basic health services, it has heightened concerns about potential shortages of many types of healthcare professionals, including registered nurses" (Martiniano, et. el., 2011, p. 94). The demand for more nurses is expected to increase in ambulatory settings with the implementation of this Act (Martiniano et. el., 2011). The increasing demand for healthcare services parallels an increasing demand for nurses, and the nursing shortage will have a major impact on the healthcare system.

The aging baby boomers are expected to add additional strain on the healthcare system. The baby boomer generation, born between 1946 and 1964, has already begun to reach age 65. With improved healthcare and healthier lifestyles, the World Population Review estimates that by 2050 one in five people in the United States will be over the age of 65, with the mean life expectancy increasing to 78.11 years (Population and Development Review, 2014). Evolving healthcare technology will contribute to longevity and assist the elderly to live longer; however, they may live with disabling effects of more complex and severe medical illnesses.

With the deterioration of health, older persons seek more healthcare services, creating additional strain on the currently over-taxed healthcare system. With these increasing numbers of complex and severe medical conditions, there will be a corresponding increase in the number of residents cared for in nursing homes or assisted living facilities. It is expected that the baby boomers "will expect more and tolerate less" (Wolf, 2003, p.32) because they are knowledgeable healthcare consumers, often coming from the healthcare industry themselves. It is estimated that the annual cost of healthcare in retirement will be $650,000 per couple. Concern is growing regarding the fiscal impact of this rapidly increasing segment of population age 65 and older and

the strain it will place on the healthcare system and entitlement programs such as Medicare and Social Security as the boomers qualify for medical, retirement and disability benefits.

According to a report by Dr. Buerhaus in the July/August 2009 Health Affairs publication, the nursing shortage in the United States is expected to grow to 260,000 by 2050, is expected to be twice as large as any previous nursing shortage experienced in the past, and large enough to incapacitate the healthcare system. Job opportunities will be best for the registered nurse with a baccalaureate degree in nursing (BSN) due to the need to replace retiring nurses and providing nursing care for the growing elderly population with chronic healthcare needs (BLS, 2014).

Nursing has experienced workforce shortages over the past decades but the upcoming nursing shortage is projected to be more critical than shortages in past years. The "United States Registered Nurse Workforce Report Card and Shortage Forecast (Juraschek et al, 2012) projects a countrywide registered nurse shortage between 2009 and 2030. This shortage is projected to reach one million, with all 50 states being affected. In a year of high unemployment and low job growth, one of every five new jobs reported by the BLS was created in the healthcare sector. It is speculated that registered nurses will be recruited to fill many of these newly created positions (AACN, 2012). The article reported that the registered nurse workforce was identified as the top occupation for job growth through 2020, with the number of employed registered nurses at 3.45 million, up from 2.74 million in 2010. The article projects that 581,500 new registered nurse positions will be created through 2018. This represents a growth rate of 22% of registered nurses needed in the workforce (AACN, 2012). Due to the rapidly aging workforce and retirement of the existing nursing workforce in the next few years, additional nurses will be needed to fill the

vacated positions, bringing the total number of additional registered nurse positions to 1.2 million by 2020 (AACN,2012).

According to Buchan and Aiken (2008) a nurse staffing shortage is "usually defined and measured in relation to that country's historical staffing levels, resources, and demands for health services (p.3264). Global nursing shortages have been reported in 57 countries, with the largest shortage reported in sub-Saharan Africa, followed by Southeast Asia because of its population size (Buchan & Aiken, 2008). Areas of the United States have been affected by the nursing shortage at various rates and in differing specialty areas. California, with a very large and ethnically diverse population, is projected to need an additional 116,600 nurses by 2020 (Ganley & Sheets, 2009).

Societal Reasons for Shortage

Several reasons account for the large size of workforce shortage projections in the nursing profession. One reason is that the large numbers of registered nurses approaching retirement will increase over the next 2 to 3 years just as the demand for nurses in the workforce increases. Another reason is that the demand for nurses is expected to increase dramatically as the baby boomers enter the healthcare system as geriatric patients, adding to the strain of the already burdened healthcare system. It is speculated that there will not be enough registered nurses to meet the healthcare needs of the aging baby boomers. As the baby boomer population grows, the RN workforce will shift from acute care settings to long term and home healthcare (Bureau of Labor Statistics, 2011). This shift will create a need for more nurses in acute and long term care settings, critical care settings, home health and community settings (Edlund et al., 2003). The BLS predicts a 22% increase in registered nurse positions by 2018 (BLS, 2011).

A recurring theme in the factors contributing to the current nursing shortage is the aging RN workforce with impending retirements. This cohort of experienced registered nurses, born between 1946 and 1964, began reaching retirement age between 2005 and 2010 at a time when the demand for nurses was high (Goodwin, 2003). This will have a great impact on the remaining younger workforce for two reasons. This group of nurses will retire with a vast knowledge of patient care that only experience can provide. In addition, many of the retiring nurses have served as mentors over the years, guiding the less experienced, younger nurse in nursing practice.

Nursing Faculty Shortage

Nursing education will not be exempt from the nursing shortage. The National League of Nursing reported that the nursing educational infrastructure is threatened by the nursing faculty shortage (Nardi & Gyurko, 2013). Nursing schools across the United States are bracing for the impending retirement of the "graying" nurse educator, leaving many programs with an inadequate faculty.

Baby boomers comprise the largest segment of nursing faculty and their projected retirement will create a serious shortage in nursing education which will have a direct effect on the nursing shortage by restricting nursing education program enrollment. In 2009 the American Association of Colleges of Nursing (AACN) reported a 6.6% nursing faculty vacancy rate with the average age of nursing faculty now 54.3 years and a wave of retirements expected to peak in the next 10 years. In 2010, AACN reported an increase in the faculty shortage to 7.6% (Nardi & Gyurko, 2013). In September 2011, AACN reported 1,088 faculty openings at 603 baccalaureate nursing schools. The schools also identified a need for an additional 104 faculty to meet the needs of the programs. In a July 2006 report by Nursing Management Aging

Workforce Survey, 55% of the current 32,000 nurse educators reported an intention to retire by 2020 (Hader, et. el., 2006)   In 2010, the National League of Nursing /Carnegie Foundation National Survey of Nurse Educators: Compensation, Workload and Teaching Practices reported that 48% of nurse educators were age fifty five and older with half the nurse faculty reporting plans to retire within the next five to ten years. In a 2014 NLN Survey of Schools of Nursing, lack of qualified nursing faculty was identified as the main obstacle to expanding nursing program capacity. The report cited a 38% faculty vacancy in 2012 and 31% in 2014. Coupled with the fact that many nurses who pursue higher degrees today do not often choose careers in nursing education, these retirements will be an obstacle as baccalaureate nursing programs attempt to expand nursing programs as the need for professional registered nurses continues to grow (AACN, 2016).

Faculty shortage places limitations on student enrollments in all levels of nursing programs, which further impact the shortage of nurses in the workforce. An already existing faculty shortage is cited by nursing programs as a primary obstacle for expanding admissions to all qualified baccalaureate school applicants. A nursing faculty shortage in 16 states was reported in 2002 by the Southern Regional Board of Education (SREB, 2002). This 12% shortfall of nursing educators was found to be the result of a new faculty positions as schools increased enrollment and vacancies that occurred due to retirement.

The percentage of nursing students pursuing a master's degree also dropped 27.5% from 1997 to 1998. One factor is that only 50% of the 32,000 nursing faculty are prepared at the doctoral level and qualified to teach in a master's program. This low number of faculty presents a serious barrier to educating the nursing faculty needed for the future. Leah Curtin predicted that "increasing percentages of nurses will continue to seek higher education because the most

exciting and financially rewarding opportunities for nurses are to be found at the master's level

and above. This means the present faculty shortage will need to be addressed" in order to meet

the educational needs of those seeking graduate education (Roman, 2008, p. 39). However,

adding to the growing faculty shortage is a decline in the number of academically qualified

nurses at the master's or doctoral level entering nursing education rather than the service sector.

Serious barriers exist in attracting new faculty to nursing education. The strongest barrier is the

compensation disparity between academics and clinical practice. Nardi and Gyurko (2013)

reported the shortage of nursing faculty was a result of several factors:

> including the global migration of nurses, an aging faculty, a reduced younger faculty
> hiring pool, decreased satisfaction with faculty role, lack of funding and poor salaries, a
> seemingly persistent devaluation of faculty by academic institutions, increased
> dependence on contingent faculty, and overall reduction in full time equivalent faculty
> positions" (p. 316-317).

Coupled with the fact that nurses who pursue higher degrees do not often choose careers in

nursing education, these retirements will be an obstacle as baccalaureate nursing programs

attempt to expand nursing programs, graduating greater numbers of students.

Increasing Demand for Baccalaureate Nurses

Nurses must be educated at the baccalaureate level to enter a highly educated and

competent nursing workforce that is complex and constantly evolving. It is recommended by the

Tri-Council of Nursing that qualified students must be prepared at the baccalaureate level as the

entry level into practice. The Tri-Council of Nursing is composed of the following nursing

organizations: American Association of Colleges of Nursing; American Nurses Association;

American Organization of Nurse Executives; and the National League of Nursing. These

organizations recognize the need for a more highly educated workforce to serve the health

delivery system as educators, researchers, primary care providers, specialists and leaders in

healthcare. New graduates must be able to function competently and safely. Nurses today must

be prepared to implement health policy, master technology and information management tools

and conduct research in addition to delivering evidence-based nursing care to meet complicated

patient needs in a dynamic healthcare system. Leadership qualities will be necessary to foster

team work and collaboration in the delivery of quality healthcare. A 2000 National Survey of

Registered Nurses determined that only 43% of practicing nurses in the United States hold at

least a baccalaureate degree in nursing (Spratley, Johnson, Sochaiski, Fritz & Spencer, 2002).

Nursing schools across the country are under pressure to increase enrollment and

graduation rates. Recruitment efforts of students interested in the nursing profession have been

successful. Ad campaigns, along with state and federal funding for educational tuition, have

resulted in increased applications to nursing programs. Another reason for the increased

application to baccalaureate programs is employer expectations. The Magnet Status acquired by

hospitals requires that a high percentage of registered nurses be baccalaureate graduates. In a

report on the future of nursing, the Institute of Medicine called for baccalaureate prepared nurses

to increase from 50% to 80%. In addition, the paper called for the number of doctorally prepared

nurses to double by 2010 (Nardi & Gyurko, 2013). However, in 2010, the AACN reported a

7.6% national nursing shortage (Nardi & Gyurko, 2013). The goal of increasing the educational

level of the nursing workforce will move the nursing profession forward in the healthcare

delivery system. The projected need for baccalaureate prepared nurses was identified by the

BLS (2012) to be an occupation with the largest job growth potential through 2020 (AACN,

2011). The BLS projects that an additional 1.2 million nurses will be needed in the workforce.

However, increasing enrollment in order to increase the workforce presents a challenge as

students must complete the demanding program and achieve licensure. As nursing programs

increase enrollment of minimally qualified students in an attempt to address the nursing shortage, there is a risk of greater attrition rates. Instituting measures to improve retention may result in a lower NCLEX-RN pass rate for the nursing program.

In spite of increased applications to nursing programs, the American Association of Colleges of Nursing (AACN) reported in 2006, that 43,000 qualified nursing applicants were denied admission to nursing programs (AACN, 2007). That number has dramatically increased, with the AACN reporting that more than 75,000 qualified nursing program applicants were denied admission to nursing schools in the United States in 2010 due to lack of nursing faculty and clinical sites (AACN, 2011). The Enrollment and Graduation Survey conducted in 2006-2007 by AACN reported the existing nursing faculty shortage as a reason prohibiting expansion of student enrollment (AACN, 2007). The nursing faculty shortage, along with lack of clinical sites and classroom space, often contribute to enrollment restrictions and are identified as a major reason for the limited enrollment.

Potential Solutions for the Nursing Shortage

As both educators and gatekeepers of the nursing profession, Schools of Nursing have searched for the optimal criteria to select students who will be successful in the program. It is therefore imperative that appropriate solutions to the current and escalating nursing workforce shortage be addressed. One possible solution is to increase the number of new nursing graduates but sufficient faculty resources are reported to be a major factor prohibiting increased admission. The lack of qualified nursing educators will have an effect on the nursing shortage (AACN, 2007). Faculty shortage is cited by nursing programs as a primary obstacle for expanding admissions to all qualified school applicants. This 12% shortfall of nursing educators was found to be a combination of new faculty positions as schools increased enrollment and vacancies

occurred due to retirement. The survey also identified a shortage in nurses with advance

preparation selecting to enter the nursing education workforce (SREB. 2002).

Varied admission policies have been implemented to admit greater numbers of students

into nursing programs, however, these policies vary widely across baccalaureate nursing

programs. Both rolling admission and multiple admissions per academic year have been

employed to increase admission (Newton, Smith & Moore, 2007) but research does not identify

how these policies affect student success in the program. An open admission policy allows all

students to enroll in the nursing program if minimum requirements are met. In open admissions,

Shulruf, Wang, Zhas, and Baker, (2011) reported a high failure rate in first year students,

resulting in an increased financial burden along with the loss of the academic year.

With major factors inhibiting an increase in the number of students admitted to nursing

school, it becomes imperative that the selection process of candidates for admission include the

criteria which best predict success. With the number of students admitted to programs remaining

constant, it will be necessary that the number of students admitted to the program be carefully

selected based on criteria which predict success. This will increase the number of students who

succeed in the curriculum, graduate and are successful on the NCLEX-RN licensure

examination. Nayer (1992) suggests, "the purpose of admission procedures is to select students

who will complete the educational program and go into professional careers, do well in the

program, perform creditably in professional practice and possess the traits of character and

ethical values desired of a professional person" (p.41). The literature supports the position that

both academic and demographic assessments of applicants should be included in the admission

process.

Nursing student success and retention are priorities for the baccalaureate nursing programs and are closely monitored by accrediting agencies such as the State Board of Nursing and the National League of Nursing Accrediting Commission. The National League of Nursing Accrediting Commission mandated that the student retention rate in schools of nursing should be at least 80%. Attrition rates as high as 41% have been reported in some schools (Ehrenfeld, Rotenberg, Sharon & Bergman, 1997). Students cite both personal and academic reasons for academic failure or program withdrawal. The responsibilities placed on the programs' nursing admission committee of schools of nursing are to admit qualified students who will be successful in completion of the baccalaureate program. A need exists to identify demographic and academic variables that predict a student's first year academic success in a baccalaureate program. It is important to institute admission policies and criteria which have the potential for maximizing student retention and academic success in the first year nursing courses. Identification of the admission criteria could be utilized for early identification of students who are at risk of academic failure and in the development of appropriate strategies to meet student's educational needs.

One of the difficulties in researching admission criteria is that faculty in every school of nursing is responsible for determining admission criteria for entrance into their programs. This inhibits a statistical analysis of admission criteria across schools of nursing. Research findings regarding both demographic and academic criteria vary but are used most often in the admission process. The variables discussed as demographic data include age at time of application, gender, race and ethnicity. Academic variables include the grade earned in the prerequisite courses (College Writing I, College Algebra, Introduction to Chemistry, Human Anatomy and

Physiology, Human Anatomy and Physiology Laboratory and Introduction to Psychology), as well as the cumulative grade point average and ACT composite score.

Baccalaureate prepared nurses are in great demand. AACN (2008) reported that applications for admission to Schools of Nursing had increased by 5% and have continued to increase in baccalaureate nursing programs by 5% over the past few years (Raines & Taglaireni, 2008). It was recommended by the National Advisory Council on Nurse Education and Practice that by 2010 at least two thirds of all registered nurses be educated at the baccalaureate level (Potolsky, Cohen, & Saylor, 2003). With the prediction of the national nursing shortage in the next five years, nursing schools are being challenged to prepare more nurses by selecting students for admission that are capable of success and by facilitating student success in the program. Student attrition occurring in the first year of nursing school is reported to be as much as 82.3% (Ehrenfeld, et al., 1997). Identifying criteria that predict student success is challenging and complicated because the admission criteria for each nursing program differ. This variability is reflected in the literature and makes it very difficult for admission committees to identify the variables that predict success. However, even with the program variability, some basic areas seem to be consistently used in some form by many schools of nursing such as: basic computational skills; communication skills; science knowledge; and one or more measures of academic ability (ACT, GPA, etc.)

Factors that Influence Success

One focus of the literature review is to identify potential demographic and academic factors to explain nursing GPA (first year success in a nursing program). The review includes relevant research conducted in the last 20 years. The literature abounds with research on student academic success using the NCLEX-RN as the dependent variable. However, there is a gap in

the literature as few studies focus on admission criteria as predictors of success in the first year of nursing school. The first year of nursing school is very challenging for the student in any curriculum. Attrition rates are highest during this first year. Identification of criteria that best predict success during this first year of the nursing program is crucial because the number of positions in programs is restricted. It is critical that students at risk be identified early in the nursing program so necessary support and academic programs can be developed to meet their learning needs.

The independent variables in this study are categorized as demographic data and academic data. Selected demographic data included in the research will correspond to Jeffery's "student profile characteristics." The academic data will include the grade in prerequisite courses as well as grade point averages and standardized test scores. This study will measure the following demographic data as predictors of student success: age at time of application, gender and race.

GPA

A study conducted by Phillips, Smith, Moore & Magnan, (2007) found four predictors of success relating to the students' GPA: overall college grade point average, English GPA, biology course GPA and the number of times a student repeated biology courses. This study supported the assumption that pre-nursing courses have an impact on a student's success in nursing school.

Salvatori (2001) reviewed a total of 83 research articles in the health professions, including nursing, for the purpose of identifying reliable and valid selection criteria to assess cognitive and non-cognitive characteristics in terms of predicting academic and clinical performance in the healthcare professions. It was concluded that the best predictor of academic

performance in the health professions preadmission was the overall GPA. This finding is supported by many researchers. Early research by Yocom and Scherubel (1985) found preadmission GPA to be an important predictor of students' success. While science GPAs were not as predictive, the strongest, correlations were found in preadmission cumulative GPA and the liberal arts courses GPAs. A study reported by Potolsky et al., (2003) found that a prerequisite science course grades had a significant relationship with the academic performance of first year nursing students. The researchers suggested that grade point average of 3.0 for science courses be required in order to avoid attrition. Fowles (1992) reported that the anatomy and physiology grade, along with standardized test scores, were the best predictors of success. More recent research by Wolkowitz and Kelley (2010) concluded that science should be a prominent academic variable for selecting successful applicants. The researchers found that the applicant's reading score was the next strongest criterion for predicting success in a nursing program, stronger than either English or mathematics.

Lower high school grades, along with prerequisite course grades were found in students who had academic difficulty in the first two years of a nursing program (Brennan, et al, 1996). However, high school grades for older students are often considered to be irrelevant as predictors of academic success (Griffiths, 2004). McClellan, Land and Glick (1992) found that the high school GPA was also a predictor of success. This research concluded that, in addition to using the high school GPA, the ACT composite score, chemistry grades, history grades and social science grades be used as predictors of success. Allen, Higgs and Holloway (1988) used a stepwise regression model to determine that the final nursing GPA could be predicted using the prerequisite nursing GPA, cumulative GPA, presence of a baccalaureate degree and a pattern of D course grades.

Brennan, Best and Small (1996) found that students who were not successful in the first two years of nursing school had significantly lower mean high school GPA and prerequisite course grades. In a longitudinal study of diploma school students, Kevern, Ricketts and Webb (1999) found that qualifications and age were significant predictors of academic success. Potolsky et al., (2003) reported that prerequisite science course grades have a relationship to the academic performance of first semester nursing students. In a study of predictive value of grades, researchers reported that for each C, D, or F a student received in a nursing course the probability of failure of the NCLEX-RN examination increased (Potolsky et al., 2003). Grant (1986) found that future success in a nursing major could be predicted from past success, concluding that cognitive variables were the most predictive of the nursing GPA.

Transfer

Admission to nursing school is competitive and very stressful for students. Schools receive approximately three times the applications than space available for admission. The nursing shortage has stressed the critical role of the nurse and has presented an option for students seeking to change careers. All students who apply must meet the minimum qualification of the admission criteria so admission becomes competitive with the application pool for that admission period. In order to increase the probability of program admission, students often apply to several schools. This accounts for the large number of transfer students in the application pool. Little information is found in the literature related to the admission criteria and success of transfer students. Newton, et al., (2007) found no evidence that a history of pre-nursing transfer credits from community college impacted the student's success or failure in a baccalaureate nursing program. The researchers suggested further studies be conducted to investigate the value of the transfer courses from community colleges versus baccalaureate

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course offerings. Yocam and Scherubel (1985) found a significant association between student success and the school the student attended prior to admission.

The value of transfer courses from community colleges and some universities with less rigorous prerequisite courses has been called into question by Griffiths et al., (1995). Most schools of nursing require transferring students to complete residency requirements of 6 to 9 credit hours at that college before applying to a program of study. The value of the transfer courses as predictors of success in nursing programs has to be weighed individually by some nursing admission committees and correlated with the credit hours earned during residency. Griffiths et al., (1995) found the final anatomy and physiology grade, along with evaluation of the type of college and transfer credits were criteria for potential success in nursing programs.

Gender/Age/Race

Current research does not indicate that a certain sex or age or race is highly correlated with success and retention in nursing school. This demographic data is typically analyzed in research and may assist in selecting students in order to create diverse groups. If this research identified demographic data which does not promote success, measures could be instituted early in order to promote the student's success in the program. Diverse ethnic and cultural backgrounds are desired in today's classrooms. The Executive Summary from the Nursing Data Review (2006) reported a rise in nursing school admission between the years 2004-2005. An AACN (2012) survey of student diversity revealed that the ethnicity of entry level baccalaureate students admitted to nursing programs rose by 26.9% in 2011. The race of nursing students today is identical in baccalaureate, associate degree and diploma nursing programs with the exception of the number of black students enrolled. Diploma schools report one in every six students is black while a ratio of one in eight students is reported in associate degree and baccalaureate

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programs. In all programs, Asian students account for six percent of admission, five percent are

Hispanic and one percent is reported as American Indian. (Executive Summary from the Nursing

Data Review, 2006). Seago and Spetz (2005) reported finding there may be significant

demographic data related to ethnicity which affects student success in nursing programs. Forty-

two percent of reporting Caucasian nurses, 48% of reporting African American nurses, 45% of

reporting Hispanic/Latino nurses and 61% of reporting Asian nurses report having a

baccalaureate nursing degree (D'Antonio, 2004). The research also found that only 17% African

American registered nurses had baccalaureate degrees but 48% of Asian American registered

nurses had baccalaureate degrees. Similar findings of baccalaureate degrees were reported in

Hispanic and Asian American registered nurses. Hispanic baccalaureate registered nurses

holding baccalaureate degrees was 45% with 11% of Hispanic registered nurses overall. Among

Asian American registered nurses, 60% were baccalaureate graduates compared to 41.7% of all

Asian American registered nurses (D'Antonio, 2004).

The nursing profession is dominated by females. The percentage of male students has

shown consistent growth from the 1980s, peaking at 13.5% in 1994. The percentage then fell to

10.7% in 2003 (Executive Summary from the National Data Review, 2004-5). In a 2011 survey,

men with baccalaureate nursing degrees represented only 6.6% of the nursing workforce in the

United States (AACN, 2011).

<center>**Standardized Examinations**</center>

Standardized examination scores have gained wide acceptance as predictors of success in

nursing programs, but there are limited research findings on the different individual content areas

assessed on standardized tests and identification of the specific predictors of success in a nursing

program. The test most often used by nursing schools are the Scholastic Aptitude Test (SAT), the

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American College Test (ACT), the Nursing Entrance Test (NET), and the Test of Essential

Academic Skills (TEAS). The SAT and ACT are designed to be used in postsecondary schools

during the admission process. The NET and TEAS, also postsecondary assessments, are specific

to nursing school admission. Schools of Nursing Admission Committees establish the

acceptable score on the examinations (Wolkowitz & Kelley, 2010).

Multiple standardized tests have been evaluated as predictors of academic success,

however the American Educational Research Association, Standard 13.7 recommends that

standardized tests not be used as the sole determinant for program admission, but rather be used

in conjunction with other admission criteria (Wolkowitz & Kelley, 2010). Newton, et al., (2007)

found that the pre-nursing GPA along with scores on the Test of Essential Academic Skills

(TEAS) were predictors of student success in the first year of nursing school. Dell and Halpin

(1984) found the best predictors of success in black students were college GPA, ACT

mathematics scores and ACT natural science scores. Fowles (1992) reported that the best

predictors of final college GPA were prerequisite GPA, percentile on the Mosby Assessment

Test, and the ACT social science or composite score.

The literature does not agree on whether a standardized score on reading is predictive of

nursing program success, but this is disputed by Wolkowitz and Kelley (2010) who reported that

it is unclear which of the different content areas on standardized examinations predict success in

nursing programs. The researchers found the strongest predictor of early success in a nursing

program was science, followed by reading. Additionally, Mathematics and English were not

found to be as strong in predicting success.

Summary of Review of Literature

A review of the literature supports the fact that the approaching nursing shortage will be epic in proportion, with large numbers of nurses entering retirement just as the baby boomers enter the healthcare system. This nursing shortage will have adverse effects on nurse staffing with implications for public safety and quality of care. While a simple solution to the shortage would be to increase admission to nursing programs, nursing education will not be exempt from the shortage. A serious shortage of academically prepared nurse educators will have a direct effect on the nursing shortage by restricting nursing program admissions at both the undergraduate and graduate level. It is therefore imperative that demographic and academic criteria be identified that predicts success in baccalaureate nursing programs so qualified students can be admitted and retention can be increased by offering programs to assists students identified at risk.

CHAPTER 3: METHODOLOGY

Purpose of Study

The primary purpose of this study was to determine the influence of selected demographic and academic characteristics on success in nursing education among first year baccalaureate clinical nursing students at a private college in the Southern Region of the United States.

Dependent Variable

The dichotomous dependent variable was whether or not the undergraduate nursing student successfully completed the first year of clinical nursing courses following admission to a nursing program. For the purpose of this study, success was measured by a grade of C or better in two clinical nursing courses in the first year of the nursing program. This data was operationalized as a dichotomous variable. Students receiving a C or better in both courses were categorized as successful (coded 1) and students receiving less than a C in one or both courses were categorized as unsuccessful (coded 0). Students who withdrew from any course during the first year were also considered unsuccessful. Independent variables include selected demographic and academic characteristics.

Specific Objectives

The following objectives were formulated to guide this research study:

1. Describe currently enrolled students in a baccalaureate nursing program at a private college in the Southern region of the United States on the following selected demographic characteristics:

a. Age;

b. Gender;

c. Race: American Indian: Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic and White.

2. Describe currently enrolled students in a baccalaureate nursing program at a private college in the Southern Region of the United States on the following academic characteristics:

a. Success in nursing defined as a grade of C or higher in the two first year clinical nursing courses;

b. Grade on prerequisite nursing courses: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology;

c. Grade in nursing courses: Introduction to Nursing; Nursing Pathophysiology; Nursing Pharmacology; and Nursing Assessment;

d. The following selected academic measures: prerequisite nursing grade point average (GPA); institutional GPA; cumulative GPA; Composite ACT assessment score; and Test of Essential Academic Skills (TEAS);

3. Determine if a relationship exists between success in nursing and the following selected academic variables:

a. Cumulative GPA;

b. Institutional GPA;

c. Prerequisite nursing GPA;

d. ACT composite test score;

e. Test of Essential Academic Skills (TEAS);

f. Grade in prerequisite nursing courses including: College Writing; College

Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and

Physiology Laboratory; and Introduction to Psychology;

      g. Grade in nursing courses including: Introduction to Nursing; Nursing

      Pathophysiology; Nursing Pharmacology; and Nursing Assessment.

4. Determine if a model exists that significantly increases the researcher's ability to correctly

classify nursing students on their success in nursing (defined as a grade of C or higher on the two

first year clinical nursing courses) from the following demographic and academic measures:

      a. Age;

      b. Gender;

      c. Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander;
         Hispanic; and White;

      d. Grade in prerequisite nursing courses including: College Writing; College Algebra;

Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and

Physiology Laboratory; and Introduction to Psychology;

      e. Grade in nursing courses including: Introduction to Nursing; Nursing

Pathophysiology; Nursing Pharmacology; and Nursing Assessment;

      f. Cumulative GPA;

      g. Institutional GPA;

      h. Prerequisite nursing GPA;

      i. ACT composite assessment test score;

      j. Test of Essential Academic Skills (TEAS).

Population and Sample

The target population for this study was students enrolled in a baccalaureate nursing program at a private college in the Southern region of the United States. The accessible population were students enrolled in the baccalaureate nursing program at one selected small private college in the Southern region of the United States. The sample included all nursing students admitted during the fall of 2013 to the baccalaureate nursing program at the selected private college in the Southern Region of the United States.

Cochran's sample size formula (1977) was used to determine the minimum sample size to maintain the established margin of error. Calculations are as follows:

$n_0 = t^2 pq/d^2$

$n_0 = (1.96)^2 (.5)(.5)/(.05)^2$ $= .9604/.0025 = 384$

$n = n_0/(1+(n_0/N)) = 384/(1+(384/120)) = 384/4.2$

$n = 92$

The sample included all students enrolled in the selected small private college who were admitted to the baccalaureate nursing program during the fall of 2013. This sample included 102 students.

Instrumentation

A researcher-designed computerized recording form established as an Excel document was used as the instrument for recording archived data collected from the College Registrar's Office. Variables downloaded in the Excel document included:

a. Age;

b. Gender;

c.   Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic; White;

d.   Grade for prerequisite courses: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy; Physiology Laboratory and Introduction to Psychology;

e.   Prerequisite GPA;

f.   Cumulative GPA;

g.   Institutional GPA;

h.   ACT composite test score;

i.   TEAS score;

j.   Grade in nursing courses: Nursing Pharmacology; Nursing Pathophysiology; Introduction to Nursing; and Nursing Assessment.

Data Collection

A completed application for exemption from institutional oversight was submitted to both the Institutional Review Boards from the researcher's university and the small private college in which the researcher sought approval to conduct the study (Appendix A and B). The next approval was obtained from the Dean of the School of Nursing at the research institution. When approval was granted, a request was submitted to the College Registrar's Office to transfer the data. Data for this retrospective research study were extracted from the admission applications and student transcripts from the original records in the Registrar's Office. Selected demographic and academic variables for the study were downloaded onto the researcher-designed Excel recording form which served as the instrument for the study. The Excel database included all the variables to be measured in the study objectives, but no personal identifiers for individual

students were included, therefore, there was no risk to the members of the population since they remained completely anonymous.

Data Analysis

The individual research objectives provided the organizational structure for the data analysis. Specific statistical analyses used to accomplish each objective are outlined below with each objective. The statistical significance level selected for data analysis was $p=0.05$.

Objective One: Research objective one was to describe currently enrolled students in a baccalaureate nursing program in the Southern Region of the United States on the selected demographic characteristics.

The students were described on selected demographic characteristics compiled from the admission forms at the time of admission to the Nursing Program. Frequencies and percentages were used to analyze the demographic variables measured as categorical data (nominal and ordinal). Specific variables in this category included:

a. Gender: This data was recorded as "male" or "female".

b. Race: Race was described using the following categories: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic; and White.

Variables measured as continuous data were described using means and standard deviations. These variables included:

a. Age;

b. Grade for prerequisite courses: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology;

c. Cumulative GPA;

d. Prerequisite nursing GPA;

e. Institutional GPA;

f. ACT composite test scores;

g. TEAS score;

h. Grade in nursing courses: Nursing Pharmacology; Nursing

Pathophysiology; Introduction to Nursing; and Nursing Assessment.

Objective Two: Research objective two was to describe currently enrolled students in a

baccalaureate nursing program at a private college in the Southern Region of the United States

on selected academic characteristics. The student characteristics recorded as interval data was

obtained from archived data in the Office of Admission. Means and standard deviations were

used to describe the following selected academic characteristics:

a. Grade for prerequisite courses: College Writing; College Algebra;

Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology

Laboratory; and Introduction to Psychology;

b. Grade in nursing courses: Introduction to Nursing; Nursing

Pathophysiology; Nursing Pharmacology; and Nursing Assessment

Objective Three: Objective three was to determine if a relationship existed between

success in nursing and selected demographic and academic variables. The following variables in

this objective were interval and the researcher chose the independent t-test procedure as the

method for analysis to compare the successful and unsuccessful students on the selected

demographic and academic variables. This analysis was also chosen for ease of interpretation of

the findings. These variables included:

a. Cumulative GPA;

b. Institutional GPA;

c. Prerequisite nursing GPA;

d. ACT composite test score;

e. Test of Essential Academic Skills (TEAS);

f. Grade in prerequisite nursing courses including: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology;

g. Grade in nursing courses including: Introduction to Nursing; Nursing Pathophysiology; Nursing Pharmacology; and Nursing Assessment.

Demographic data measured as categorical data used the Chi-Square test to assess the relationship of the following variables:

a. Gender: This data was recorded as "male" or "female";

b. Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic; White.

Objective Four: Objective four was to determine if a model existed that significantly increased the researcher's ability to correctly classify nursing students on their success in nursing (as defined as a grade of C or higher on the two first year clinical nursing courses) from the following demographic and academic measures. A multiple binary logistic regression analysis was used to analyze data for this objective. Success was the dependent variable and the following measurements were entered into this analysis as independent variables:

a. Age;

b. Gender;

c. Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic; White:

d. Grade in prerequisite courses: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory and Introduction to Psychology;

e. Grade in nursing courses: Nursing Pharmacology; Nursing Pathophysiology; Introduction to Nursing; and Nursing Assessment;

f. Cumulative GPA;

g. Institutional GPA;

h. Prerequisite GPA;

i. ACT composite assessment test score;

j. TEAS.

CHAPTER 4: RESULTS

The primary purpose of this study was to determine the influence of selected demographic and academic characteristics on success in nursing education among first year baccalaureate clinical nursing students at a private college in the Southern Region of the United States. The dependent variable of this study was whether or not the students who applied and were admitted in the Fall 2013 semester were successful in the first year of the clinical component of nursing school as defined by a grade of C or better in the first two clinical nursing courses.

Following completion of clinical nursing course-two, the selected demographic and academic variables were collected from the Registrar's Office of the study institution. The researcher defined success as a grade of C or better in the first year clinical nursing courses. The sample was defined as 100% of the accessible population. Of the 107 students selected for admission, 102 students accepted admission and became the accessible population, enrolling in the Fall 2013 class. The remaining 5 students who did not enroll in the Fall 2013 semester were not included in the study. This chapter presents the findings of the study by objective.

Objective One Results

The first objective of the study was to describe currently enrolled students in a baccalaureate nursing program at a private college in the Southern region of the United States on the following selected demographic characteristics.

a. Age;

b. Gender;

c. Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic; and White.

There were 102 students who were enrolled in the Fall 2013 class and met the criteria for inclusion in the study. The results for each of these variables are presented in the following sections.

Age

The first variable on which students were described was age. The mean age of students enrolled in the Fall 2013 semester was 24.75 years (SD=6.909). The age range of the 102 students was from a minimum of 19 years to a maximum of 53 years. To further examine the data regarding age of subjects, the responses were grouped into the following age categories: 18-19, 20-21, 22-23, 24-25, 26-30, 31-35, 36-40, and 41 and older. When the data were examined in these categories, the largest group of students (n= 43, 42.2%) was in the 20-21 age category. These data are presented in Table 1.

Table 1 Age of Nursing Students Admitted in Fall 2013 at a Private College in the Southern Region of the United States

Age	Frequency[a]	Percent
18-19	6	5.8
20-21	43	42.2
22-23	14	12.7
24-25	11	10.8
26-30	13	12.7
31-35	6	5.9
36-40	4	3.9
41 or more	6	5.9
Total	102	100.0

[a] Mean Age=24.75,(SD=6.909), Range=19-53

Gender

Another variable on which the students were described was gender. Of the 102 students in the study, 86 (84.3%) were identified as female and 16 (15.7%) were identified as male.

Race

Students were also described on the variable race. Five of the 102 students in the study

did not provide information regarding race. Of the 97 students who identified race, the largest

group was White (n=76, 78.4%), followed by African American (n=15, 15.5%). (see Table 2).

Table 2 Race of Nursing Students Admitted in Fall 2013 at a Private College in the Southern
Region of the United States

Race	Frequency	Percent
White	76	78.4
African American	15	15.5
Hispanic	5	5.5
Asian	1	1.0
Total	97[a]	100

[a] Five study participants did not provide information regarding their race.

Objective Two Results

The second objective of the study was to describe currently enrolled students in a

baccalaureate nursing program at a private college in the Southern Region of the United States

on the following academic characteristics:

a. Success in nursing defined as a final grade of C or higher in the two first year

clinical nursing courses;

b. Grade in prerequisite nursing courses: College Writing; College Algebra;

Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology

Laboratory; and Introduction to Psychology;

c. Grade in nursing courses: Introduction to Nursing; Nursing Pathophysiology;

Nursing Pharmacology; and Nursing Assessment;

d. The following selected academic measures: prerequisite nursing grade point average

(GPA); institutional GPA; cumulative GPA; Composite ACT assessment score; and Test of

Essential Academic Skills (TEAS).

There were 102 students who met the criteria for inclusion in the study. The results for

each of these variables are presented in the following sections.

Two First Year Clinical Nursing Courses

The first variable in objective 2 on which these 102 students were described was success

in nursing defined as a final grade of C or better in the two first year clinical nursing courses. Of

the 102 students admitted in the Fall 2013 cohort, 89 students entered the first year clinical

nursing course-one while 13 students did not progress to this point in the curriculum. Of the

students who progressed to the first year clinical nursing course-one, 81 were successful while 8

received a letter grade below C. The mean GPA achieved by the students in this first year

clinical nursing course-one was found to be 2.32 (SD=0.777). To further describe the students,

the data are presented on letter grade earned in the course. The largest group of students (n=29,

32.6%) earned a grade of C. The frequency and percent of the letter grade earned by students in

the first year clinical nursing course-one is presented in Table 3.

Table 3 Grade Earned in the First Year Clinical Nursing Course-One by Students at a Private
College in the Southern United States.

First Year Clinical Nursing Course-One		
Letter Grade	Frequency[a]	Percent
A	1	1.1
B+	3	3.4
B	22	24.7
C+	26	29.2
C	29	32.6
D	3	3.4
F	5	5.6
Total	89[b]	100

[a] Mean=2.32 (SD=0.777) Range=0.0-4.0
[b] Thirteen of the participants did not progress to the first clinical nursing course.

Of the 102 students admitted to the nursing program in Fall 2013, 77 students were

enrolled in the first year clinical nursing course-two, with 25 students not enrolled in the course,

either from withdrawal or previous failure. Of the students who completed the first year clinical

nursing course-two, 69 were successful earning a grade of C or better while 8 students were unsuccessful earning a grade below C. The mean GPA achieved by the students in the first year clinical nursing course-two was found to be 2.52 (SD=0.718). To further describe the students, the data are presented on letter grade earned in the course. The largest group of students (n=23, 29.9%) earned a B. The frequency and percent of the letter grade earned by students in the first year clinical nursing course-two is presented in Table 4.

Table 4 Grade Earned in First Year Clinical Nursing Course-Two by Students at a Private College in the Southern United States.

First Year Clinical Nursing Course-Two		
Letter Grade	Frequency[a]	Percent
A	3	3.9
B+	6	7.8
B	23	29.9
C+	17	22.1
C	20	26.0
D+	5	6.5
D	2	2.6
F	1	1.3
Total	77[b]	100

[a]Mean =2.52 (SD=0.718), Range= 0.0-4.0
[b] Twenty five of the students did not progress to the second clinical nursing course.

Of the 102 students who were enrolled in the nursing program, 69 (67.6%) were successful as defined by a grade of C or higher in both of the clinical nursing courses. Conversely, 33 (32.4%) were not successful indicating that they either earned a grade lower than C in one or both clinical nursing courses or they did not complete one or both the courses.

Prerequisite Nursing Courses

The second group of academic characteristics on which study subjects were described as part of Objective 2 was the grade earned on prerequisite nursing courses: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology. One requirement for admission to

the nursing program states that applicants must complete 16 credit hours of required prerequisites with a grade of C or better. Each of these variables is discussed separately in the following sections.

College Writing

Of the 102 students admitted to the nursing program in the Fall 2013, 90 students completed College Writing. Twelve of the students had either earned transfer credit for the course or credit from the College-Level Examination Program (CLEP) as indicated by a course grade of P and were not included in the data for this objective. The range of measurements was A to C with all students earning a grade of C or better. The mean GPA of the College Writing course was 3.25 (SD=0.685). To further describe students on this variable, the data are presented on letter grade earned in the course. When these data were examined, the grade earned by the largest group of students was B (n=44, 48.9%). (See Table 5)

Table 5 Grade Earned in College Writing by First Year Clinical Nursing Students at a Private College in the Southern United States

Letter Grade	Frequency[a]	Percent
A	32	36.0
B+	2	2.2
B	44	49.4
C	11	12.4
Total	89[b]	100

[a]Mean= 3.25 (SD=0.658), Range=2.0-4.0
[b] Thirteen of the students transferred course credit or completed the prerequisite College Writing course with a CLEP grade of P and were not included in the data for this variable.

College Algebra

Of the 102 students admitted to the nursing program in the Fall 2013, 91 students completed College Algebra. Eleven of the students had earned either transfer credit for the course or credit from the College-Level Examination Program (CLEP) as indicated by a course grade of P and were not included in the data for this variable. The range of measurements was A

to C with all 91 students earning a grade of C or better. The mean GPA of the College Algebra

course was 3.01 (SD=0.749). When the data were examined on letter grade earned in the course,

the grade earned by the largest group of students was B, (n=36, 39.6%). The letter grade earned

by students in College Algebra is presented in Table 6.

Table 6 Grade Earned in College Algebra by First Year Clinical Nursing Students at a Private
College in the Southern United States.

| College Algebra | | |
Letter Grade	Frequency[a]	Percent
A	25	27.5
B+	3	3.3
B	36	39.6
C+	3	3.3
C	24	26.4
Total	91[b]	100

[a]Mean= 3.01 (SD=0.749), Range=2.0-4.0
[b] Eleven of the students transferred course credit or completed the prerequisite College Algebra course with a CLEP grade of P and were not included in the data for this variable.

Introduction to Chemistry

All 102 students admitted to the nursing program in the Fall 2013 completed Introduction

to Chemistry. The range of measurements for this prerequisite academic variable was A to C for

the 102 students. The mean GPA in the Introduction to Chemistry course was 3.06 (SD=0.750).

When the data were examined, the letter grade earned by the largest group of students was B

(n=35, 34.3%). The letter grade earned by students in the Introduction to Chemistry is presented

in Table 7.

Table 7 Grade Earned in Introduction to Chemistry by First Year Clinical Nursing Students at a
Private College in the Southern United States.

| Introduction to Chemistry | | |
Letter Grade	Frequency[a]	Percent
A	31	30.4
B+	5	4.9
B	35	34.3
C+	8	7.8
C	23	22.5
Total	102	100

(Table 7 continued)
[a]Mean = 3.06 (SD=0.750). Range=2.0-4.0

Human Anatomy and Physiology

All 102 students admitted to the nursing program in the Fall 2013 completed Human

Anatomy and Physiology. The range of measurements for this prerequisite academic variable

was A to C for the 102 students in the study. The mean GPA of the Human Anatomy and

Physiology course was 3.17 (SD=0.746). When the data were further examined by letter grade,

the grade earned by the largest group of students in the course was A (n=37, 36.3%). The letter

grade earned by students in the course is presented in Table 8.

Table 8 Grade Earned in Human Anatomy and Physiology by First Year Clinical Nursing
Students at a Private College in the Southern United States.

Human Anatomy and Physiology		
Letter Grade	Frequency[a]	Percent
A	37	36.3
B+	5	4.9
B	34	33.3
C+	7	6.9
C	19	18.6
Total	102	100

[a]Mean = 3.17 (SD=0.746), Range=2.0-4.0

Human Anatomy and Physiology Laboratory

All 102 students admitted to the nursing program in the Fall 2013 completed Human

Anatomy and Physiology Laboratory. The range of measurements for this prerequisite academic

variable was A to C for the 102 students in the study. The mean GPA of the Human Anatomy

and Physiology Laboratory was 3.35 (SD=0.713). When the data were further examined by

letter grade, the grade earned by the largest group of students was A (n=47, 46.1%). The letter

grade earned by the students in the course is presented in Table 9.

Table 9 Grade Earned in Human Anatomy and Physiology Laboratory by First Year Clinical Nursing Students at a Private College in the Southern United States.

Human Anatomy and Physiology Laboratory		
Letter Grade	Frequency[a]	Percent
A	47	46.1
B+	8	7.8
B	32	31.4
C	15	14.7
Total	102	100

[a]Mean = 3.35 (SD=0.713), Range 2.0-4.0

Introduction to Psychology

Of the 102 students admitted to the nursing program in the Fall 2013, 101 students completed Introduction to Psychology. One student earned credit for the course from the College-Level Examination Program (CLEP) as indicated by a course grade of P and, therefore, this student was not included in the data for this variable. The range of measurements was A to C with all 101 students earning a grade of C or better. The mean GPA of the Introduction to Psychology course was 3.16 (SD=0.686). When the data were further examined by letter grade, the grade earned by the largest number of students was B (n=46, 45.5%). The letter grade earned by the students in the course is presented in Table 10.

Table 10 Grade Earned in Introduction to Psychology by First Year Clinical Nursing Students at a Private College in the Southern United States.

Introduction to Psychology		
Letter Grade	Frequency[a]	Percent
A	33	32.7
B+	2	2.0
B	46	45.5
C+	5	5.0
C	15	14.9
Total	101[b]	100

[a]Mean =3.16 (SD=0.686), Range 2.0-4.0;
[b]One student completed the prerequisite Introduction to Psychology course with a CLEP grade of Pass and was not included in the data for this variable.

Grade in Nursing Courses

The third group of academic characteristics on which study subjects were described as part of objective 2 was grade in non-clinical nursing courses: Introduction to Nursing; Nursing Pathophysiology; Nursing Pharmacology and Nursing Assessment. These four courses must be completed with a grade of C or better before the student can progress to the clinical nursing courses. Each of these courses is described separately in the following section.

Introduction to Nursing

Of the 102 students admitted to the nursing program in the Fall 2013, 99 students enrolled in and completed the Introduction to Nursing course. Three of the 102 students admitted in Fall 2013 did not enroll in Introduction to Nursing due either to previous failure or withdrawal from the study institution. The range of measurements was A to C with all 99 students earning a grade of C or better. The mean GPA of the Introduction to Nursing course was 3.71 (SD=0.441). When the data were examined, the grade earned by the largest group of students was A (n=60, 60.6%). Table 11 identifies the letter grade earned by students in the Introduction to Nursing course.

Table 11 Grade Earned in Introduction to Nursing by First Year Clinical Nursing Students at a Private College in the Southern United States.

Letter Grade	Frequency[a]	Percent
A	60	60.6
B+	28	28.3
B	5	5.1
C+	5	5.1
C	1	1.0
Total	99[b]	100

[a]Mean =3.71(SD=0.441), Range 2.0-4.0
[b]Three of the students did not enroll in the prerequisite Introduction to Nursing course due to previous failure and one student withdrew from the study institution.

Nursing Pathophysiology

Of the 102 students admitted to the nursing program in the Fall 2013, 96 students

completed Nursing Pathophysiology. Six students were not enrolled in the course due to

previous failure or withdrawal from the study institution. The range of grades in the course was

A to D, with 95 students earning a grade of C or better and 1 student earning a D. The mean

GPA of the students in the Nursing Pathophysiology course was 3.18 (SD=0.693). When the

data were examined for letter grade, the grade earned by the largest group of students was B

(n=30, 31.3%). Table 12 identifies the letter grade earned by students in Nursing

Pathophysiology.

Table 12 Grade Earned in Nursing Pathophysiology by First Year Clinical Nursing Students at a
Private College in the Southern United States.

Letter Grade	Frequency[a]	Percent
A	26	27.1
B+	19	19.8
B	30	31.3
C+	8	8.3
C	12	12.5
Total	96[b]	100

[a]Mean =3.18 (SD=0.693), Range 1.5-4.0
[b]Six of the students were not enrolled in the prerequisite Nursing Pathophysiology course.

Nursing Pharmacology

Of the 102 students admitted to the nursing program in the Fall 2013, 96 students

enrolled in and completed Nursing Pharmacology. The range of grade in the course was A to F

with 94 students earning a grade of C or better. Conversely, two students earned a grade less

than C. The mean GPA of the Nursing Pharmacology course was 2.98 (SD=0.757). When the

data were further examined, the grade earned by the largest group of students was B (n=24,

25%). Table 13 identifies the letter grade earned by students in Nursing Pharmacology.

Table 13 Grade Earned in Nursing Pharmacology by First Year Clinical Nursing Students at a
Private College in the Southern United States.

Letter Grade	Frequency[a]	Percent
A	18	18.8
B+	18	18.8
B	24	25.0
C+	20	20.8
C	14	14.6
D	1	1.0
F	1	1.0
Total	96[b]	100

[a]Mean = 2.98 (SD=0.757), Range 0-4.0
[b]Six of the students were not enrolled in the prerequisite Nursing Pharmacology course due to previous failure or transfer.

Nursing Assessment

Of the 102 students admitted to the nursing program in the Fall 2013, 95 students

enrolled in and completed Nursing Assessment. Seven students did not enroll in Nursing

Assessment due to either previous failure or withdrawal. The range of grades in the course was

A to C with all 95 students earning a grade of C or better. The mean GPA of the Nursing

Assessment course was 3.24 (SD=0.550). When the data were further examined, the grade

earned by the largest group of students was B (n=37, 38.9%). Table 14 identifies the letter grade

earned by students in Nursing Assessment.

Table 14 Grade Earned in Nursing Assessment by First Year Clinical Nursing Students at a
Private College in the Southern United States.

Letter Grade	Frequency[a]	Percent
A	22	23.2
B+	21	22.1
B	37	38.9
C+	11	11.6
C	4	4.2
Total	95[b]	100

[a]Mean: 3.24 (SD=0.550)
[b]Seven of the students did not enroll in the prerequisite Nursing Assessment course due to a previous failure or transfer.

Selected Academic Measures

The fourth group of academic characteristics on which study subjects were described in objective 2 was the following selected academic measures: prerequisite nursing grade point average (GPA); institutional GPA; cumulative GPA; Composite ACT assessment score; and Test of Essential Academic Skills (TEAS). Each of these measures is presented separately in the following section.

Prerequisite Nursing Grade Point Average

The overall prerequisite nursing grade point average (GPA) was one of the selected academic measures used to describe students admitted to the nursing program in Fall, 2013. The prerequisite nursing GPA was composed of the average of the grades earned in the following required academic courses taken prior to admission to the nursing program: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology. The courses used in this study were selected by faculty of the study institution because of the importance in evaluating the students' baseline knowledge for success in the nursing curriculum and therefore admission to the nursing program. The mean Prerequisite Nursing GPA was 3.17 (SD=0.414). The prerequisite GPA was examined in the following categories of scores: A (4.0); B+ (3.5-3.9); B (3.0-3.4); C+ (2.5-2.9); C (2.0-2.4); D+ (1.5-1.9); D (1.0-1.4); F (0). When the prerequisite nursing GPA was examined in categories of measurement, the scores ranged from A-C and the grade earned by the largest number of students was B (n=39, 38.3%). The categories used in this study corresponded to the letter grade used by the study institution and were selected for ease of interpretation. Table 15 identifies the prerequisite GPA earned by students in the courses.

Table 15 Prerequisite Nursing Grade Point Average First Year Clinical Nursing Students at a Private College in the Southern United States.

Prerequisite GPA Category	Frequency[a]	Percent
A (4.0)	4	3.9
B+ (3.5-3.9)	26	25.5
B (3.0-3.4)	39	38.3
C+ (2.5-2.9)	28	27.5
C (2.0-2.4)	5	4.9
Total	102	100

[a] Mean: 3.17 (SD=0.414), Range=2.17-4.0

Institutional Grade Point Average

The Institutional grade point average (GPA) was also a selected academic measure used to describe students in the study. The Institutional GPA was defined as the GPA for all grades earned at the study institution. This GPA was calculated by the Registrar's Office. The mean Institutional GPA was 3.24 (SD=0.329). The institutional GPA was examined in the following categories of scores: A (4.0); B+ (3.5-3.9); B (3.0-3.4); C+ (2.5-2.9); C (2.0-2.4); D+ (1.5-1.9); D (1.0-1.4); F (0). When the institutional GPA was examined in categories of measurement, the scores ranged from B+ to C+ with the largest number of students being B (n=52, 51.0%). The categories used in this study corresponded to the letter grade used by the study institution and were selected for ease of interpretation. The categories of Institutional GPA are presented in Table 16.

Table 16 Institutional GPA by First Year Clinical Nursing Students at a Private College in the Southern United States.

Institutional GPA Category	Frequency[a]	Percent
B+ (3.5-3.9)	25	24.5
B (3.0-3.4)	52	51.0
C+ (2.5-2.9)	25	24.5
Total	102	100

[a] Mean: 3.24 (SD=0.329), Range=2.51-3.94

Cumulative Grade Point Average

A third GPA that was a variable used to describe students admitted to the nursing

program in the Fall, 2013 semester was the cumulative GPA. The cumulative GPA included all

undergraduate and graduate credits earned in the academic career of the student. The cumulative

GPA was obtained from the university Registrar's Office. The mean Cumulative GPA was 3.12

(SD=0.381). The cumulative GPA was examined in the following categories of scores: A (4.0);

B+ (3.5-3.9); B (3.0-3.4); C+ (2.5-2.9); C (2.0-2.4); D+ (1.5-1.9); D (1.0-1.4); F (0). When the

cumulative GPA data were examined in categories of measurement, the grade category earned by

the largest number of students was B (n=47, 46.1%). The categories used in this study

corresponded to the letter grade used by the study institution and were selected for ease of

interpretation. Table 17 presents the categories of cumulative GPA.

Table 17 Cumulative GPA First Year Clinical Nursing Students at a Private College in the
Southern United States.

Cumulative GPA Category	Frequency[a]	Percent
B+ (3.5-3.9)	17	16.7
B (3.0-3.4)	47	46.1
C+ (2.5-2.9)	33	32.4
C (2.0-2.4)	5	4.9
Total	102	100

[a] Mean: 3.12 (SD=0.381), Range=2.28-3.96

Composite ACT

The composite ACT was the fourth academic variable on which students were measured.

The data for this variable was very limited (n=27) as a result of two confounding factors: (a)

students who transfer 30 credit hours or more do not have to submit ACT scores and (b) students

applying for admission with a previous baccalaureate degree are not required to submit ACT

scores. The mean composite ACT score was 21.52 (SD=3.17). The following ACT composite

scores were grouped in categories for ease of interpretation: 25 or higher; 22-24; 19-21; and 18

or less. The category of measurement with the largest number of students was 19-21 (n=11,

40.7%). The categories of Composite ACT Scores are presented in Table 18.

Table 18 Categories of Composite ACT Scores for Students at a Private College in the Southern
United States.

Composite ACT Score Category	Frequency[a]	Percent
25 or higher	6	22.2
22-24	6	22.2
19-21	11	40.7
18 or less	4	14.8
Total	27[b]	100

[a]Mean: 21.52 (SD=3.17), Range=16-28
[b]Seventy five students either transferred 30 or more credit hours or had a previous baccalaureate
degree and were not required by the study institution to submit an ACT composite score.

Test of Essential Academic Skills

The Test of Essential Academic Skills (TEAS) was the fifth academic measure selected

to describe students in the baccalaureate nursing program. One criterion for admission to the

nursing program was that an applicant must achieve a level 2 benchmark on version V of the

TEAS. Any applicant who had earned a non-nursing baccalaureate degree or higher was exempt

from taking the TEAS. The score on the TEAS was obtained from the Registrar's Office. The

mean of the TEAS was 67.72 (SD=8.05). The TEAS data were examined in the following

categories of measurement for ease of interpretation: 81 or more; 76-80; 71-75; 66-70; 61-65;

and 60 or less. The category of measurement with the largest number of students was 60 or less

(n=36, 40.0%). The categories of TEAS scores are presented in Table 19.

Table 19 Categories of scores on the Test of Essential Academic Skills for Students at a Private
College in the Southern United States.

TEAS Category	Frequency[a]	Percent
81 or more	5	5.6
76-80	12	13.3
71-75	8	8.9
66-70	16	17.8
61-65	13	14.4
60 or less	36	40.0
Total	90[b]	100

(Table 19 continued)
[a] Mean: 67.72 (SD=8.05), Range=45-87
[b] Twelve students held baccalaureate degrees and were not required to take the TEAS.

Objective Three Results

The third objective of the study was to determine if a relationship exists between success

in nursing and the following academic variables:

    a.   Cumulative GPA;

    b.   Institutional GPA;

    c.   Prerequisite nursing GPA;

    d.   ACT composite test score;

    e.   Test of Essential Academic Skills (TEAS);

    f.   Grade in prerequisite nursing courses including: College Writing; College

Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and

Physiology Laboratory; and Introduction to Psychology;

    g.   Grade in nursing courses including: Introduction to Nursing; Nursing

Pathophysiology; Nursing Pharmacology; and Nursing Assessment.

These findings for objective 3 were accomplished by analyzing the data using the

independent t test to compare successful students with the unsuccessful students on the variables

of investigation. This technique was selected for ease of interpretation of the findings. An a

priori significance level of <0.05 was used to determine if the differences were statistically

significant. Of the specific academic variables that were compared, four variables were found to

be significant. Three of the four nursing courses, Nursing Pharmacology, Nursing

Pathophysiology and Nursing Assessment were found to be statistically significant. Course

grades in Nursing Pharmacology had the highest level of significant difference (t_{94}=7.128,

p<0.001). The nature of these differences was such that successful students (a grade of C or higher in the first two clinical nursing courses) had significantly higher grades in these courses than unsuccessful students. In addition, the TEAS was found to be statistically significant, with a higher score on the TEAS reflective of successful students than the grade of unsuccessful students. The remaining academic variables were found to be similar for both successful and unsuccessful students in the first year clinical nursing courses. The comparison of these selected academic measures by whether or not baccalaureate nursing students were successful in their first year of clinical nursing courses is presented in Table 20.

Table 20 Comparison of selected academic measures by whether or not baccalaureate nursing students were successful in their first year of clinical nursing courses.

Grade in Nursing Courses						
Variable Group	n	Mean	SD	t	df	p
Successful	69	3.27	0.579			
Nursing Pharmacology				7.128	94	<0.001
Unsuccessful	27	2.24	0.656			
Successful	69	3.41	0.551			
Nursing Pathophysiology				5.881	94	<0.001
Unsuccessful	27	2.61	0.698			
Successful	69	3.37	0.519			
Nursing Assessment				3.956	93	<0.001
Unsuccessful	26	2.90	0.490			
Successful	68	3.74	0.506			
Introduction to Nursing				0.773	97	0.441
Unsuccessful	31	3.66	0.410			
Grade for Prerequisite Nursing Courses						
Variable Group	n	Mean	SD	t	df	p
Successful	58	3.26	0.744			
College Writing				0.304	88	0.762
Unsuccessful	32	3.22	0.608			
Successful	61	2.97	0.768			
College Algebra				0.793	89	0.430
Unsuccessful	30	3.10	0.712			

(Table 20 continued)

Grade for Prerequisite Nursing Courses						
Variable Group	n	Mean	SD	t	df	p
Successful	69	3.14	0.747	1.448	100	0.151
Introduction to Chemistry						
Unsuccessful	33	2.91	0.744			
Successful	69	3.24	0.760	1.426	100	0.157
Human Anatomy and Physiology						
Unsuccessful	33	3.02	0.701			
Successful	69	3.33	0.706	0.548	100	0.585
Human Anatomy and Physiology Laboratory						
Unsuccessful	33	3.41	0.734			
Successful	68	3.21	0.687	-0.893	99	0.374
Introduction to Psychiatry						
Unsuccessful	33	3.08	0.836			
Grade Point Average						
Variable Group	n	Mean	SD	t	df	p
Successful	69	3.04	0.380	-1.295	100	0.198
Cumulative GPA						
Unsuccessful	33	3.15	0.380			
Successful	69	3.21	0.421	.946	100	0.346
Prerequisite GPA						
Unsuccessful	33	3.13	0.385			
Successful	69	3.28	0.305	1.813	100	0.073
Institutional GPA						
Unsuccessful	33	3.15	0.334			
Standardized Test Scores						
Variable Group	n	Mean	SD	t	df	p
Successful	19	22.00	3.432	1.224	25	0.232
ACT Composite Test Score						
Unsuccessful	8	20.38	2.264			
Successful	60	68.96	7.921	2.240	83	0.028
TEAS						
Unsuccessful	25	64.76	7.707			

Objective Four Result

Objective four was to determine if a model exists that significantly increases the researcher's ability to correctly classify nursing students on their success in nursing from the following demographic and academic measures:

a. Age;

b. Gender;

c. Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic and White;

d. Grade for prerequisite nursing courses: College Writing; College Algebra;

e. Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Pathophysiology Laboratory; and Introduction to Psychology;

f. Grade in nursing courses including: Introduction to Nursing; Nursing Pathophysiology; Nursing Pharmacology; and Nursing Assessment;

g. Cumulative GPA;

h. Institutional GPA;

i. Prerequisite nursing GPA;

j. ACT composite assessment test score;

k. TEAS.

To accomplish this objective, the researcher utilized a binary logistic regression analysis. The variables were entered into the binary logistic regression analysis with whether or not the student was successful in the first two clinical nursing courses (defined as a grade of C or higher in both courses) used as the dependent variable in the analysis. Independent variables were entered into the model in a stepwise manner due to the exploratory nature of the study.

The first task was to determine the optimum model, and models that included from one to as many as four explanatory factors were examined to make this determination. Binary logistic regression provides multiple steps in the analysis that facilitates the researcher's ability to identify the optimum model. The first measure examined was the Nagelkerke R^2. Essentially, the Nagelkerke statistic provides the researcher with an assessment of the percentage of variance explained by the model. The four models examined ranged from a Nagelkerke value of 0.485 for the one variable model to as high as 0.566 for the four variable model. Therefore, the Nagelkerke statistic was inconclusive regarding the optimum model in this analysis; although, the amount of increase for models beyond the one variable model were relatively low with only an increase of 0.028 when a second variable was added. Next the researcher examined the -2 Log likelihood (-2LL) which was found to be 87.347 for the initial model (with no independent variables entered). The -2LL can be used in determining the variables to enter in a stepwise analysis. The criteria used is the greatest reduction in the -2LL which in this analysis clearly indicates the one variable model with a -2LL value of 56.227 which is a reduction of 31.12. The reduction in the -2LL when another variable is added to the analysis is only 2.197 to a -2LL value of 54.030. Additionally, the one variable model was determined to be the model of best fit on the basis of the Hosmer and Lemeshow Test results (X^2=0.737, p=0.864). This indicates that there was no significant difference between the predicted model and the observed model. Hair, et. al. (1998) suggest that a non-significant Hosmer and Lemeshow test result is indicative of a good model fit. The two variable model was also found to have a non-significant Hosmer and Lemeshow value ($X^2 = 3.562$, p=0.894) indicating that there was not a significant difference between the predicted and observed model; however, the one variable model was the best fitting model. Therefore, the one variable model was selected as the most appropriate model for

explaining success of nursing students in their first year clinical nursing courses. The variable

that entered this model was grade earned in the Nursing Pharmacology course. This variable was

found to significantly increase the researcher's ability to correctly classify nursing students on

whether or not they were successful in their first year clinical nursing courses. Table 21 presents

the binary logistic regression of student success in the first year clinical nursing courses on

selected academic and demographic characteristics.

Table 21 Binary Logistic Regression Analysis of Student Success in the First Year Clinical
Nursing Courses

	X^2	df	p
Model	30.936	1	0.000
Variables in the Equation			
Variable	Wald	df	p
Nursing Pharmacology	12.117	1	<0.001
Variables Not in the Equation			

Variable	Score	p
Cumulative GPA	2.171	0.141
African American	0.558	0.455
White	0.247	0.619
Gender	0.017	0.897
Institutional GPA	0.848	0.357
TEAS	0.430	0.512
Prerequisite GPA	0.474	0.491
Age	1.857	0.173
Introduction to Nursing	0.021	0.885
Nursing Pathophysiology	0.937	0.333
Nursing Assessment	0.631	0.427

[a]Constant=7.039

The nature of the impact of Nursing Pharmacology was such that students who had

completed the course with higher grades were more likely to be successful in the first two

clinical nursing courses. To determine the substantive significance of the derived explanatory

model, the researcher examined the classification results. Using this one variable model, a total

of 87.5% of the students included in the analysis were correctly classified on whether or not they

were successful (defined as a grade of C or higher on both of their first two clinical nursing

courses) in the first year of their nursing education program. The classification results resulting

from this logistic regression analysis are presented in Table 22.

Table 22 Classification Results of Students Successful in the First Two Clinical Nursing
Courses

Observed	Successful	Unsuccessful	Overall Percentage
Successful	47 (95.9%)	2 (4.1%)	49 (87.5%)
Unsuccessful	6 (40%)	9 (60.0%)	15 (12.5%)
Overall	54 (82.8%)	53 (87.5%)	107 (100%)

Note. Overall percentage of correctly classified cases=87.5%

CHAPTER 5: SUMMARY

Purpose and Objectives

The primary purpose of this study was to determine the influence of selected demographic and academic characteristics on the success in nursing education among first year clinical baccalaureate nursing students at a private college in the Southern Region of the United States. The dependent variable in the study is whether or not the undergraduate nursing student successfully completed the first year of clinical nursing courses following admission to a baccalaureate nursing program. For the purpose of the study, success was measured by a grade of C or better in two clinical nursing courses in the first year of the nursing program.

The following objectives were formulated to guide this research study:

1. Describe currently enrolled students in a baccalaureate nursing program at a private college in the Southern region of the United States on the following selected demographic characteristics.

    a. Age;

    b. Gender;

    c. Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic; and White.

2. Describe currently enrolled students in a baccalaureate nursing program at a private college in the Southern Region of the United States on the following academic characteristics:

    a. Success in nursing defined as a grade of C or higher in the two first year clinical nursing courses;

b. Grade on prerequisite nursing courses: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology;

c. Grade in nursing courses: Introduction to Nursing; Nursing Pathophysiology; Nursing Pharmacology; and Nursing Assessment;

d. The following selected academic measures: prerequisite nursing grade point average (GPA); institutional GPA; cumulative GPA; Composite ACT assessment score; and Test of Essential Academic Skills (TEAS).

3. Determine if a relationship exists between success in nursing and the following selected academic variables:

a. Cumulative GPA;

b. Institutional GPA;

c. Prerequisite nursing GPA;

d. ACT composite test score;

e. Test of Essential Academic Skills (TEAS);

f. Grade in prerequisite nursing courses including: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology;

g. Grade in nursing courses including: Introduction to Nursing; Nursing Pathophysiology; Nursing Pharmacology; and Nursing Assessment.

4. Determine if a model exists that significantly increases the researcher's ability to correctly classify nursing students on their success in nursing (defined as a grade of C or higher on the two first year clinical nursing courses) from the following demographic and academic measures:

a. Age;

b. Gender;

c. Race: American Indian; Asian; Black/African American; Hawaiian/Pacific Islander; Hispanic; and White;

d. Grade in prerequisite nursing courses including: College Writing; College Algebra; Introduction to Chemistry; Human Anatomy and Physiology; Human Anatomy and Physiology Laboratory; and Introduction to Psychology;

e. Grade in nursing courses including: Introduction to Nursing; Nursing Pathophysiology; Nursing Pharmacology; and Nursing Assessment;

f. Cumulative GPA;

g. Institutional GPA;

h. Prerequisite nursing GPA;

i. ACT composite assessment test score;

j. Test of Essential Academic Skills (TEAS).

Methodology

The target population for this study was defined as students enrolled in a baccalaureate nursing program at a private college in the Southern Region of the United States. The accessible population was defined as students enrolled in the baccalaureate nursing program at one selected small private college in the Southern Region of the United States. The sample included all nursing students enrolled during the Fall semester of 2013 to the baccalaureate nursing program at the selected private college in the Southern Region of the United States. Thus, there were 102 students who were selected as the sample for this study.

The instrument that was used for this study consisted of a researcher-designed computerized recording form established as an Excel document. The specific variables that were measured were selected based on the review of literature. All variable information was obtained from archived data from the College Registrar's Office and downloaded in the Excel document which served as the research instrument.

Permission to conduct the study was obtained from the Dean of the nursing program at the study institution. A completed application for exemption from institutional oversight was requested and granted from the researcher's university and the small private college in which the research was conducted (See Appendices A and B). With approval, selected demographic and academic achieved data was obtained from the College Registrar's Office and downloaded onto the researcher-designed Excel document which served as the research instrument.

Findings

The findings of this study are discussed by the particular objective used.

Objective One

This objective was to describe students enrolled in a baccalaureate nursing program in Fall 2013 at a private college in the Southern region of the United States on selected demographic characteristics.

Of the 104 students selected for admission to the nursing program in Fall, 2013, 102 students accepted admission and were subsequently enrolled. The age of the students ranged from 19 to 53 years of age, with a mean age of 24.75 (SD=6.909). The largest category of age was 20-12-year old (n=43, 42.2%). The majority of students were female (n=86, 84.3%) with males in the minority (n=16, 15.7%). Of the 97 students reporting race, White (n=76, 78.4%)

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accounted for the overwhelming majority in this population with African Americans (n=15, 15.5%) a distant second among the race categories.

Objective Two

This objective was to describe students enrolled in a baccalaureate nursing program in Fall 2013 at a private college in the Southern region of the United States on selected academic characteristics.

The first group of variables on which students were described was success in nursing as defined by a final grade of C or better in the first year of clinical nursing courses. Eighty-one students were successful in completing the first clinical nursing course while 8 students were unsuccessful. The mean GPA was 2.32 (SD=0.777) with the largest group of students receiving a grade of C (n=29, 32.6%). Of the 77 students enrolled in the second nursing course, 69 successfully earned a grade of C or better. The GPA for this group of students was 2.52. (SD=0.718), with the largest group of students (n=23, 22.9%) receiving a B in the second clinical nursing course. Of the 102 students admitted in Fall 2013, 69 students successfully completed the first year clinical nursing courses while 33 of the students admitted were unsuccessful.

The second group of academic variables on which students were described were measures of grades in nursing prerequisite courses. All 102 students submitted grades in each required prerequisite course. The mean grade point average of each of the prerequisite courses was above 3.0, ranging from a high of 3.35 (SD=0.713) in Human Anatomy and Physiology Laboratory to the lowest mean of 3.01 (SD=0.749) in College Algebra.

The third group of academic variables was grades in non-clinical nursing courses. The study reviewed means (M) and standard deviations (SD), along with the range of measures and unsuccessful/successful (U/S) course status as defined by a C or better. The highest mean in this

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group of nonclinical nursing courses was in Nursing Assessment (M: 3.24, SD=0.550) with a range of measures from A to C with all 95 of the enrolled students successfully completing the course with a C or better. Nursing Pathophysiology had the next highest mean of 3.18 (SD=0.693) with a category range of measures between A to D with one student enrolled in the course unsuccessful, receiving a grade of D. Although two students were non-successful in Nursing Pharmacology, the course mean was 2.98 (SD=0.757) with the range of measures from A to F. All 99 students enrolled in Introduction to Nursing were successful in completing the course with a C or better, however, the course mean was the lowest score at 2.32 (SD=0 .776) with the range of measures from A to C.

The next set of variables in Objective 2 described students on selected academic measures of Prerequisite Nursing GPA, Institutional GPA, Cumulative GPA, Composite ACT score and the TEAS.

 The grade point averages examined in this objective were also reported in categories. The grade with the largest number of measures in the categories was consistently B, with the Institutional GPA having the largest number of students earning a B (N=52, 51.0%). The measurement of the Prerequisite GPA contained the largest range of scores of the GPAs, ranging between A to C (M=3.17; SD=0.414). However, the highest mean in the group of GPA was found to be the Institutional GPA (M=3.24; SD=3.29).

The Composite ACT had a limited number of student measurements (n=27) as 75 students had transferred 30 credit hours or had previous baccalaureate degrees. The largest group of student scores was 19-21 (n=11, 40.7%). The largest category of measurement of the TEAS score was 60 or less (n=36, 40.0%).

Objective Three

Objective three was to determine if a relationship existed between success in the first year clinical nursing courses and selected demographic and academic variables. The first group of variables was analyzed using the independent t test for ease of interpretation. Four variables were determined to be related to success. The remaining academic variables were found to be similar for both successful and unsuccessful students in the first year of clinical nursing courses.

Objective Four

Objective four was to determine if a model existed that significantly increased the researcher's ability to correctly classify nursing students on their success in nursing from selected demographic and academic measures. To accomplish objective four, the researcher utilized a binary logistic regression analysis, entering variables in a stepwise manner. The Nagelkerke R^2 was inconclusive regarding an optimum model. However, when the -2LL examined the variables, a one variable model was clearly indicated. The Hosmer and Lemershow statistic also indicated that the one variable model was the best fit, indicating there that no differences were detected and observed model (Hair, et. al., 1998). Therefore, the one variable model was selected as the most appropriate model. The grade earned in the Nursing Pharmacology course was found to significantly increase the researchers' ability to classify nursing students in whether or not they were successful in the first year clinical nursing courses.

Conclusions, Implications and Recommendations

Based on the findings from this study, the researcher has derived the following conclusions, implications and recommendations.

Conclusion One

The prerequisite course grades do not predict success of nursing students in first year clinical nursing courses.

This conclusion is based on the finding that no relationship was found between grade earned in prerequisite courses and success. Additionally, the required prerequisite course grades did not enter the binary logistic regression model as a predictor of success in first year clinical nursing courses. All of the students who were admitted in Fall 2013 achieved a grade of C or better on the prerequisite courses.

An implication from the study is that the grade earned in the prerequisite courses did not have an impact on the student's success in nursing school. This study supported the potential concern that the prerequisite courses did not provide the students with the baseline knowledge for the nursing curriculum and therefore for admission to the program. This finding is inconsistent with the literature. A study by Phillips et al. (2002) found four predictors of student success relating to the GPA which included English GPA and biology GPA. Potolsky et al. (2003) found that the prerequisite science course grades had a significant relationship with the academic performance of first year nursing students. Fowles (1992) concluded that the anatomy and physiology grades were the best predictor of success. This is also supported by Wolkowitz and Kelley (2010) who determined that science was a prominent academic variable for student success in nursing. One reason the support courses do not predict success in the first year clinical nursing courses in this study may be that a large percentage of the 102 students (n=75) were transfer students, and transferred 30 credit hours or more, some of which were prerequisite courses. The transfer courses may not meet the needs of students in the nursing curriculum.

Based on these findings and conclusion the researcher recommends that the faculty review the required prerequisite courses, along with course content, for relevance to the nursing curriculum. Course content should be focused on nursing majors and provide the students with a strong knowledge base. Particular attention should be focused on courses that have been shown to be predictors of success in other studies, such as algebra, chemistry and anatomy and physiology.

Currently, credit is awarded for a C or better in any transfer courses. It is further recommended that faculty review and select a number of credit hours of prerequisite courses and require students to transfer these courses with a B or better. If a student does not meet the criteria, the student should be required to complete the course at the study institution in order to apply for admission. Consideration should be given to requiring the credit hours in Introduction to Chemistry, Human Anatomy and Physiology and Introduction to Psychology even though these specific courses were not significantly related to success, they showed the highest promise for prerequisite course predictors of success in first year clinical nursing courses. This is supported by the literature which identifies a relationship between science and student success in nursing (Fowles, 1992; Wolkowitz & Kelley, 2010; Polotsky et al., 2003). This could potentially strengthen the students' knowledge base and provide a foundation for the nursing curriculum. In addition, the researcher recommends that further research be conducted with the current study subjects by following them to the completion of their nursing program and then examining the relationship between performance on the study variables (especially the prerequisites) and performance on the NCLEX licensure examination.

Conclusion Two

Standardized tests are weak predictors of student success in first year clinical nursing courses.

This conclusion is based on the findings that only a weak relationship existed between standardized test (ACT composite score and the TEAS) and student success in the first year clinical nursing courses. There were 27 students who submitted the ACT composite scores for admission to the nursing program in Fall, 2013. For data that were available, no relationship was found to exist between the ACT composite score and student success in the first year clinical nursing courses. Due to this low number of ACT composite scores, it was concluded that the ACT composite score was not a good measure to use for predicting the success of students in the first year of clinical nursing courses in this study.

Eighty-five students submitted the TEAS examination as required for admission to the nursing program while 12 students held previous baccalaureate degrees and were not required to take the TEAS examination. Of these 85 students, 60 were identified as successful in the first year clinical nursing courses, while 25 students were unsuccessful. The mean TEAS score of the successful students was 68.96 (SD=7.921) and for unsuccessful students 64.76 (SD=7.707) ($t_{.83}$=2.240, p=0.03). Also, data analysis did not include the TEAS variable in the regression model to correctly classify nursing students on their success in nursing in the first year clinical courses.

The literature is inconclusive regarding the use of standardized tests as predictors of academic success; however, the recommendation from this research is that a standardized test not be used as the sole determinant for program admission. Also, researchers disagree about the different content areas that predict success in nursing programs (Wolkowitz, & Kelly, 2010;

Fowles, 1992; Newton et al., 2007; Dell & Halpin, 1984). Recommendations range from

cumulative or prerequisite GPA to selected components of the standardized examinations (Dell

& Halpin, 1984; Fowles, 1992; Wolkowitz & Kelley, 2010).

The researcher recommends that the TEAS benchmark be raised and examined to

determine if the higher standard improves the test's predictive ability for student success in first

year clinical nursing courses. Raising the standard would better reflect the students' knowledge

base prior to entering nursing school and thereby should be a better predictor of student success

in the first year clinical nursing courses.

Conclusion Three

The incoming class of nursing students included in this study had an inadequate

representation of minority groups.

This conclusion is based on findings in the study that of the 97 students reporting race,

the largest group was White (n=76, 78.4%) followed by African American (n=15, 15.5%),

Hispanic (n=5, 5.2%), and Asian (1, 1.0%). Therefore, the Fall, 2013 class included only 21

students (21.7%) of non-white ethnic origin. Specifically, the African American students

accounted for only 15% in a city in which approximately one-third of the population is African

American.

Although the literature does not highly correlate ethnicity with success and retention in

nursing school, it does support diverse ethnic and cultural backgrounds as desirable in today's

classrooms. An understanding of ethnicity and culture in the classroom promotes compassionate

and ethically responsible nursing care in the clinical setting. The findings of the demographic

data of the class admitted in Fall, 2013 was similar to the demographic characteristics described

in the literature (AACN 2011; Seago & Spetz, 2005; D'Antonio, 2004). The literature identifies Hispanic and Asian ethnic groups as being extremely underrepresented in nursing.

Based on the conclusion, and research findings and literature review supporting diversity in the classroom, the researcher recommends that recruitment efforts be focused on recruiting qualified minority students. It is further recommended that scholarships be offered to qualified minority students to increase the representation of minority groups. Campus activities should also be developed to promote inclusion of the students in the student body, fostering a sense of belonging.

Conclusion Four

Successful students performed academically better in the three nursing courses, Nursing Pharmacology, Nursing Pathophysiology and Nursing Assessment, than did unsuccessful students.

Academic performance in Nursing Pharmacology, Nursing Pathophysiology and Nursing Assessment has implications not only for success in first year clinical nursing performance but implications for clinical nursing practice as students translate theory into practice.

This conclusion is based on the finding that the grade earned in these courses was significantly higher for students who were successful in their first two clinical nursing courses than those who were not successful. Sixty-nine students were successful in their first two clinical nursing courses while 27 students were unsuccessful. The mean grade in Nursing Pathophysiology for successful students was 3.41 (SD=0.551) while the mean for unsuccessful students 2.61 (SD=0.698). The mean grade in Nursing Pharmacology for successful students was 3.27 (SD=0.579) while the mean of unsuccessful students was 2.24 (SD=0.656). In Nursing

Assessment, the mean of the successful students was 3.37 (SD=0.519) and the mean of unsuccessful students was 2.90 (SD=0.490).

Based on the findings and conclusion, it is recommended that faculty review course content, including assignments and assessment measures in order to strengthen each of the courses. Since these courses are predictive, students should be admitted provisionally, placing more emphasis on completion of these courses in order to achieve full admission to the program. Students should also be required to complete the courses with a B in order to achieve full admission to the program. Completion of the courses with a B or better would prepare the students with the broad baseline knowledge needed for the rigors of nursing school.

Conclusion Five

The program had an excessive number of unsuccessful students.

This conclusion is based on the finding that the overall success rate was determined to be 67.6% with 32.4% of students unsuccessful at the completion of the first year clinical nursing courses.

Based on this conclusion and findings, the researcher recommends that faculty review student program and course evaluations. Data should be gathered from unsuccessful students. In order to maintain student confidentiality, this should be accomplished with a follow-up survey of unsuccessful students to determine what specifically were positive and negative course and program experiences. The evaluations could assist the faculty in reviewing the value of prerequisite courses in supporting the curriculum, nursing course content, teaching strategies and content placement in the curriculum.

It is also recommended that faculty consider implementing standardized testing of course content, such as ATI or HESI testing, in order to determine mastery of course content.

The faculty would have the capability of customizing either of these standardized tests in order to measure the student's knowledge of course content. In addition, taking standardized tests would familiarize the students with standardized test taking skills prior to taking the NCLEX examination. In order to emphasize the importance of the standardized test, the faculty could use the testing scores in one of two ways. One option is that the faculty could establish a benchmark that students must obtain in order to progress. For option two, faculty could assign a percentage of the course grade to the earned test score. Faculty should research the findings of the standardized test to determine the threshold for success.

Conclusion Six

Nursing Pharmacology was a meaningful predictor of success in first year clinical nursing courses.

This conclusion is based on the finding that Nursing Pharmacology entered the binary logistic model as a meaningful predictor of success in first year clinical nursing courses. Sixty-nine of the 102 students were successful in the first year clinical nursing courses with 27 students unsuccessful. The mean GPA of the Nursing Pharmacology course was 2.98 (SD=0.757). The mean for successful students was 3.27 (SD=0.579) while the mean for unsuccessful students was 2.24 (SD=0.656). Nursing Pathophysiology and Nursing Assessment were also related to student's first year clinical nursing success but not as highly related as Nursing Pharmacology. Several explanations may account for this. Success in Nursing Pharmacology has implications not only for success in first year clinical nursing courses but also has implications for clinical nursing practice. Students practice administering medications in simulated learning situations and translate theory into practice as they begin to administer medications in the hospital clinical setting. The student is accountable for not only administering medication safely but also in

monitoring the therapeutic effect of the medication. In order to do this, the student must use

knowledge from prerequisite courses. It is essential that the student have knowledge of drug

calculation (algebra) as well as knowledge of drug interaction (chemistry).

Based on these findings and conclusion, the researcher recommends that faculty review

course content and assessment measures. Based on findings that the mean was higher for

successful students, faculty should also consider requiring that students complete the course with

a grade of B or better. In addition, a pharmacology review should be incorporated into each of

the nursing courses in the curriculum. Specific recommended practices include the student with a

tutorial on the drugs that were relevant to the course content, such as labor and deliver. Students

would be given three opportunities to complete the quiz with a B or better at the beginning of the

course in order to be allowed to take the course without further pharmacology remediation.

Students who were unsuccessful in making a B on the quiz would be allowed to progress and

take the course but be required to take a one credit hour remediation pharmacology course in

addition to the nursing course. These students would be required to complete the remediation

course with a B or better in order to continue in the nursing program.

Conclusion Seven

GPA measures were not found to be significant predictors of success of first year nursing

students.

This conclusion is based on the finding that none of the three GPAs measured in the

study entered the binary logistic regression model. The mean GPA of successful students was

higher than the GPA of 2.75 required for admission. The mean Cumulative GPA for successful

students was 3.04 (SD=0.380) while the unsuccessful student mean was 3.15 (SD=0.380). The

mean prerequisite GPA for successful students was 3.21 (SD=0.421) with the unsuccessful

student mean 3.13 (SD=0.385). The mean for Institutional GPA for successful students was 3.28 (SD=0.305) and for unsuccessful students the mean was 3.28 (SD=0.334).

One reason for this lack of relationship may be that these GPAs may be inflated by the use of a different grading scale at other institutions. For example, in a 10-point scale a 70 is a C. However, at the study institution a 70 would be a D and not accepted for transfer. Grade point averages should reflect the preparation and student's ability to complete the nursing program. Many of the students in the study institution were transfer students and may have come from institutions using a 10-point grading scale. Faculty reviewing the GPAs for admission may not realize that the GPA was based on a different scale (e.g. 10-point scale) rather than a 7-point grading scale and consequently admit students who are not prepared for the rigors of the nursing program. Additionally, this discrepancy of letter grades may result in the possibility that students who had higher GPAs did not receive adequate preparation in non-nursing courses resulting in a faulty assessment of their academic preparation to be successful in the first two clinical nursing courses. It is the experience of the researcher that students who have been admitted to the nursing program become frustrated and discouraged when they do not make the grade in the nursing courses that they previously made in non-nursing courses.

Based on the findings and conclusion, it is recommended that the faculty raise the GPA criteria for admission to the nursing program to 3.0 or possibly 3.25. Faculty should continue to monitor and research the GPA criteria in order to promote student success in the first year clinical nursing courses. To assist with student success and retention, students with low GPAs should be identified on admission and referred to the academic support center for assistance developing study and test taking skills. Faculty should consider mandating that students with

failing grades attend remediation and test review in order to improve retention and success in a

nursing courses.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

ACTION ON EXEMPTION APPROVAL REQUEST

LSU

Dr. Robert Mathews, ChairInstitutional Review Board
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu | lsu.edu/irb

TO:
Scelitta Bond SHREWD

FROM:
Robert C. Mathews
Chair, Institutional Review Board

DATE: April 8, 2014
RE: IRB# E8769

TITLE: The Influence of Selected Personal and Academic Demographic Characteristics on the Academic Success of First Year Students Enrolled in a Baccalaureate Nursing Program

New Protocol/Modification/Continuation: New Protocol

Review Date: 4/7/2014

Approved X **Disapproved**

Approval Date: 4/7/2014 **Approval Expiration Date:** 4/6/2017

Exemption Category/Paragraph: 4

Signed Consent Waived?: Yes

Re-review frequency: (three years unless otherwise stated)

Protocol Matches Scope of Work in Grant proposal: (if applicable) _____

By: Robert C. Mathews,
Chairman

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING – Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.

5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. SPECIAL NOTE:
*All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/irb

APPENDIX B: OLOL IRB FEASIBILITY APPROVAL LETTER

OUR LADY OF THE LAKE COLLEGE

November 16, 2015

Scelitta Bond, MSN, RN
OLOL College, School of Nursing
7500 Hennessy Blvd.
Baton Rouge, LA 70808

RE: The Influence of Selected Personal and Academic Demographic Characteristics on the Academic Success of First Year Students Enrolled in a Baccalaureate Nursing Program

Research studies that will use Our Lady of the Lake College resources will be reviewed and endorsed by the Office of Academic Research.

In accordance with the policies of the OLOL College Office of Academic Research, it was confirmed that study is feasible to implement at Our Lady of the Lake College and is granted endorsement from the Office of Academic Research.

You may not begin the research study until the Office of Academic Research receives a copy of the approval letter from the **OLOL College IRB**.

Please file this notice with your files and include a copy of this correspondence with your packet for submission to the OLOL College IRB. Please submit a copy of your findings to the Office of Academic Research upon completion of your project.

Sincerely,

Dr. Susan Steele-Moses
Susan Steele-Moses, DNS, APRN-CNS, AOCN
Academic Research Director

OUR LADY OF THE LAKE COLLEGE

Franciscan Missionaries of Our Lady Health System

Date: November 19, 2015

Study Number: 1539
Study Title: *The Influence of Selected Personal and Academic Demographic Characteristics on the Academic Success of First Year Students Enrolled in a Baccalaureate Nursing Program*
Primary Investigator: Scelitta Bond
Secondary Investigator: Dr. Michael F Burnett
Primary Reviewer: Tracie Major
Secondary Reviewer: John Meinert
Approval Designation: Exempt
Approval Date: November 19, 2015
Expiration Date: November 17, 2016

Dear Ms. Bond,

I am pleased to inform you that Tracie Major and John Meinert of the Our Lady of the Lake College Institutional Review Board have reviewed and approved your proposed study entitled *The Influence of Selected Personal and Academic Demographic Characteristics on the Academic Success of First Year Students Enrolled in a Baccalaureate Nursing Program* conducted by Scelitta Bond and Dr. Michael F Burnett.

Please be aware that this approval is only valid for one year. If your research extends past that time, you will need to submit a Reapplication form no later than two weeks before the end of the approval period.

Thank you for your submission and I would like to wish you success with your study.

Best regards,

Dr. Michael T. Dreznick,
Associate Professor and OLOL College IRB Chair

5414 Brittany Drive, BATON ROUGE, LA 70808 · PHONE (225) 768-1700 · FAX (225) 768-1726

VITA

Scelitta Forbes Bond is a native of Walker, Louisiana, and graduated from Walker High School with honors in 1968. She earned a Bachelor of Science in Nursing from Southeastern Louisiana University in 1974 and a Master of Nursing in Community Mental Health Nursing with a focus on education from Louisiana State University Health Science Center in New Orleans, Louisiana in 1981.

Scelitta began her nursing career at Earl K. Long Hospital in Baton Rouge, Louisiana, working on the pediatric unit for eighteen months and later transferred to the Outpatient Clinics which specialized in twenty-seven clinics a week. She accepted a position at Our Lady of the Lake Diploma School of Nursing in 1977, teaching pediatric theory and clinical practice. Upon earning her Master's Degree she began to teach mental health nursing theory and clinical practice. Throughout her career at Our Lady of the Lake, she worked in various programs, including the Diploma Program, Associate Degree Program, Bachelors of Science in Nursing Program, the Accelerated Nursing Program and the RN-BSN Program. Scelitta served on the Steering Committee which facilitated the closing of the Diploma Program and opening Our Lady of the Lake College and the Our Lady of the Lake School of Associate Degree Nursing. She is currently an Associate Professor and teaches an online leadership nursing course in the RN-BSN Program.

Scelitta is a member of the National League of Nursing. She also maintains membership in Sigma Theta Tau National Honor Society for Nurses--Epsilon Nu Chapter and Phi Kappa Phi National Honor Society.

Scelitta met her husband Stephen Thomas Bond when an undergraduate at Southeastern Louisiana State University. They reside in Denham Springs, La. The Bonds have two daughters, Betsy Bond Halphen, a teacher who lives with her husband Jason and daughters Caroline and Lauren in Natchez, MS., and Stephanie Bond Hulett, an attorney who lives with her husband Jeff in Baton Rouge, LA.