

THE NURSING PROFESSION DIVERSITY CHALLENGE: INDIVIDUAL AND  
INSTITUTIONAL FACTORS THAT INFLUENCE THE ACADEMIC AND NCLEX-RN®  
SUCCESS OF RACIAL/ETHNIC MINORITY STUDENTS IN AN ASSOCIATE DEGREE  
PROGRAM

By

LOUISE AURELIEN

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To mom, dad & JJ

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## LIST OF DEFINITIONS

ADN	Associate Degree Nursing: Refers to the registered nurse who completes an established two-year nursing program and earned an Associate of Science Degree in Nursing.
Attrition	Refers to students “dropping out” of the nursing program. <i>Voluntary attrition</i> is when a student drops out due to personal (non-academic) reasons compared to <i>involuntary attrition</i> because of academic reasons (failure or dismissal).
BSN	Baccalaureate Degree Program: Sometimes denoted as BSN (Bachelors of Science Degree in Nursing) refers to the four-year nursing program in higher education.
Graduation rate	The number of students who complete the ADN program in 150% of the stated program length [National League for Nursing Accrediting Commission (NLNAC), 2008]. This means the number of students who complete the ADN program in 6 semesters.
HESI (E2)	Health Education Systems Inc. HESI Exit Exam.
IRE	Institutional Research Effectiveness.
NCLEX-RN <sup>®</sup>	National Council Licensure Examination for Registered Nurses: Refers to the nationally approved licensing exam for registered nurses enacted in 1982.
NCG	Nursing Course Grade
NGPA	Nursing Grade Point Average.
Race/Ethnicity	Refers to a student’s self-reported race or ethnic origin. Racial and Ethnic Minorities refers to students who self-identify as Black/African American or Hispanic
Stopout	Refers to a break in continuous enrollment for one or more semesters (excluding summer sessions and intercessions).
Withdrawal	When a student officially withdraws from a college course or courses due to personal and/or academic reasons.
W/F	Withdrawal/Failing (W/F): when a student has a failure status in a nursing course or courses and decides to officially withdraw due to personal and/or academic reasons.

Abstract of Dissertation Presented to the Graduate School  
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Louise Aurélien

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Chair: Luis Ponjuan

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The purpose of this quantitative study was to examine the relationship between individual and institutional factors that influence the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students in an Associate Degree Nursing program. The independent variables were race/ethnicity, nursing course grades (NCG), nursing grade point average (NGPA), HESI E2 exam scores, and financial support/aid (yes/no); and the dependent variables were academic success and NCLEX-RN<sup>®</sup> success. The study used Marianne Jeffreys' Nursing Undergraduate Retention and Success (NURS) model as the theoretical framework. Data was collected from an existing student database on eight cohorts of (White, Black/African American, & Hispanic) nursing students (N=617) who have or should have already graduated and taken the NCLEX-RN<sup>®</sup>. Results from statistical analyses revealed significant relationship between race/ethnicity and academic success, but no significant relationship between race/ethnicity and NCLEX-RN<sup>®</sup> success. Hispanic nursing students had the lowest enrollment rate. Black/African American nursing students had higher attrition rates than the other two racial/ethnic groups. Additional results indicated significant relationship between NCG, NGPA, and HESI E2 mean scores and

academic and NCLEX-RN success. Policy recommendations to facilitate the academic success of all (primarily Hispanic & Black/African American) nursing students are provided.

## CHAPTER 1 INTRODUCTION

The nursing profession is currently experiencing a national shortage of qualified registered nurses (RNs). Even more critical is the underrepresentation of RNs from racial/ethnic minority groups. Concurrently, the United States' racial and ethnic diversity is exponentially growing. The most recent data from the U.S. Census Bureau identify the Hispanic population growth between 2000 and 2010 to be 43%, representing now 16% of the total population and the largest minority group in the United States. During the same period, the Black/African American population increased by 12.3%, accounting for 12.6% of the nation's total population (March, 2011). While these racial/ethnic minority groups are steadily expanding within the general population, their persistent underrepresentation in the nursing profession is persisting and alarming.

This disproportion of racial/ethnic minority presence in the nursing workforce is of critical significance. Results from the 2008 *National Sample Survey of Registered Nurses* (NSSRN) indicate that only 16.8% of RNs are from ethnic/racial minority groups. Of these, Blacks/African Americans (non-Hispanic) and Hispanics/Latinos of any race respectively comprise 5.4% and 3.6% of RNs (HRSA, September 22, 2010). Although, these percentages show improvement from the 2004 NSSRN data, which revealed 4.2% of Blacks/African Americans (non-Hispanic) and 1.7% of Hispanics/Latinos RNs, they remain insignificant when compared to the racial/ethnic diversity shift occurring in the United States' general population. Other racial/ethnic minority groups, such as American Indians/Alaskan Natives and Hawaiian Natives/Pacific Islanders, are also underrepresented in the registered nursing workforce, but they will not be included in this study.

In 2004, the diversity challenge in the health professions caught the attention of the Kellogg Foundation that commissioned two landmark initiatives to address the issue: an Institute of Medicine (IOM) panel and the Sullivan Commission. The IOM report: *In the Nation's Compelling Interest: Ensuring Diversity in the Health Care Workforce* draws attention to the substantial differences in the racial/ethnic composition of the healthcare workforce compared to the U.S. population. The report argues that an increase in the diversity of the healthcare workforce is critical to minimize health disparities (2004). The Sullivan Commission report: *Missing Persons: Minorities in the Health Professions* concludes that racial and ethnic diversity in the health care workforce has extensive consequences for the U.S. health care system. The report further maintains that increasing diversity in the health care professions (including nursing) will not only improve health care access, satisfaction and quality for racial/ethnic minority patients, but also assure a sound health care system for all of our nation's citizens (2004). More recently, in 2008, the Robert Wood Johnson Foundation partnered with IOM on a two-year initiative to assess and transform the nursing profession. On October 5, 2010, the IOM published a report titled: *The Future of Nursing: Leading Change, Advancing Health*, which also calls for a "greater emphasis" on increasing racial/ethnic diversity within the profession. These initiatives recognize the crisis and recommend an increase in racial/ethnic diversity within the nursing profession as a solution to reducing health disparities between minority and majority populations.

The National Institute of Health (NIH, 2006-2007.) defines "*health disparities*" as "differences in the incidence, prevalence, mortality, and burden of diseases and other adverse health conditions that exist among specific population groups in the United States." Lack of health insurance, geographical location, low socio-economic status, language and literacy

barriers, and patients' perception of provider-patient relationship/interaction are among the contributing factors to healthcare access and disparities. According to the 2004 IOM report, racial/ethnic minority patients are more likely to seek care from healthcare professionals from their own race, not only because of geographic accessibility but also for personal preference and language. These patients are also more satisfied with the care they receive from them. Recent research by Tucker et al., (2010) reports that "the higher the percentage of racially and ethnically diverse staff members employed at a health care facility, the more satisfaction patients report about their care." The 2004 IOM report further cites that "racial and ethnic minority providers are more likely than their non-minority colleagues to serve in minority and medically underserved communities." Based on these facts, improvement in health care access and quality for racial/ethnic minority patients can be partly achieved with the academic and NCLEX-RN® success of racial/ethnic minority nursing students, and Associate Degree Nursing (ADN) programs play a crucial role in the promotion and realization of such outcomes.

The longstanding racial/ethnic minority discrepancy in the nursing workforce is a serious concern and challenge facing ADN programs as they are being urged to graduate more racial/ethnic minority students. All the aforementioned reports agree that health professions institutions and programs (including nursing) play a vital role in shaping the progress of their recommendations. This call to improve educational outcomes of racial/ethnic minority nursing students coincides with President Obama's higher education reform, which plans "to invest in community colleges with the purpose to equip a greater share of young people and adults with high-demand skills and education for emerging industries" ("Investments in Community Colleges, <http://www.whitehouse.gov/issues/higher-education>, 2009). The President's proposal is aiming at restoring America's educational leadership status of having the highest proportion of

college graduates in the world by 2020 (President Obama, Feb. 24, 2009). On March 30, 2010, President Obama signed into law the Health Care and Education Reconciliation Act of 2010 (Pub.L. 111-152, 124 Stat. 1029), which contains the Student Aid and Fiscal Responsibility Act of 2009 (SAFRA) (H.R. 3221). The latter expands federal Pell Grant and changes federally subsidized private loans to direct loans. Such federal support is welcomed both by institutions of higher education that are currently facing declining resources and Blacks/African Americans and Hispanics/Latinos nursing students. Furthermore, the nursing literature cites financial needs as one of the factors influencing the success of these students in nursing education (Amaro et al., 2006), and consequently contributing to their underrepresentation in the nursing workforce. Thus making any form of financial assistance an appreciated proposition.

Both the National League for Nursing (NLN) and the American Association of Colleges of Nursing (AACN) support the call from the Sullivan Commission and the IOM to increase racial/ethnic minority students in nursing programs and the profession. These two national organizations represent nursing education at the Associate and Baccalaureate degree levels and have respectively published position statements on the issue (NLN, 1979, 2009; AACN, 1997, 1999, 2010). Although recruitment and enrollment efforts have produced positive gains for nursing schools the past few years, retention of racial/ethnic minority nursing students remains a significant issue as reflected in the imbalanced profile of the nursing workforce.

The literature is replete with research that discloses the complexities surrounding the retention issue that nursing programs (ADN and BSN) face with their enrolled students, particularly those of racial/ethnic minority backgrounds (Evans, 2003; Fletcher, Williams, Beacham, Elliott, Northington, Calvin, Haynes, Winters, & Davis, 2003; Gardner, 2005a; Stewart, 2005; Valencia-Go, 2005; Wilson, Andrews, & Leners, 2006). The high attrition rates

of racial/ethnic minority nursing students further intensify the national nursing shortage of nurses, and jeopardize the prospect of supplying racial/ethnic minority nurses. Many researchers have studied and reported on the factors that influence retention, and have proposed strategies to increase [enrollment] and retention rates of racial/ethnic minorities in nursing programs (Amaro, Abriam-Yago, & Yoder, 2006; Evans, 2004; Fletcher, et al., 2003; Gardner, 2005a; Gilchrist & Rector, 2007; Guhde, 2003; Mills-Wisneski, 2005; Shelton, 2003; Stewart, 2005; Valencia-Go, 2005; Wilson, Andrews, & Leners, 2006; Yoder, 1997; Yoder, 2001). However, all these efforts have yet to produce the desired outcome of equal racial/ethnic minority representation in the nursing workforce to the U.S. population. Challenged by research findings, many retention projects have been initiated and efforts to identify and address the special needs of racial/ethnic minority nursing students, as well as their perceived experiences and barriers to success have been undertaken (Amaro, Abriam-Yago, & Yoder, 2006; Davis, 1999; Evans, 2004; France, Fields, & Garth, 2004; Gardner, 2005b; Gooden, 2001; Yoder, 1996; Yoder, 1997; Yoder, 2001).

It is very important to note that academic success refers to students who graduate on time from the ADN program within 4 semesters. Additionally, the National Council Licensure Examination for Registered Nurses (NCLEX-RN<sup>®</sup>) success refers to a graduate registered nursing student who passes the NCLEX-RN<sup>®</sup> on the first trial. Passing the NCLEX-RN<sup>®</sup> is the ultimate professional goal of all nursing students post-graduation. It is a requirement for licensure, which will allow graduates to enter the nursing workforce as RNs. First time pass rates statistics are a concern for nursing programs as they are a point of reference for state boards of nursing, accrediting bodies, and public opinion of educational quality. The National Council of State Boards of Nursing (NCSBN) monitors this examination and publishes quarterly first time pass rates for each institution. This regulatory agency ensures provision of safe and competent

care by licensed nurses. NCSBN publication of NCLEX-RN<sup>®</sup> statistics does not contain a breakdown of specific data regarding racial/ethnic minority registered nursing graduates on their performance on the NCLEX-RN<sup>®</sup>. However, institutional reports are available and contain this data.

Smith (2009) maintains that by now “we (nurse educators) should be experts in minority recruitment, retention and graduation,” since for decades, nursing programs in the U.S. have developed and tested initiatives, which unfortunately have yet to produce long-term structural changes within nursing education (p. xxii). This lack of positive outcomes further warrants the need to scrutinize the topics of retention of racial/ethnic minority students in nursing education. The following segment of the paper will provide additional background information on the integration of racial/ethnic minority students within nursing education. It is important to note that the background information primarily addresses Blacks (African Americans), as they were the first group in the United States to pave the way and advocate for the inclusion of racial/ethnic minorities in the nursing profession, and more literature is available. In contrast, the paucity of historical data on Hispanic/Latino inclusion/presence within the nursing literature makes it difficult to provide a comprehensive overview of their journey through the nursing profession in the U.S. However, the small amount retrieved is incorporated in the background.

### **Background**

In order to set the context for this study, this section will provide a historical overview of racial/ethnic minorities’ access and inclusion to nursing education, along with the influence of affirmative action. These historical trends have contributed to the underrepresentation of racial/ethnic minorities within the nursing workforce. From the post-Civil War era to the *World War II Era*, the preclusion of equal educational opportunities certainly did not help the situation.

Additionally, current enrollment, retention, and graduation rates of racial/ethnic minority students will also be discussed in this section.

### **Racial/Ethnic Minorities in Nursing during the Post-Civil War Era**

Racial/ethnic minorities have struggled for access to nursing education from the initial establishment of nursing schools that primarily catered to White, middle-class females at a time when blatant racism was rampant (Hine, 1989). In 1873, following the Civil War era when nursing care was carried out by volunteer nurses and former slaves, three nursing schools were founded and opened their doors to only White female candidates. They were located at Bellevue Hospital in New York City, Massachusetts General Hospital in Boston, and New Haven Hospital in Connecticut. By the end of the 1800s, the number of nursing schools in the U.S. grew to more than 400. However, African Americans [Blacks] were denied access to all these schools, with the exception of the New England Hospital for Women and Children in Boston, which admitted “one Negro and one Jewish student” each year. In 1897, Mary Eliza Mahoney graduated as the first Black professional nurse (Carnegie, 1995; Hine, 1989; *Journal of Blacks in Higher Education [JBHE]*, Winter 2001/2002).

The practice of racial discrimination, segregation, quota system and exclusion of African Americans and other people of color served as barriers to access nursing programs and the nursing profession (Hine, 1989). Since White professionals were reluctant to provide care for Blacks, Black physicians founded their own hospital facilities and nursing schools (Hine, 1989; *JBHE*, Winter 2001/2002). In 1891, the surgeon Daniel Hale Williams established the first hospital school of nursing for Black women at Provident Hospital in Chicago. By 1920, thirty-six nursing schools for Blacks were operating (Carnegie, 1995). Other nursing schools for Blacks were also initiated within independent institutions. These private institutions (colleges and universities) referred to as Historically Black Colleges and Universities (HBCUs) were set up

and supported by religious missionary societies and private donors. Such was the case of the Atlanta Baptist Seminary established in 1886, which was later renamed Spelman College in honor of Laura Spelman, John D. Rockefeller's wife (JBHE, Winter 2001/2002).

The exclusion from membership in the National League for Nursing Education (NLNE) and the American Nurses Association (ANA) accentuated the marginalization of Black nurses. However, in 1908, a group of 52 black nurses gathered at St. Mark's Episcopal Church in New York City and founded the National Association of Colored Graduate Nurses (NACGN), and elected Martha Minerva Franklin as president (Hine, 1989).

### **Racial/Ethnic Minorities in Nursing during the World War II Era**

Prior to World War II, the NACGN was the only organization to undertake recruitment efforts to promote participation of Black students in the nursing profession (Hine, 1989, p. 145). However, this approach changed during World War II (WWII) as White nurses went back to being homemakers, leading to the shortage of professional nurses. This high demand for nurses led to the Federal government's passing of the Bolton Bill of 1943, which contained an anti-discrimination amendment. This new bill established the United States Cadet Nurse Corps and provided financing for basic education that benefited over 3,000 Black nurses (Carnegie, 1995). The overwhelming need for nurses obliged the bending of the racial barriers of the profession. The integration of racial/ethnic minorities within the nursing corps in the military preceded that of the nation's armed forces by many years (JBHE, Winter 2001/2002).

During the same period (WWII), in 1944, the U.S. Army welcomed large numbers of Puerto Rican troops to serve in the Caribbean and South Atlantic Theater of Operations. This decision caused the Army Antilles Department to repeal its previous policy regarding the exclusion of Puerto Rican nurses in the Army or Navy Corps. The nurses' bilingual abilities were recognized as an invaluable asset to both patients and Continental providers in the delivery of

care in the hospitals. The Surgeon General's Office, the Governor of Puerto Rico, the Commissioner of Health of Puerto Rico and a group of reputable physicians collaborated to determine criteria that would be used to grant Puerto Rican nurses entrance into the Army Nurse Corps. Thirteen Puerto Rican Nurses were commissioned to work at the Post of San Juan and Camp Tortuguero, both posts in Puerto Rico (P.R.) (Army Nurse Corps Archives, July 7, 2009).

In 1951, the NACGN merged with the American Nurses Association (ANA), and dissolved presuming that the objectives for Black nurses would be embraced and carried out by the ANA. Additionally, on May 17, 1954 in the *Brown v. Board of Education of Topeka* decision, the United States Supreme Court ruled that racial segregation in America's schools was unconstitutional. These steps toward inclusion seemed very promising in providing equal educational opportunities for Blacks who aspired to become nurses. Subsequently, in the 1950s, leaders of predominantly White nursing programs agreed to enroll more Blacks. Unfortunately, their effort yielded a steep decline in the number of Black students (Carnegie, 1964 as cited in Barbee, 1993; Hine, 1989). This decline led Carnegie (1964) to suggest that there was still a need for Black schools of nursing (as cited in Barbee, 1993).

### **Racial/Ethnic Minorities in Nursing during Civil Rights Movement Era**

The Civil Rights movement of the 1960s confronted and protested against all forms of racial subordination and discrimination against racial/ethnic groups present within American higher education and nursing schools. As the movement expanded, racial/ethnic minorities demanded social justice, which prompted legislative changes and court rulings, such as the Civil Rights Act of 1964 and the Nurse Training Act of 1964, banning segregation, providing funding and forcing nursing schools to open their doors to racial/ethnic minority nursing students (Hine, 1989). The Higher Education Act of 1965 provided funds not only to help low-income students but also for the admission and support of ethnic minority students. In 1965, the National Student

Nurses' Association (NSNA) established the Breakthrough to Nursing project with the goal of increasing the number of minority healthcare providers (NSNA, 2004).

### **Racial/Ethnic Minorities in Nursing during the 1970s through 2000s**

In the 1970s and 1980s, federal funds made possible the formation of several minority recruitment programs, which accounted for the increase in racial/ethnic minority enrollments (Barbee & Gibson, 2001). Unfortunately, in the 1990s, the extinction of these provisional funds affected the sustainability of these programs and contributed to the persistent underrepresentation of racial/ethnic minorities in the nursing workforce (Barbee & Gibson, 2001). In December 1971, under the leadership on Lauranne Sams, the National Black Nurses' Association (NBNA) was formed. This move resulted from growing concerns regarding the inequities in health care for African Americans and the lack of increase of Black RNs to speak up on such issues. Additionally, the ANA neglected to invite Black nurses to serve in key leadership roles within the organization and to recognize their significant contribution to the nursing profession (Hine, 1989). Great concern had also surfaced as the justification for Title VI (Affirmative Action) of the Civil Rights Act of 1964 has been challenged in the courts on constitutional grounds with such cases as: *Regents of University of California v. Bakke* (§1978), *Hopwood v. Texas* (§2000), *Grutter v. Bollinger* (§2003), and *Gratz v. Bollinger* (§2003). These cases demonstrated that the struggle for racial/ethnic minority integration in education persisted and existed in nursing education as well. Still in the early twenty first century, as mentioned in the Sullivan Commission 2004 report, even with a 44% increase in racial/ethnic minority enrollment made between 1991 and 2003 in BSN programs, the "shortages of underrepresented minority nursing students clearly remain" (p.56).

The voice of Hispanic nurses during this period emerged. In 1971, Ildaura Murillo-Rohde, the first Hispanic nurse to earn a PhD, founded the National Association of Hispanic

Nurses (NAHN<sup>TM</sup>), “designed and committed to improving the quality of health and nursing care of Hispanic consumers and toward providing equal access to educational, professional, and economic opportunities for Hispanic nurses” (NAHN<sup>TM</sup>, 2011).

### **Current Enrollment Rates of Racial/Ethnic Minority Nursing Students**

The data published by the NLN shows evidence of improvement in racial/ethnic minority enrollments in nursing programs. According to the 2009-2010 National League for Nursing *NLN Data Review*<sup>TM</sup>, racial/ethnic minority nursing students represented 26% of all enrollments in ADN programs with 11.9% African Americans, 7.9% Hispanics/Latinos, 5.0% Asians, and 1.2% American Indians (NLN 2011). These numbers indicate a 2.2% decline from the previous year (2008-2009) with the following breakdown: 13.9% African Americans, 7.6% Hispanics/Latinos, 5.7% Asians, and 1.0% American Indians (NLN, 2009). This drop is worrisome as it reflects the lack of consistency in tackling the persistent issue of underrepresentation of racial/ethnic minorities in the nursing workforce to care for the rapidly growing racial/ethnic population in the United States.

### **Current Retention Rates of Racial/ethnic Minority Nursing Students**

The NLN reports that as of 2004, ADN programs had a first-year retention rate of 83% (NLN, 2008). However, it is important to note that not only does this data lack to furnish a breakdown by racial/ethnic groups, it is not indicative of program completion, and consequently requiring further exploration. The persistent underrepresentation of racial/ethnic minorities in nursing remains problematic. Based on the 2008 NSSRN findings (HRSA, 2010), it is obvious that nursing programs still struggle with retention of this group to generate favorable outcomes of a representative nursing workforce. Recruitment and enrollment of racial/ethnic minority students are ineffective and unproductive, when the students are not retained and do not achieve

their goal of becoming RNs. Therefore, it is essential that ADN programs establish suitable environments that promote the retention of these students.

### **Current Graduation Rates of Racial/ethnic Minority Nursing Students**

In spite the high attrition and low retention rates, nursing programs across the U.S. have reported an increased in graduation rates of racial/ethnic minority students. According to the National League for Nursing *NLN Data Review<sup>TM</sup>* for year 2008-2009, the graduation rate for racial/ethnic minority students from pre-licensure registered nursing programs (both ADN & BSN programs) was 24.5% in 2006. This represented a 4.5% increase from the previous three years and was an even 1.0% distribution across all racial/ethnic categories (Asians, African Americans, and Hispanics), with the exception of American Indians who only gained 0.3%. In 2007, the graduation rate slightly dropped to 23.6% (NLN, 2009). While these percentages indicate an upward trend, they still lag behind the much-desired racial/ethnic minority representation in the nursing workforce.

This background has shed some light on the historical trend of marginalization of racial/ethnic minorities in nursing education, leading to their underrepresentation in the nursing workforce. The effects of the segregation movement have spawned into a full-blown public health issue, as supported by the existing health disparities among racial/ethnic minorities. In 2008, roughly 60% of all nursing students graduated from ADN programs (NLN, 2008). Despite evidence of such contribution to the nursing workforce, there remains an alarming lack of supply of racial/ethnic minority RNs, which the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) refers to as “a prescription for danger, negatively affecting patients’ outcomes” (JCAHO, 2002). The 2008 *National Sample Survey of Registered Nurses* (NSSRNs) report shows the total RN population to be made of only 15.1% of racial/ethnic minorities (HRSA, September 2010). This upward trend is welcomed, but not enough to mirror the current

33% ethnic/racial minority population of the United States, nor does it address today's healthcare disparities respective to this group.

### **Statement of the Problem**

The U.S. Census Bureau latest report substantiates forecasts of a rapidly growing racial/ethnic minority population, while the 2008 NSSRN reveals a homogeneous nursing workforce, unreflective of the United States population. The Sullivan Commission, the IOM and two of the major nursing educational organizations (NLN and AACN), along with other health care organizations have been once again alerted on the issue. In order to tackle this major challenge, ADN programs across the nation are being urged to graduate more racial/ethnic minority students. Unfortunately, most of these programs still struggle with retention of this student population. Because of the nationwide nursing shortage, it is critical to focus on the retention of racial/ethnic minority nursing students in ADN programs. Knowing which individual and institutional factors that may assist or hinder these students from persisting to graduation is necessary to achieve a diverse nursing workforce. Individual factors are classified into race/ethnicity, nursing course grades, and HESI exit (E2) examination scores. The selected institutional factor is financial support.

### **Purpose of the Study**

The purpose of this quantitative study is to examine the relationship between the selected individual and institutional factors that influence the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students enrolled in an ADN program. Students' retention through the nursing program will be examined using Jeffrey's Nursing Undergraduate Retention and Success (NURS). The need to explore this complex nursing education phenomenon of racial/ethnic minority nursing students' retention leads to the following research question: What

is the relationship between selected individual and institutional factors and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students in an ADN program?

### **Significance of Study**

The steady increase of the racial/ethnic minority segment of the United States population necessitates a similar trend in the racial/ethnic composition of the nursing workforce, to improve the health outcomes of this group. Between 1977 and 1997, racial/ethnic minority in the nursing workforce grew from 6.3% to 9.7% (Buerhaus & Auerbach, 1999). As noted earlier, report from the 2008 NSSRN shows the total RN population to be made of 15.1% of racial/ethnic minorities (HRSA, September 22, 2010). Due to the underrepresentation of racial/ethnic minorities in the nursing workforce in spite of current progress in enrollment and graduation rates, it is imperative for educational leaders to determine the reasons for the early departure of this group of students, so as to implement strategies that promote racial/ethnic minority students' successful completion of an ADN program.

Many quantitative and qualitative research studies exploring the plight of racial/ethnic minority nursing students have been undertaken, primarily at the baccalaureate level. However, the results have been inconsistent and vary from one nursing program to another. Glossup (2001) remarked that there are fewer studies aiming at describing variables that may predict completion of a nursing program than those conducted to predict NCLEX-RN<sup>®</sup> success; thus the need to investigate these outcomes. A quantitative study on selected individual and institutional factors influencing the retention and NCLEX-RN<sup>®</sup> success of these students in an ADN program is warranted. It is important for several reasons. First, valuable data analysis will reveal some of the underlying reasons such as demographic, cognitive, and financial factors that may be related to the lack of success of this group of students, and may assist faculty in the examination and

revision of curriculum, and instructional approaches in order to meet the learning needs of these students. The study results will offer faculty information that will facilitate early recognition of at-risk students. This early identification will allow faculty's provision of the necessary counseling and support to promote academic success and the probability of on-time graduation.

Second, the data will provide nursing program administrators with greater understanding of variables associated with academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority students in an ADN program. The study results will prompt administrators to design and implement new strategies to break down barriers and promote higher retention and NCLEX-RN<sup>®</sup> pass rates of this population. Third, the findings will serve as supporting evidence for institutional administrators of the need to establish new policies and strategies such as tutoring, support groups, and financial support.

### **Summary**

Many initiatives and organizations have recently drawn attention to the persistent underrepresentation of racial/ethnic minority in the nursing workforce and the imperative need to change it. In the academic year 2005-2006, roughly 24% of all nursing students who graduated from an ADN program were racial/ethnic minorities (NLN, 2008). Evidence of such contribution to the nursing workforce is barely noticeable in the nursing workforce and not supplying enough racial/ethnic minority registered nurses. Also, there remains a disparity between the United States racial/ethnic population and the nursing workforce composition. The National Advisory Council on Nurse Education and Practice (NACNEP, 2008) urges nurse educators to resolve the situation by improving the retention and graduation rates of this group of students. Also compelled by President Obama's higher education reform, ADN programs need to not only recruit, but also retain individuals that represent the United States population. A

quantitative study to further explore selected individual and institutional factors influencing the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students is obligatory.

## CHAPTER 2 REVIEW OF THE LITERATURE

Colleges and departments of nursing are faced with the ambitious aim of assuring the academic and NCLEX success of racial/ethnic minority students, so as to counter their underrepresentation in the nursing workforce. Based on some of the most recent graduation rates from nursing programs, the interventions related to key benchmarks have yet to appropriately address the issue of racial/ethnic diversity of the nursing workforce to better reflect the nations' changing demographic profile. Researchers have attributed these low levels of representation of this group of students to their low retention rates. As Jeffreys (2004) puts it: "the most persistent trend in student persistence research is that student attrition persists" (p. 4). Therefore, understanding which individual and institutional factors that influence the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students is invaluable to all stakeholders. The purpose of this study is to examine the relationship between the selected individual and institutional factors that influence the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students enrolled in an ADN program. The individual factors explored in this study are race/ethnicity, nursing course grades (NCG), nursing grade point average (NGPA) (for the first two didactic courses), and HESI exit (E2) examination scores. The selected institutional factor is financial support.

For more than six decades, the nursing literature has consistently explored the student nurse within nursing education. In general, predictive studies have been undertaken to examine the relationship between individual and institutional variables and academic and NCLEX-RN<sup>®</sup> success. However, there is a paucity of studies in the nursing literature that closely examine racial/ethnic minority students in ADN programs. This chapter will present a review of pertinent scholarly research that identify the individual and institutional factors that influence the retention

and NCLEX-RN<sup>®</sup> pass rates for nursing students in general, from either the baccalaureate or associate degree level. Furthermore, an overview of Jeffreys' *Nursing Undergraduate Retention and Success* (NURS) Model will be presented. Jeffreys' NURS Model is the selected theoretical framework that will guide this investigation.

### **Literature Related to Racial/Ethnic Minority Nursing Students**

Numerous research studies and doctoral dissertations have investigated variables that predict first-time NCLEX-RN<sup>®</sup> pass rate and academic success as a form of retention. However, the results are inconsistent and vary from one nursing program to another. The majority of the studies only cover some aspects of student retention in nursing programs, and most samples are from BSN programs, while the greater number of graduates who sit for the NCLEX-RN<sup>®</sup> examination are from ADN programs (NLN, 2009; Yin & Burger, 2003). Additionally, there is a paucity of both quantitative and qualitative evidence concerning NCLEX-RN<sup>®</sup> pass rates associated with racial/ethnic minority students. In order to identify early predictors of academic and NCLEX-RN<sup>®</sup> success, more research focused on racial/ethnic minority students in associate degree nursing (ADN) programs need to be undertaken. As mentioned earlier, since only a few of the studies were conducted with samples from ADN programs, this review of the literature will report findings from the general nursing student population without regard to degree level (BSN and ADN). Hence, this literature review reports on the research examining the correlation between selected individual and institutional factors and academic and NCLEX-RN<sup>®</sup> success.

### **Individual and Institutional Factors that Influence the Academic and NCLEX-RN<sup>®</sup> Success of Racial/Ethnic Minority Nursing Students**

#### **Race/Ethnicity**

Many researchers in nursing have identified race/ethnicity as a risk factor that significantly affects the retention of college students. An earlier study by Oliver (1985) reported

great disparity in an ADN program completion between Black and Caucasian students. Similarly, Yocom and Scherubel (1985) found that minorities at a baccalaureate nursing program were less likely to complete or pass the NCLEX-RN<sup>®</sup>. Gardner (2005) reported that the high attrition rate of ethnic/racial minority nursing students is a contributing factor to the underrepresentation of these individuals in the nursing profession. An analysis of racial/ethnic minority students' records admitted to a Minority Retention Project at California State University showed the attrition rate to be 80% and primarily due to academic reasons (Gardner, 2005a).

Campbell and Dickson (1996) conducted an integrative review and meta-analysis of 47 nursing studies that were published in the United States between 1981 and 1990. The studies investigated predictors of retention, graduation and NCLEX-RN<sup>®</sup> pass rates of baccalaureate nursing students. Only five of the studies they reviewed included race/ethnicity as a demographic variable. Of these studies, only two yielded significant results, rendering it difficult to identify any consistent trends, patterns, or gaps. Other nursing researchers have found that racial/ethnic minority students to be most at risk for stopouts or dropouts, take longer to complete their education, and have lower first-time pass rates in the NCLEX-RN<sup>®</sup> (Bessent, 1997; Byrd, Garza, & Niewiadomy, 1999; Crow, Handley, Morrison & Shelton, 2004; Endres, 1997; Haas, Nugent, & Rule, 2004; Harris, 2006; Jeffreys, 2007; Seago & Spetz, 2005; Sayles, Sheldon & Powell, 2003).

Haas, Nugent, and Rule (2004) sought to determine if first time success on the NCLEX-RN<sup>®</sup> examination could be accurately predicted of 351 students who graduated between 1991 and 2001. The authors used a discriminant analysis with a stepwise procedure to predict student success on the NCLEX-RN<sup>®</sup>. The overall NCLEX-RN<sup>®</sup> first time pass rate for the group was 90.3%. Results obtained through chi-square analysis indicated that the failure rate of African

American students (18.8% or n = 6) was significantly higher than that of Caucasian students (8.1% or n = 25). Asian students also demonstrated a significantly higher failure rate (37.5%) than Caucasian students, though the sample size was small (n = 8). On the other hand, the only two Hispanic students in the study passed the NCLEX-RN® on the first trial (Haas et al., 2004). It is important to mention that the small number of Hispanic and Asian students in their study limits its generalizability.

A study by Seago and Spetz (2005) of California Community College nursing (ADN) programs sought to determine whether ethnic minority groups have different success rates. The authors examined factors related to on-time completion rates, attrition rates, and NCLEX-RN® first time pass rates of racial/ethnic diverse students from California Community College nursing (ADN) programs. The study findings indicate that Asian non-Filipino and African American students had lower on-time completion rates than the statewide average and the lowest rate of success with only approximately 50% graduating by 2002. Also, the nursing programs with higher percentages of Asian and African American students had higher attrition rates in spite of support services. Additionally, these programs had lower NCLEX-RN® first time pass rates, even when controlling for other program characteristics. It is interesting to note that the authors did not accentuate on the findings for Hispanics/Latinos in this study, given their high proportion in California's population. The researchers are aware of the limitations of their findings related to geography, and omission of variables (predictors) for both individual and institution (Seago & Spetz, 2005).

Another study of national scale by Crow, Handley, Morrison, and Shelton (2004) aimed to identify current interventions used by BSN programs to promote academic success and predict NCLEX-RN® success. Participants were voluntary recruits from the 513 generic BSN programs

listed in *Official Guide to Undergraduate and Graduate Nursing Schools* (NLN, 2000 as cited in Crow et al., 2004). The researchers found that “programs with higher percentages of White students were more likely to have higher passing rates than programs with smaller percentages; additionally, programs with higher percentages of Hispanic students reported lower pass rates” (p. 184). They recommend further studies to investigate the relationship between ethnicity and NCLEX-RN® success (Crow et al., 2004).

Similarly, research by Sayles, Sheldon, and Powell (2003) exploring predictors of success in nursing education involving a sample of 78 nursing graduates from an ADN program; found that African American students were less likely to be successful in the NCLEX-RN® than their White counterparts. The findings from these previous studies are consistent with a study by Byrd, Garza, and Niewiadomy (1999), which concluded that the demographic variables such as race/ethnicity along with admission and progression criteria were predictive of students' completion of a BSN program. Results implied a correlation between race/ethnicity and graduation from a nursing program and NCLEX-RN® first-time pass rate. The researchers found that White students were more likely to graduate than racial/ethnic minorities (Byrd et al., 1999). However, the researchers caution interpretation of the data due to the uneven racial/ethnic representation in the sample. Additionally, a more recent study by Harris (2006), examining the records of 167 nursing students who graduated from a BSN program in the Southeastern United States between May, 1999 and December, 2003, yielded comparable findings. The investigator found that White nursing students were 0.48 times more likely to pass NCLEX-RN® the first-time than racial/ethnic minority students.

Conversely, other researchers found no correlation between race/ethnicity and first-time pass rate in the NCLEX-RN® (Briscoe & Anema, 1999; Endres, 1997; Hardin, 2005; Higgins,

2005; Jeffreys, 2007; Washington & Perkel, 2001; Yin & Burger, 2003). For instance, Endres (1997) conducted a retrospective study to look at the strongest predictors of NCLEX-RN<sup>®</sup> success. The random sample included of 50 African-American, 50 Foreign-born, and 50 Caucasian, who were selected from 1,205 nursing graduates from four BSN programs in Texas. The author concluded that there were no significant differences between the passing and failing rates among the three ethnic groups, therefore rejecting race/ethnicity as a predictor to NCLEX-RN<sup>®</sup> success (Endres, 1997). Similarly, Jeffreys (2007) did not find race/ethnicity to be a significant predictor of first-time NCLEX-RN<sup>®</sup> pass rate; neither did Higgins's (2005) study of 213 ADN students yield any statistical significance between race and nursing program completion and NCLEX-RN<sup>®</sup> success.

However, when Endres (1997) further analyzed the data, she found an interesting relationship between student progression and NCLEX-RN<sup>®</sup> success/failure. "African American graduates who passed the NCLEX-RN<sup>®</sup> were more likely to require significantly more semesters to complete the nursing curriculum than passing foreign-born and White graduates. Failing African American graduates also needed more semesters to complete the nursing curriculum than failing White graduates"... Also, "foreign-born graduates who failed the NCLEX-RN<sup>®</sup> required more semesters to complete the nursing curriculum than passing foreign-born graduates." They also needed more semesters to complete the nursing curriculum than failing African American and White graduates (Endres, p. 369, 1997).

Jeffreys (2007) conducted a retrospective evaluation study assessing the entry, progression, graduation and licensure characteristics of culturally diverse ADN students. The sample consisted of 112 students who entered their first clinical nursing course during fall or spring semester of the 1997 – 1998 academic year. The author tracked students' progress via

three different retention pathways (ideal, continuous, and interim/stopout), and three attrition pathways (first semester failure, voluntary and involuntary). Jeffreys (2007) noted that Hispanic students had the highest percentage of stopouts and the highest first semester failure.

Furthermore, Black students had the highest percentage of voluntary attrition and the highest percentage of non-graduates (ibid). This finding is reflective of the Black students' attrition rate in higher education, especially those attending predominantly White institutions (Bessent, 1997; Gardner, 2005; Oseguera, 2005; Taxis, 2002; & Stewart, 2005 as cited in Jeffreys, 2007). As was the case in Endres' (1997) study, Jeffreys (2007) further analyzed the data and found White students to have the highest percentage of graduates, and Blacks to have taken longer to complete the nursing program than Asians and Whites. Evidently, further comparison of the ethnic groups yielded important information that demonstrated differences in retention rate among the distinctive racial/ethnic minority groups that are supported by other researchers (i.e. Seago & Spetz, 2005) cited earlier in this paper. In light of the changing racial/ethnic demographic in the United States, further exploration of the role of the race/ethnicity variable in predicting academic and NCLEX-RN<sup>®</sup> success in nursing programs is warranted.

Briscoe and Anema (1999) conducted a study in which one of the six hypotheses was to examine the relationship between race and the ability to pass the NCLEX-RN<sup>®</sup>. The convenience sample included 19 White/non-Hispanics, 13 Blacks/non-Hispanics, 5 students of African descent, and 1 Hispanic from an ADN program. The researchers found statistical significant relationship between students of African descent and poor first-time NCLEX-RN<sup>®</sup> pass rate; but found no significant correlation between the other racial/ethnic groups and NCLEX-RN<sup>®</sup> success; yielding mixed results related to race/ethnicity. The small sample size and the inconsistencies of these results limit the generalizability of this study.

The findings from these studies represent the evidence that racial/ethnic minority nursing students may be at greater risk of academic difficulty and attrition. Most of the results suggests that Whites were more likely to graduate on-time from nursing programs and succeed in the NCLEX-RN<sup>®</sup> (Campbell & Dickson, 1996; Byrd et al., 1999; Sayles et al., 2003; Seago & Spetz, 2005), while others proposed that Blacks, Asian and Hispanic students needed longer period of time toward program completion, and Black and Hispanic students were more likely to drop out from a nursing program (Endres, 1997; Jeffreys, 2007). At the same time, others (Briscoe & Anema, 1999; Endres, 1997; Hardin, 2005; Higgins, 2005; Jeffreys, 2007; Washington & Perkel, 2001; Yin & Burger, 2003) found some or no significant correlation between race/ethnicity and first-time NCLEX-RN<sup>®</sup> pass rate. Because of the conflicting findings, the variable of race/ethnicity alone cannot be considered the most significant predictor of retention and NCLEX-RN success of minority students.

### **Nursing Course Grades (NCG)/Nursing Grade Point Averages (NGPA)**

Although nursing course grades have been shown to have some predictive value for academic and NCLEX-RN<sup>®</sup> success, limited studies demonstrating a relationship between the two variables have been published in the nursing literature (Byrd et al., 1999; Gallagher, Bomba, & Crane, 2001; Jeffreys, 2007). The majority of studies focused on the predictive value of nursing course grades to NCLEX-RN<sup>®</sup> success, which will be presented later in this section. Although licensure is the optimal goal for students, additional studies examining the correlation between nursing course grades and academic success may assist nurse educators in early identification of at-risk students and the implementation of early interventions promoting retention and eventually NCLEX-RN<sup>®</sup> success.

Byrd et al., (1999) found grades in nursing courses to be predictive of graduation from a BSN program. Gallagher et al., (2001) examined the final academic grades for the first nursing

course (NUR 101), in order to determine their ability to predict successful nursing program completion. This course introduces students to fundamental nursing concepts and care of patients. The investigators concluded that the NUR 101 course average is predictive of successful completion of the nursing program. They further stated “NUR 101 grade has the potential to identify students who may be at risk for failure in our program or on NCLEX-RN<sup>®</sup>” (p.134). Consequently, the faculty increased the course grade average from 74% to 76% (“C” grade) as the lowest grade necessary for successful completion of all nursing courses (Gallagher et al., 2001).

Similarly, findings from a more recent study by Jeffreys (2007) support these previous conclusions regarding nursing course grades. The independent variable MS1 was the introductory nursing course and included contents from fundamentals and medical-surgical nursing. The author reported grades in MS1 to have significantly influenced the type of retention, progression, graduation, and licensure. Additionally, Jeffreys evaluated the course grade distribution for each retention and attrition category. Eighty-three percent of students in the ideal retention group had earned grades of B or greater in MS1. These students consistently demonstrated higher mean grades in each nursing course, as opposed to those who voluntarily dropped out. Furthermore, a C<sup>+</sup> grade in MS1 was the most predominant grade among students who voluntarily dropped out (40%), and those enrolled continuously but took longer than 4 semesters to complete the program (56%), as well as those who stopped out (32%). Thus, the study concluded that nursing course grades were predictive of academic success (Jeffreys, 2007).

Nursing research has consistently demonstrated a strong correlation between nursing course grades and NCLEX-RN<sup>®</sup> success or failure. In a national survey of 160 BSN programs, 36.3% of the programs reported using specific course grades as a predictor of NCLEX-RN<sup>®</sup>

success (Crow et al., 2004). Some researchers maintain that failure in even one nursing course is associated with NCLEX-RN<sup>®</sup> failure (Alexander & Brophy, 1997; Endres, 1997). For example, Endres (1997) found the risk for failure in the NCLEX-RN<sup>®</sup> to increase with the number of C grades or lower in nursing theory courses. The author further reported a significant relationship between a student's grades in certain nursing courses (psychiatric mental health nursing, maternity nursing, pediatric nursing, adult health nursing I and II, and nursing care of the critically ill) and success on the NCLEX-RN<sup>®</sup> (ibid, 1997). Likewise, Nnedu's (2000) ex post facto study of graduates from three BSN programs in Southeastern U.S. identified grades in a selected nursing course of psychiatry as the best predictor of NCLEX-RN<sup>®</sup> success, while grades in pediatric nursing offered the least predictability.

Alexander and Brophy (1997) conducted a retrospective study that covered a five-year period (July 1988 – February 1994). The researchers sought to determine the relationship between admission, progression, and exit variables with NCLEX-RN<sup>®</sup> performance and the identification of students at-risk. They used a quota sampling technique of 188 graduates, which included all (n = 94) first-time NCLEX-RN<sup>®</sup> failures from July 1988 through February 1994, and an additional n = 94 randomly selected graduates who had passed the NCLEX-RN<sup>®</sup> on their first trial during the same period. The authors noted statistically significant differences in nursing course grades between graduates who passed and those who failed the NCLEX-RN<sup>®</sup>. The most significant difference between the two groups occurred in the theory nursing courses (e.g. childbearing, nursing adult I and II, child/family); and “grades in five of the six clinical nursing courses (all but mental health nursing) provided the greatest differentiation between the groups” (Alexander & Brophy, 1997).

Congruously to Alexander and Brophy's (1997) findings are Barkley, Rhodes, and Dufour's (1998) findings from their investigation on the relationship between grades in six nursing courses (psychiatric/mental health, adult health I and II, pediatric, obstetric, and critical care nursing) and performance on the NCLEX-RN<sup>®</sup>. The researchers found strong correlations between grades in the pediatric and psychiatric mental health nursing courses with performance on the NCLEX-RN<sup>®</sup>, and moderate correlations between grades in the remaining courses and performance on the NCLEX-RN<sup>®</sup>. The higher the number of "Cs" obtained by a student in clinical or theory nursing courses, the higher the probability of failure in the NCLEX-RN<sup>®</sup> (Barkley et al., 1998). Likewise, Uyehara, Magnussen, Itano, and Zhang (2007) found significant correlations between NCLEX-RN<sup>®</sup> success and nursing GPA, and course grades in Fundamental nursing course.

Consistent with previous research, a comparison study by Roncoli, Lisanti, and Falcone (2000) of a random sample of 19 BSN nursing students from four graduating classes who passed the NCLEX-RN<sup>®</sup> with 19 students who did not pass, also reported similar results. They found that nursing students, with A and B grades in nursing courses, were significantly more likely to pass the NCLEX-RN<sup>®</sup> than those who obtained Cs in nursing courses or repeated nursing courses. A recent study by Bentley (2008) found the number of Cs in clinical nursing courses to be significantly correlated with negative NCLEX-RN<sup>®</sup> results.

Similar findings were reported by another study by Beeman and Waterhouse (2001), who examined the records of 289 nursing graduates. The sample included students from the traditional and accelerated BSN programs at the University of Delaware between 1995 and 1998. The researchers found a significant correlation between the number of Cs that a student earned in nursing courses and negative performance on the NCLEX-RN<sup>®</sup>. The number of C<sup>+</sup> grades or

lower in nursing theory courses had the highest negative correlation with NCLEX-RN<sup>®</sup> success, followed by grades in specific nursing courses. Graduates who passed the NCLEX-RN<sup>®</sup> had significantly higher grades in all didactic nursing courses. The researchers used a discriminant analysis function, which correctly classified more than 94% of the students who passed and more than 92% of the students who failed. Approximately 31% of the variance in passing and failing was accounted for by the discriminant analysis (Beeman & Waterhouse, 2001).

Seldomridge and DiBartolo (2004) also conducted a retrospective descriptive study, and sought to identify the best models for predicting NCLEX-RN<sup>®</sup> success and failure at three points in the nursing curriculum: pre-admission, after the completion of 1 year of nursing courses, and immediately prior to graduation. The sample consisted of 186 graduates of a traditional BSN program, at a rural, mid-Atlantic public institution from 1998 through 2002. Using logistic regression, four models were developed that included predictors of medical-surgical course test averages, the number of Cs in nursing courses, and overall grade point average at the end of junior-year and senior-year nursing courses.

Findings indicated students who passed the NCLEX-RN<sup>®</sup> had higher mean test averages in both adult health I & II nursing courses compared to those who failed. Students with no grades of C or below in junior-year courses had a 100% chance of success on the NCLEX-RN<sup>®</sup>, while those with 5 or more Cs, only had a 50% chance of being successful. The second logistic model accurately predicted 98.7% of the students who passed, but only 5.6% of the students who failed. At the end of senior-year nursing courses, the third logistic model accurately predicted 94% of NCLEX-RN<sup>®</sup> passes and 33.3% of failures (Seldomridge & DiBartolo, 2004). The authors argue that the pass/fail nature of the NCLEX-RN<sup>®</sup> limits the use of more sophisticated statistical procedures, which is further compounded by the low failure rate in comparison to the high pass

rate, rendering it difficult to predict failure as accurately as success.

These findings are consistent with those noted by Beeson and Kissling (2001) who investigated a sample of 505 generic, transfer, and second-degree graduates of a baccalaureate nursing program. They found that students who passed the NCLEX-RN<sup>®</sup> earned fewer grades of C or below in nursing courses. Conversely, those who had an increasing number of Cs in nursing courses had a higher probability of NCLEX-RN<sup>®</sup> failure. The researchers developed a logistic regression model with a simple formula to predict NCLEX-RN<sup>®</sup> performance based on the number of Cs or lower grades in nursing courses through the junior year and the Mosby Assessment Test scores from the end of the first semester in the senior year. In the validation sample, the model accurately predicted 85.7% of the students who passed and 66.7% of those who failed. The logistic model for the entire sample was significant in predicting 76% of the students who failed in the NCLEX-RN<sup>®</sup> (Beeson & Kissling, 2001).

Stuenkel (2006) conducted a systematic review of a BSN program in California and explored the predictive value of nursing course theory grades in order to facilitate the identification of at-risk students. Data was collected from 312 students' records from six graduating classes who took the NCLEX-RN<sup>®</sup> for the first time between December 1997 and March 2001. The researcher performed discriminant analysis of the predictor set of variables which included pharmacology, pathophysiology, medical-surgical, maternal-child, mental health, community, and leadership course grades, and concluded that those who passed NCLEX-RN<sup>®</sup> held higher mean scores for nursing theory grades.

On the other hand, refuting most of the findings reported so far, Horton (2006) investigated the predictors of graduation and NCLEX-RN<sup>®</sup> success of 351 students who attended a small Midwestern BSN program from 1994-2005. Independent variables included pre-nursing

science course grades, grades in junior and senior nursing courses, and grade point averages at various points in the nursing program. Neither demographic variables, nor pre-nursing science course grades, nor the number of C grades earned in nursing courses were identified as predictors of graduation or NCLEX-RN<sup>®</sup> success (Horton, 2006).

### **The HESI Exit Exam (E2) Scores**

Most nursing programs use some type of standardized testing at different phases of their curriculum (pre-admission, at the end of every semester, mid-curriculum, and/or before graduation). Most relevant to this study is the computerized Health Education Systems Inc. (HESI) HESI Exit Exam (also referred to as the E2) that is used in the last semester of the ADN program before graduation. The E2 is a 150-item comprehensive exam that is based on NCLEX-RN<sup>®</sup> test blueprint and usually administered to students near the completion of the nursing curriculum. Its purpose is to measure their preparedness for the NCLEX-RN<sup>®</sup>. The HESI E2 further identifies students' strengths and weaknesses and the possible need for remediation prior to taking the official licensure exam (NCLEX-RN<sup>®</sup>). HESI has four versions of the E2 available for RN students. In order to evaluate the effectiveness of remediation, students are retested with a different version of the E2 (Morrison, Adamson, Nibert, & Hsia, 2004). "RN students serve as the norming group for the test items that are included on the RN version of the E2" (Morrison et al., p. 41S, 2004).

Many researchers found that end-of-program exit exams were strong predictors of NCLEX-RN<sup>®</sup> outcomes. In four annual validity studies of the E2, the researchers studied large national samples of nursing students from diploma, associate, and baccalaureate degree programs as well as practical nursing students. Aggregate data was collected from 19,554 subjects over four consecutive years. The standardized comprehensive examination was found to be highly accurate, between 96.42% and 98.46%, in predicting NCLEX-RN<sup>®</sup> success for all types of

nursing students (Lauchner, Newman & Britt, 1999; Newman, Britt & Lauchner, 2000; Nibert & Young, 2001; Nibert, Young & Adamson, 2002). Although the predictive value of the E2 of NCLEX-RN<sup>®</sup> failure has been questioned by Spurlock and Hanks (2004), some researchers (Hanks & Lauchner, 1999; Daley, Kirkpatrick, Frazier, Chung & Moser, 2003) respectively found the E2 to be 96.425% and 100% accurate in predicting NCLEX-RN<sup>®</sup> failures.

In order to provide data about middle-scoring students, the E2 study in year 4 included scoring categories ranging from A to H, with A being the highest scoring and H being the lowest category. The five scoring intervals were as follows: A/B (90.00-99.99), C (85.00-89.99), D (80.00-84.99), E/F (70.00-79.99), and G/H  $\leq$  69.99. The previous E2 studies revealed significant differences in NCLEX-RN<sup>®</sup> failure rate between low-scoring and high-scoring students ( $\chi = 571.401$ ,  $P = .001$ ). In year 4, chi-square analysis of the students' scores for each of the five scoring intervals showed significant differences ( $X = 618.816$ ,  $P = .001$ ) among scoring intervals of RN students. As the scoring interval decreased, the NCLEX-RN<sup>®</sup> failures increased. No significant difference was found in the predictive accuracy of the E2 regardless of the type of programs (ADN, BSN, or diploma) (Lauchner, et al., 1999; Newman et al., 2000; Nibert & Young, 2001; Nibert et al., 2002), nor students' levels at each of the five scoring intervals (Nibert et al., 2002).

Yoho, Young, Adamson, and Britt (2007) conducted a descriptive, longitudinal, correlation case study to determine the accuracy of the HESI nursing standardized examinations in predicting ADN student success in a southwest Texas school. The sample consisted of a cohort of 139 students enrolled between August 2002 and October 2004. The HESI exams were administered at different points in the program: admissions assessment (A2), mid-curricular point (MC), and exit (E2). The researchers wanted to identify students who were academically

prepared and able to succeed in the program, those at risk for failure once enrolled, and those likely to benefit from remediation in order to be successful on the NCLEX-RN<sup>®</sup>.

The study assessed the strength of the math and reading comprehension A2 scores in predicting the ADN student population's MC scores, the accuracy of the MC scores in predicting E2 scores, and the accuracy of E2 scores in predicting NCLEX-RN<sup>®</sup> success. The researchers established a score of 850 as the minimally acceptable HESI score for both the MC and the E2. Of the original 139 students, 38 withdrew in the first year, and 24 withdrew in the second year, contributing to 62 students who did not complete the program in 2 years. Additional results for the remaining 77 students indicated that the MC scores were positively correlated with E2 scores ( $r = .617$ ;  $p = .01$ ), and the first version of the E2 was 94.83% accurate in predicting NCLEX-RN<sup>®</sup> success. The MC was highly predictive of E2 scores, and the E2 was highly predictive of NCLEX-RN<sup>®</sup> success (Yoho et al., 2007).

Similarly, Lewis' (2005) study of 182 nursing programs totaling 19,695 students in enrollment concluded that the E2 accurately predicted NCLEX-RN<sup>®</sup> success at a rate of 97.8%. The author also found better student performance on the E2 ( $p < .0005$ ) in schools where consequences (progression, remediation, etc...) were attached to E2 performance. Additional support is offered by Higgins' (2005) study of ADN students that showed statistically significant relationship between the E2 and passing the NCLEX-RN<sup>®</sup> ( $r = 0.518$ ). Also, a multidimensional study by Hardin (2005) suggested ADN graduates with higher passing scores on HESI mid-curricular examination and the E2 had a higher NCLEX-RN<sup>®</sup> success rate.

Some nursing programs have established program progression policies based on students' scores in assessment exams. Students are often allowed to retake the E2 multiple times until achievement of the minimum score set by the program. Nibert, Young, and Britt (2003) reviewed

45 programs with progression policies and identified students who did not meet minimal HESI E2 scores either failed a key course, were denied eligibility for graduation, or approval to take NCLEX-RN<sup>®</sup>. Likewise, Lewis' (2005) retrospective research identified significant difference between HESI E2 scores of students in nursing programs with benchmark policies than those in programs without progression policies. Conversely, Spurlock and Hanks (2004) questioned the ability of the HESI E2 to predict NCLEX-RN<sup>®</sup> failures, therefore, recommending nursing programs to consider multiple aspects for progression beyond the HESI E2, and nurse educators to be “concerned with the sensitivity and positive predictive value (PPV) as the most important characteristics of scores” (p.165). Spurlock and Hanks (2008) further cautioned against the practice of multiple retakes of the E2, as they have found that “only students’ first scores on the E2 is significantly related to NCLEX-RN<sup>®</sup> outcomes” (p.165). The additional scores decrease the strength of the relationship between the two variables. Also, this practice may give schools a false sense of security, because the initial scores on the E2 are the most reliable in predicting NCLEX-RN<sup>®</sup> success.

This section covered published literature about HESI exams and their predictive value of NCLEX-RN<sup>®</sup> success. HESI has been very proactive in conducting research establishing the reliability and the validity of its products (A2, MC, specialty, and E2). The available publications, using large samples, may be one of the reasons for its national popularity. Nevertheless, Spurlock and Hanks (2004, 2008) raised questions about the ability of a single variable to accurately predict NCLEX-RN<sup>®</sup> failure, especially for educators who are considering adopting progression policies based on E2 scores. In the same way, Spector and Alexander (2006) indicated that progression or exit exams are valuable tools in predicting NCLEX-RN<sup>®</sup> success. Nonetheless, the researchers recognized and encouraged a comprehensive assessment

program throughout the curriculum with sufficient remediation, vital in promoting students' readiness for NCLEX-RN®. Therefore, more studies looking at HESI exams' predictive value of NCLEX-RN® failure are needed in the general student population as well as among racial/ethnic minorities, confirming the significance of this study.

**Institutional Factors.** Since nursing programs are now enrolling higher rates of racial/ethnic minority students, additional issues of retention and NCLEX-RN® success have emerged. Although the graduation rate for racial/ethnic minority students has improved, it has not produced the significant, desired change in the proportion of ethnic/racial minority nurses. Once minority students are accepted into nursing programs, retention efforts must be undertaken to promote successful outcomes. The American Association of Colleges of Nursing (AACN) issued a statement on *Diversity and Equality of Opportunity* stressing that “nursing programs must provide a supportive learning environment and curriculum in which students, staff and faculty from all walks of life and from the entire spectrum of society are full participants in the educational process” (AACN, 1997, p.3). Many institutional factors, such as faculty mentoring/support, professional/social integration, and financial aid, that influence academic and NCLEX-RN® success, have been identified in the nursing literature. This portion of the literature review will primarily focus on financial aid, since it is beyond the scope of this study to explore the other institutional factors.

### **Financial Aid**

Many racial/ethnic minority nursing students experience financial struggles. In order to finance their college education, most of them have to work, thus making financial concerns a significant source of stress and competitor of time commitment for study. Gardner (2005a) maintains racial/ethnic minority students can greatly benefit from financial counseling and assistance. Many nurse researchers have examined the educational experiences of racial/ethnic

minority nursing students. Lack of finances (Amaro et al., 2006), and or the need for financial assistance (Taxis, 2006) are some of the recurring themes (institutional factors) that have emerged in the literature to explain the low retention rate of this group of students. Taxis (2006) conducted an investigation of the experiences of nine Latina/Hispanic senior students and graduates from a BSN program with regard to institutional factors that influenced their retention and graduation. From the data analysis of individual interviews, focus groups and questionnaire responses, financial support was among the key factors in the academic success of racial/ethnic minority students.

Nurse Educators from a BSN program in Texas undertook a project aiming at assisting “disadvantaged students” (including ethnic/racial minorities). They adapted strategies suggested by Pallack, Gary, and Perdue (1997, as cited in Stewart, 2005). Prior to the project implementation, the nursing program had less than a 70% NCLEX-RN<sup>®</sup> first time pass rate, and had received a warning from the State Board of Nurse Examiners (Stewart, 2005). The faculty, with the support of central administration, took a proactive approach to reduce attrition and increase NCLEX-RN<sup>®</sup> first time pass rate. The benefits of the program included a monthly stipend. Financial support along with alterations done to the curriculum were very successful, proven by the 90% graduation and NCLEX-RN<sup>®</sup> first time pass rates over the course of two years (Stewart, 2005).

Evans (2007) reported the perceptions of nursing students who participated in a Nursing Workforce Diversity Grant (ALCANCE) in south-central Washington State. The targeted populations were Hispanic/Latinos and American Indians. Among the services provided were stipends of \$1,500 dollars per semester for nursing students. Grant personnel sought evidence of the effectiveness of the provided services. Fifteen entering students completed the questionnaire,

which added up to 37 completed questionnaires in the course of 3 years. Most students (26 out of 49 responses) expressed high satisfaction with the financial services provided by the grant, primarily because it allowed them more time with their family and to study (Evans, 2007). The financial assistance was critical in the retention efforts of this program.

Nugent, Childs, Jones, and Cook (2004) describe the development of a Mentorship Model for the Retention of Minority Students (MMRMS). One of the four concepts incorporated in the model was financial support. The program offered a monthly stipend that was allotted to qualified program participants. This was made possible through funding from the Nursing Workforce Diversity Grant through the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Bureau of Health Professions, Division of Nursing. The program reported an increase in minority enrollment of 18% in summer 2001. The first graduating class in 2003 saw a 100% retention rate and an 81.3% graduation rate. The enrollment rate for summer 2002 was 10% with 100% retention. Nugent et al., (2004) asserted, “without faculty and institutional awareness and support, the implementation of the strategies identified in the retention model would be isolated and the outcomes would be limited” (p.93).

Taking a different approach, the Coppin State University Helene Fuld School of Nursing (HFSON) in Baltimore Maryland developed and implemented a program to “address the recruitment and retention of “underserved minority nursing students” (Gordon & Copes, 2010). The “Coppin Academy for Pre-Nursing Success” (CAPS) was funded through a Nursing Workforce Diversity Grant awarded by the Department of Health and Human Services, Health Resources and Services Administration (HRSA) (Gordon & Copes, 2010). It constitutes a “unique partnership between a historically black university (HBCU) and the Baltimore City Public Schools System”. From grade 8 through completion of the BSN program, CAPS

participants receive support in the form of mentoring, tutoring, stipend to 12<sup>th</sup> graders, academic, career, and financial aid counseling. Among the major components included in the year-round comprehensive program was the provision of monthly stipends and financial aid counseling. The CAPS program reported a retention rate above the university's average rate. The first cohort group to graduate from HFSON in 2008 had all been successful in the NCLEX-RN<sup>®</sup> on their first trial (Gordon & Copes, 2010).

Another successful program that was the recipient of the Nursing Workforce Diversity Grant through the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Bureau of Health Professions, Division of Nursing, was featured in the fifth National Advisory Council on Nursing Education and Practice (NACNEP) report (NACNEP, December 2007). The project was entitled "Preparing the Next Generation of Nurses (NGN)" from Clayton College and State University (CCSU). The goal was to increase the number of minority and disadvantaged students able to enroll in and complete a BSN program, which in turn would increase nursing workforce diversity. The project had a three-fold approach: 1) pre-entry preparation for high school juniors and seniors and college freshmen and sophomores; 2) focused retention efforts for enrolled junior and senior nursing students; and 3) monthly student stipends (\$250 dollars) to support financially disadvantaged students. In December 2004, all but one student passed both the exit exam and the NCLEX-RN<sup>®</sup> on the first attempt (Wilson, 2007 as cited in the Fifth NACNEP Report, 2007).

A different recruitment and retention project was developed by the University of Texas at El Paso, School of Nursing (UTEP-SON) for economically disadvantaged Hispanic nursing students (Anders, McInnis-Edmonds, Monreal, & Galvan, 2007). Two of the major objectives of the project consisted of: 1) increasing the number of Hispanic enrollee by 25% over the year-

three baseline, and 2) graduate an additional 10 BSN prepared Hispanic nurses in year four and five. As of 2007, all 43 students enrolled in the project either received a stipend or a scholarship; and had access to academic coaches. In addition, each student had to meet weekly with the educational outreach manager to discuss academic progress as well as any social and financial issues. The researchers reported that less than 12% (n =5) of the students have had to repeat a course and were subsequently successful. Only one student dropped out of nursing, but enrolled in another health science major. The eight students who completed the program in 2007 were all successful in NCLEX-RN<sup>®</sup> on their first trial (Anders, et al., 2007).

The majority of the findings reported in this previous section were from interventions studies. The results showed that strategies that incorporate financial aid along with the other types of support (i.e., faculty mentoring, academic support, etc.) improved the academic and NCLEX-RN<sup>®</sup> success of at-risk nursing students, primarily racial/ethnic minorities. Promoting the academic success of racial/ethnic minority nursing students will translate in increased representation of these subgroups in the nursing profession. As emphasized in the Sullivan Report (2004), this improvement will eventually generate greater access to healthcare and a reduction in health disparities for racial/ethnic minority patients in the United States.

The research addressing the selected individual and institutional factors influencing the academic and NCLEX-RN<sup>®</sup> success of [racial/ethnic minority] nursing students has shed some light on the factors related to the current problem of racial/ethnic underrepresentation within the RN workforce. This racial/ethnic diversity in the nursing workforce is a necessity and nursing education has the big burden of being the gateway. Responding to the call from national initiatives to have a workforce that reflects the racial/ethnic diversity of the general U.S. population is only the first step in addressing the health care needs and disparities of patients

belonging to racial/ethnic minority groups. ADN programs have the challenging opportunity to partake in the execution of such endeavors by ensuring the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority students; hence the importance of this study.

### **Theoretical Framework**

Discussions on student retention and academic and NCLEX-RN<sup>®</sup> success have been extensively covered in the nursing education literature. For decades, many theoretical models have attempted to explain the longitudinal process of retention. The proposed models include Durkheim's *Suicide Theory* in 1951, Heider's *Balance Theory* in 1958, Spady's theoretically based model of the *Undergraduate Dropout Process* in 1971, Tinto's in 1975 when he introduced Tinto's *Student Integration Model*, Bean and Metzger's in 1985 with his *Student Attrition Model*, and Swail's *Geometric Model of Student Persistence and Achievement* in 2003. An earlier longitudinal research by Astin in the 1970s on the "student drop out problem" helped uncover the category of student called "stop out." He operationally defined the term stop out as "students who interrupt their undergraduate education for a relatively brief period and return to complete their degree." Some researchers have employed alternative theoretical frameworks to understand retention in nursing programs. In this study, the researcher subscribed to Marianne Jeffreys' *Nursing Undergraduate Retention and Success (NURS)* model (2004), as a theoretical framework that contains variables reflective of the educational progression in an ADN program. The NURS model assisted in the investigation of the relationship between the selected individual and institutional factors and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students.

#### **Jeffreys' Nursing Undergraduate Retention and Success (NURS) Model**

Jeffreys' earlier NURS (*Nontraditional Undergraduate Retention and Success*) model primarily focused on the retention and success of nontraditional nursing students. The original

NURS model was based on the work of Bean and Metzger's model of Nontraditional Undergraduate Student Attrition (1985) and Tinto's Student Integration Model (1975). The NURS model resulted from findings obtained through Jeffreys' research testing Bean and Metzger's model and realized the limitations of all the models to be applied to nursing students in general. Jeffreys' then proposed a revised NURS model that encompasses components suitable for both the traditional (18 to 24 years old) and nontraditional (over 25 years old) undergraduate nursing student. Its purpose is to investigate the multidimensional factors that influence undergraduate nursing student retention and success.

The new NURS model is geared toward the undergraduate nursing student (traditional or nontraditional, ADN, BSN, or Diploma programs, commuter or campus resident, ESOL or English speakers, young or mature, different racial/ethnic backgrounds, High school graduate or GED certificate holder, international student or U.S. resident) in general and is therefore applicable to this study sample. In developing the model, Jeffreys (2004) considered global and national immigration trends, traditional and nontraditional students, issues of attrition, the complex process of nursing student retention and interaction of influencing variables, and the lack of diversity in the nursing workforce. Jeffreys (2004, p. 277) maintains "the NURS model is flexible enough to be used to guide assessment at the individual, subgroup, course, program, institution, or multisite level." The author also recognizes that the NURS model is "tentative" and would need revision as new empirical data become available (ibid).

The NURS model proposes that retention decisions will be based on the interaction of student profile characteristics, student affective factors, academic factors, environmental factors, and professional integration factors resulting in academic outcomes (course grades, cumulative GPA, and overall GPA) and psychological outcomes (satisfaction and stress) (Jeffreys, 2004).

The longitudinal and interactional focus of the NURS model is very similar to both Tinto's (1975) and Bean and Metzger's (1985) models, in that it investigates factors affecting students' attrition/retention from program/college entry through completion.

Jeffreys (2004) asserts that "the voluntary and/or involuntary decision to remain in a course, persist in the nursing program, graduate, take the RN licensing exam, and enter the nursing workforce and/or begin a more advanced nursing program occurs during and at the conclusion of each nursing course" (ibid. p.10). ). According to the NURS model, "student profiles characteristics have a direct influence on academic factors," ... and each characteristic can impact retention directly and/or indirectly (p.30).

Previous conceptual models like Tinto's (1975) and Bean and Metzger's (1985) have highlighted social integration as an essential, central element to undergraduate student retention and success. Now, Jeffreys' NURS model contextualizes the issue and offers a new perspective designated as professional integration factors. These factors add to the "students' interaction with the social system of the college environment" and "are at the center of the model because they are at the crossroads of the decision to persist, drop out, or stopout" (p.10). Furthermore, the NURS model proposes that persistence decisions are affected by interactions of profile characteristics, student affective factors, academic factors, environmental factors, professional integration factors, academic outcomes, psychological outcomes, and outside surrounding factors (Jeffreys, 2004).

It is important to note that this study will not test the entire NURS model. The model served as a guide to identify key variables related to nursing students' retention and success to be incorporated in this study. The conceptual model for this study (Figure 2-2) includes selected

variables from the NURS model that have been tested and concluded to have predictive values on academic and NCLEX-RN<sup>®</sup> success.

### **Conceptual Model**

The conceptual model of this study is based on Jeffreys' NURS (*Nursing Undergraduate Retention and Success*) model (2004) as a framework to illustrate the relationship between selected individual and institutional factors that have been shown to influence academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students. Jeffreys' NURS Model is very comprehensive and exceeds the scope of this study. For this reason, the researcher selected variables from the original NURS model that fit under individual and institutional factors that will be investigated in this study in relation to academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students. This study is unique in that it primarily focuses on a specific group of nursing students (the racial/ethnic minority group). The independent variables include individual factors such as demographic variables: race/ethnicity and academic variables (nursing course grades (NCG), nursing grade point average (NGPA), and HESI exit exam (E2) scores). Race/ethnicity and gender are consistent with Jeffreys' category of "student profile characteristics" at the beginning of the NURS model. Nursing course grades and HESI exit exam (E2) scores are classified under "academic outcomes" in the NURS model. The institutional factors consist of financial support, which is a subset of "environmental factors" in the NURS model. Finally, the model depicts the two dependent variables: academic success and NCLEX-RN<sup>®</sup> success, which are grouped under "retention" in Jeffreys' model (2004).

### **Summary**

This extensive literature review yielded limited empirical data that focused on the individual and institutional factors that influence the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students at community/state colleges. Campbell and Dickson

(1996) noted that only five of the studies they reviewed included race/ethnicity as a demographic variable. Only two of these studies yielded significant results, rendering it difficult to identify any consistent trends, patterns, and gaps. Discussions or studies examining these variables relating to the Hispanic/Latino population are almost nonexistent. This current search returned few studies (Bessent, 1997; Byrd, et al., 1999; Crow, et al., 2004; Endres, 1997; Gardner, 2005; Haas, et al., 2004; Harris, 2006; Jeffreys, 2007; Oliver, 1985; Seago & Spetz, 2005; Sayles, et al., 2003, Yocom & Scherubel, 1985) that examined the relationship between race/ethnicity and academic and NCLEX-RN<sup>®</sup> success. These investigators found that racial/ethnic minority nursing students were more at risk for stopouts or dropouts, took longer to complete their program and had lower first-time NCLEX-RN<sup>®</sup> pass rates. On the other hand, other researchers (Endres, 1997; Hardin, 2005; Higgins, 2005; Jeffreys, 2007; Washington & Perkel, 2001; Yin & Burger, 2003) found no correlation between race/ethnicity and first-time pass rate in the NCLEX-RN<sup>®</sup> or nursing program completion (Higgins, 2005).

Nursing course grades (NCG)/nursing grade point average (NGPA) was found to be predictive of successful completion of the nursing program (Byrd et al., 1999; Gallagher, Bomba, and Crane, 2001; and Jeffreys, 2007) and NCLEX-RN<sup>®</sup> success (Alexander & Brophy, 1997; Barkley et al., 1998; Beeman & Waterhouse, 2001; Beeson & Kissling, 2001; Bentley, 2006; Crow et al., 2004; Endres, 1997; Nnedu's, 2000; Roncoli et al., 2000; Seldomridge and DiBartolo, 2004; Stuenkel, 2006; Uyehara, et al., 2007). Students with As and Bs were more likely to successfully complete their nursing programs and pass the NCLEX-RN<sup>®</sup>. Conversely, one study by Horton (2006) found no correlation between nursing course grades and graduation or NCLEX-RN<sup>®</sup> success.

Scores on standardized exam, such as the HESI E<sup>2</sup>, administered before graduation from

nursing programs have been a positive predictor of academic and NCLEX-RN<sup>®</sup> success (Campbell & Dickson, 1996; Hardin, 2005; Higgins, 2005; Lauchner, et al., 1999; Lewis, 2005; Morrison et al., 2008; Murray & Nibert, 2003; Newman et al., 2000; Nibert & Young, 2001; Nibert et al., 2002; Nibert et al., 2003; Yoho et al., 2007). Some researchers (Hanks, et al, 1999; Daley, et al., 2003) respectively found the E2 to be 96.425% and 100% accurate in predicting NCLEX-RN<sup>®</sup> failures. Conversely, Spurlock and Hanks (2004) questioned the ability of HESI E2 to predict NCLEX-RN<sup>®</sup> failures. The difficulty to accurately predict NCLEX-RN<sup>®</sup> failures has been encountered and brought up by other researchers using other variables. They argue that the pass/fail nature of the NCLEX-RN<sup>®</sup> is most likely the factor contributing to this dilemma.

Institutional factors such as financial aid has been found to predict academic and NCLEX-RN<sup>®</sup> success (Amaro et al., 2006; Anders, et al., 2007; Evans, 2007; Gordon & Copes, 2010; Nugent et al., 2004; Stewart, 2005; Taxis, 2006; Wilson, 2007). Interventions from different nursing programs that targeted these variables in relation to academic and NCLEX-RN<sup>®</sup> success generated positive outcomes. Students who received some type of financial support from the institution experienced improved academic outcomes.

In addition to identifying race/ethnicity as a current gap in the nursing literature, the majority of the research retrieved used samples from BSN programs, while approximately two third of all nursing students graduate from ADN programs. Consequently, findings from studies using data from the general nursing student population that investigated these variables (race/ethnicity and gender, NCG, NGPA, HESI exit exam (E2) scores, financial aid) were included in this review of the literature. The findings have not all been consistent due to the lack of replication of previous studies, along with variations in samplings, settings, study designs, instrumentations, and theoretical models. Therefore, selecting a sample from an ADN program

and including the variable of race/ethnicity is of great significance. This research will offer critical information to nurse educators in their effort to improve instruction, success and eventually comparable representation of these racial/ethnic minority groups within the registered nursing workforce.

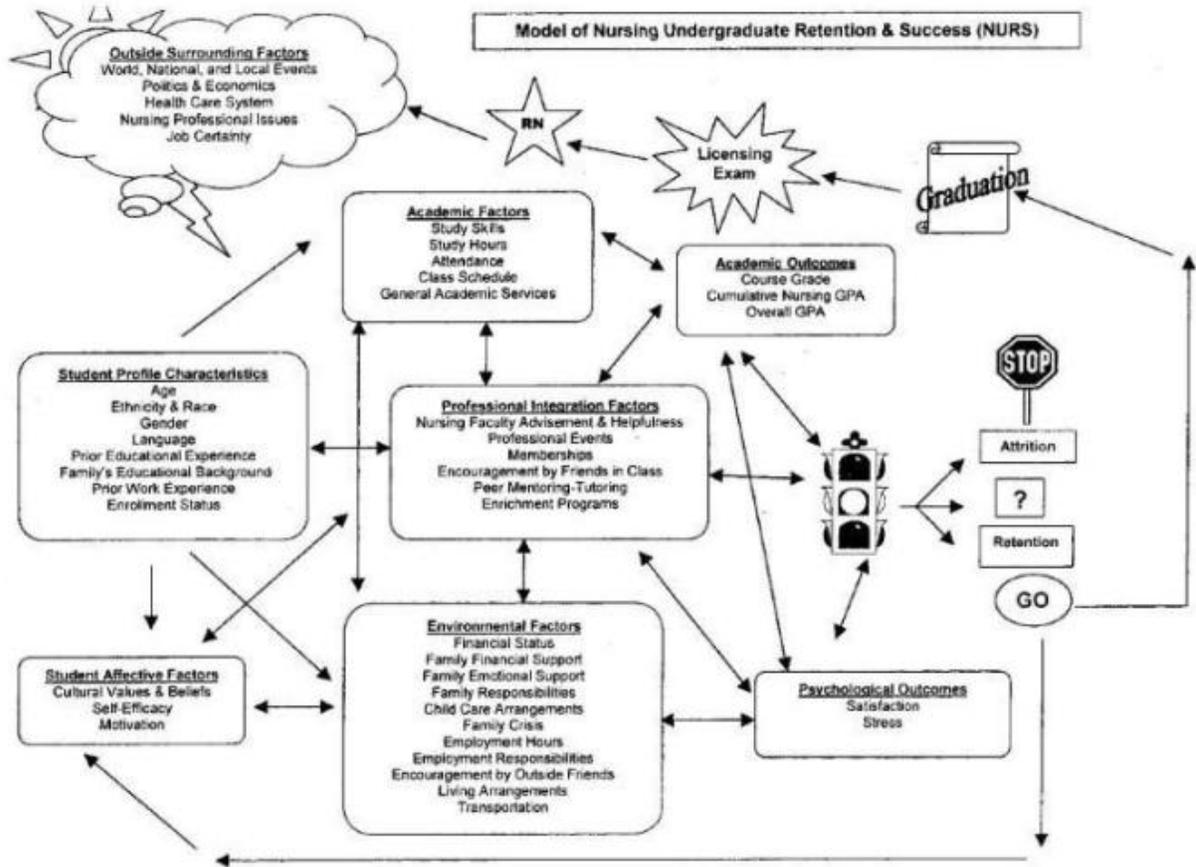


Figure 2-1. Model of Nursing Undergraduate Student Retention (NURS)

From *Nursing Student Retention: Understanding the Process and Making a Difference*. M.R. Jeffreys, 2004, p.6. Copyright 2004 by Springer Publishing, LLC, New York, New York 10036. Used with permission of publisher.

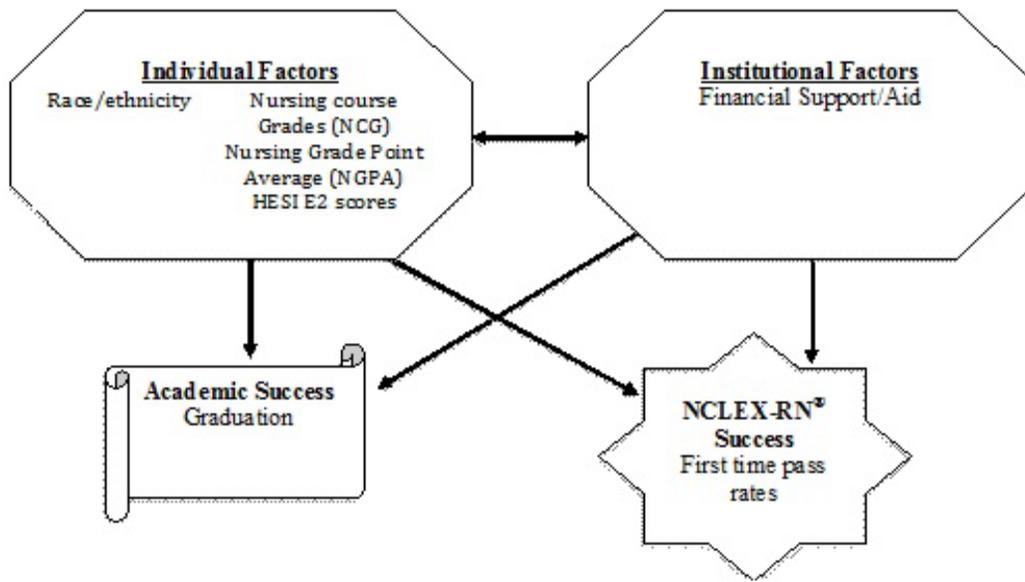


Figure 2-2. Conceptual Model: Predictors of academic and NCLEX-RN<sup>®</sup> success of racial/ethnic nursing minority students

## CHAPTER 3 METHODOLOGY

This retrospective quantitative study sought to examine the relationship between the selected individual and institutional factors that influence the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students enrolled in an ADN program. For the purpose of this study, racial/ethnic minority was defined as Black/African American and Hispanic. The research design, a quantitative methodology using students' records, is described along with rationale for this design. The research questions and hypotheses, identification of population sample, ethical considerations, measures, data collection method and analysis are discussed. This chapter ends with an explanation of the limitations of the methodology. The study used demographic and academic data to compare and contrast racial/ethnic minority nursing students versus White students. The study compared these groups in performance areas such as graduation (academic success) and NCLEX-RN<sup>®</sup> pass rates.

### **Research Method and Design**

According to Creswell (2008), quantitative research seeks to clarify phenomena by gathering numerical data that are analyzed using mathematical methods (in particular statistics). Leedy and Omrod (2001) offer the following explanation: "Quantitative researchers seek explanations and predictions ... the intent are to establish, confirm or validate relationships and to develop generalization that contribute to theory" (p. 102). This study used a retrospective design, *ex post facto* (after the fact), which means that the possibility of manipulating the data no longer exists as changes in the independent variables have already occurred in the natural course of events (Polit & Hungler, 1995); in other words, there was no manipulation of the variables. Historical and primary data was collected from the institution's archival and primary data sources.

## Research Questions and Hypotheses

The need to explore the multidimensional phenomenon of racial/ethnic minority nursing students' academic and NCLEX-RN<sup>®</sup> success led to the following research question: What is the relationship between selected individual and institutional factors and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students in an ADN program? Additionally this study will attempt to answer the following specific questions: These hypotheses were first answered by descriptive analysis followed by Chi-square, T-test and ANOVA statistical analyses. Each hypothesis was tested independently and collectively.

1. Is there a significant relationship between the nursing course grades (NCG) and the mean nursing grade point average (NGPA) and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students?
  - Hypothesis 1.a: There is no significant difference in nursing course grades and in the mean nursing grade point average between racial/ethnic minority and White nursing students.
  - Hypothesis 1.b: There is no significant relationship between mean nursing grade point average (NUR 1023 and NUR 1213) and NCLEX-RN<sup>®</sup> Success.
2. Is there a significant relationship between the HESI exit exam (E2) scores and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students?
  - Hypothesis 2.a: There is no significant difference in HESI E2 scores between racial/ethnic minority and White nursing students.
  - Hypothesis 2.b: There is no significant difference in HESI E2 scores between nursing students who passed and those who fail the NCLEX-RN<sup>®</sup>.
3. Is there a significant relationship between financial support (financial aid) and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students?
  - Hypothesis 3.a: There is no significant difference in financial support (financial aid) between racial/ethnic minority and White nursing students.
  - Hypothesis 3.b: There is no significant difference in academic success between nursing students who were financial aid recipients and non-financial aid recipients.

- Hypothesis 3.c: There is no significant difference in HESI E2 mean scores, NGPAs for NUR 1023 and NUR 1213 between nursing students who are financial aid recipients and those who were non-financial aid recipients.
4. Is there a significant relationship between race/ethnicity and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students?
- Hypothesis 4.a: There is no significant difference in academic success between racial/ethnic minority and White nursing students.
  - Hypothesis 4.b: There is no significant difference in the NCLEX-RN<sup>®</sup> success between racial/ethnic minority and White nursing students.

### **Setting**

The setting for this research study is a National League for Nursing Accrediting Commission (NLNAC) accredited ADN program located at a state college in the Southeastern region of the U.S. This ADN program is also approved by its State Board of Nursing, and is responsible for graduating the highest number of RNs in its local county. In the year 2010, the NCLEX-RN<sup>®</sup> pass rate for ADN programs in that region of the U.S. ranged from 58.97% to 98.78%. The NCLEX-RN<sup>®</sup> pass rate, for that same year, for ADN programs located in surrounding counties ranged from 85.59% to 94.70%. The state college is a public two year institution that primarily offers associate degrees. In fall 2009, about half of its student population belonged to racial/ethnic minority groups, with 23.9% Black, 20.0% Hispanic, 3.8% Asian, 0.4% Native American, and 3.3% not reported. The remaining 48.6% self-identified as White. The majority (86.6%) of the students who attend the college reside within the county, and 0.6% are from out of state. The remaining 12.8% are from surrounding counties.

The state college offers many services for its students. Some of these services consist of academic and financial aid advising, counseling, career, and testing centers, disability support, outreach recruitment and international student services. As of fall 2011, new students must attend both an online and on-campus orientation. This is all part of the new “First-Year

Experience” program to improve student retention. In the ADN program, the academic support (mentoring, tutoring, and remediation) is provided by adjunct and full-time faculty. Currently, no structured remediation program is available for the nursing students. In terms of outreach programs, some nursing faculty get involved by giving presentations at K-12 institutions during their career week.

During the 2009-10 academic year, the state college served about 40,000 students enrolled in credit courses and nearly 12,500 students in non-credit courses. The credit course grade distribution for the 2009-10 academic year revealed an 18.8% attrition rate. The 11-year (2000-01 to 2010-11) program completion report showed that the institution granted a total of 21,700 Associate degrees in Arts (AA), 3,372 Associate degree of Sciences (AS), and 1,723 Associate of Applied Science degrees (AAS), with 1,754 of these degrees awarded to registered nursing students. The county where the college is located has 925 healthcare facilities, which include 17 hospitals, 56 nursing homes and 131 assisted living facilities. Most of the nursing graduates remain in the county to practice after graduation and success in the NCLEX-RN<sup>®</sup>.

### **Identification of Population Sample**

**Sample.** The convenience sample for this study included eight nursing student cohorts representing White, Black/African American, and Hispanic students (N=617) that that were admitted to the nursing fundamentals course (NUR 1023) between spring 2005 and fall 2008 to the pre-licensure ADN program at the state college. Of the 617 students, 60 (9.5%) were admitted in spring 2005; 68 (11.0%) in fall 2005; 81 (13.1%) in spring 2006; 70 (11.3%) in fall 2006; 81 (13.1%) in spring 2007; 90 (14.6%) in fall 2007; 79 (12.8%) in spring 2008, and 88 (14.3%) in fall 2008. Students from other racial/ethnic minority groups and those with missing data were deleted from the sample. Table 3-1 provides a description of the sample per cohort admission date.

**Gender.** The sample comprised 90 (14.6%) males and 527 (85.4%) females (Table 3-2). According to the 2008-2009 National League for Nursing *NLN Data Review<sup>TM</sup>*, males accounted for 15% of pre-licensure ADN students enrolled in the United States in the years 2008-2009. Thus, the number of males in this sample is slightly lower than the national average.

**Gender and race.** The nursing profession is historically known for being predominantly female and White. In this study, the sample consisted of 340 (64.5%) White female nursing students. The remaining female proportion per race/ethnicity included 114 (21.6%) Black/African/American and 73 (13.9%) Hispanic nursing students. As reported earlier, male nursing students made up 14.6% of the sample for this study (n= 90). Of these, the racial/ethnic breakdown was as follows: 54 (60.0%) White, followed by 23 (25.6%) Black/African/American, and 13 (14.4%) Hispanic nursing students. Table 3-3 provides a description of the sample's gender distribution according to race/ethnicity.

**Race and admission date.** A cross tabulation provided the racial/ethnic representation of the sample. Details on racial/ethnicity composition for each admitted cohort are highlighted in Table 3-4. The current sample was predominantly White (n=394, 63.9%). The largest minority group was Black/African American (n=137, 22.2%), followed by Hispanic (n=86, 13.9%). According to NLN (2009), minority students accounted for 28.2% of nursing students enrolled in ADN programs, with 13.9% African Americans, 7.6% Hispanics/Latinos, 5.7% Asians, and 1.0% American Indians (NLN, 2009). In this sample, the total percentage (36.1%) of racial/ethnic minority students (African Americans and Hispanics/Latinos), enrolled at the state college ADN program between spring 2005 and fall 2008, exceeds the national average.

### **Data Collection Method**

The data set for this study was obtained from the nursing student database maintained at the nursing department, and financial aid information was obtained from student database

maintained by the Institutional Research Effectiveness (IRE) at the state college. Approval to conduct the study was granted by the Institutional Review Board at both the University of Florida and IRE at the state college. A data collection excel file with students' identification number was developed and submitted to the institutional effectiveness staff and they provided information on students' financial aid status. Data collection on each student about students' profile characteristics, admission/enrollment in the ADN program until graduation or withdrawal from ADN program, and academic outcomes was extracted from records kept in the nursing department. Students' HESI E2 exams scores were retrieved from students' records stored in HESI database. Tracking of NCLEX-RN<sup>®</sup> success for the students who graduated was done by reviewing the nursing state board generated reports of students who voluntarily agreed to notify the ADN program. These reports were obtained from the ADN program director. In order to further verify licensure, the publicly accessible Florida.gov website where all licensed registered nurses are listed was searched.

### **Ethical Considerations**

Institutional Review Board (IRB) approval from the University of Florida and the state college was obtained. Additionally, the researcher has been employed as a professor at the ADN program since spring 2004 having taught NUR 1023 and NUR 1213 (fundamental & medical/surgical nursing courses) during the time period of the cohorts and may have had a role in the academic evaluation of some of the participants. However, since the faculty team teaches the nursing courses, the academic evaluations of the theory portion of the course are always a team decision. Since the study participants had already graduated and/or had voluntarily or involuntarily withdrawn from the nursing program, there were no human interactions. A Student Data Collection sheet was developed featuring the independent and dependent variables along with the demographic characteristics. In order to ensure confidentiality, a random numerical code

was assigned to each student to replace names, social security numbers, and/or student identification numbers. This process of de-identifying the data was deemed necessary by the researcher and host institution to comply with FERPA regulations.

### **Study Variables - Measured Variables**

#### **Dependent Variables**

**Academic success:** The first dependent variable in this study was academic success, supported by students' performance in selected nursing courses (didactic) and HESI exit exam (E2), and progression through the program required curriculum in a sequential order without interruption or exit, within the specified time period of 4 semesters of full-time enrollment. Academic success was operationally defined as a variable with students being categorized as 0 = not graduated, 1 = delayed graduation, and 2 = graduated on-time. Students were categorized as graduated when they complete the entire ADN curriculum requirements from the beginning to the end of the program. This means that they had earned a grade of C or higher in all their nursing courses (didactic) and a Satisfactory = S grade in the clinical component of every nursing course for the corresponding semester in the program, in all 4 semesters. This study examined grades for two didactic nursing courses. Additionally, these students also needed to have achieved a passing score (score = 700 or above, as set by the ADN program) on their HESI exit exam (E2). Students designated as "delayed graduation" took longer than 4 semesters to complete the ADN program, due to personal or academic reasons. Students grouped in the category of "not graduated" were those who had to repeat one nursing course due to an F in the didactic component or an Unsatisfactory = U grade in the clinical component, or earned two Fs and/or two W/Fs (withdrew while failing the course) in any didactic or clinical nursing course and had to involuntarily withdraw. These students were denied graduation; either because they had to voluntarily or involuntarily withdraw for personal or academic reasons, or decided to stop

out for one or more semesters for personal reasons. The ADN program policy states: “a student will not remain in the nursing program if any of the following occur: If the student receives: two (2) “F”s” in any combination of nursing courses with clinical components; or two (2) “WF”s” in any combination of nursing courses with clinical components; or one (1) “F” and one (1) “WF” in any combination of nursing courses with clinical components.”

**NCLEX-RN<sup>®</sup> Success:** In 1994, the National Council of State Boards of Nursing (NCSBN) established the Computerized Adaptive Testing (CAT) and changed the scoring to pass/fail. The actual test scores are reported neither to individual students nor to nursing programs. This pass/fail scoring is based on passing standards that are measured in logits; the lower the logit the higher the standard. The passing standards are reviewed every three years, based on empirical data obtained from the *Post-entry Competence* study that explores the educational elements and new nurse preparation for practice and difficulty with client assignments (Li, 2006). The standards for 2006, 2007 and 2008 were established at -0.2800, -0.2100, and -0.2100 logits respectively on the NCLEX-RN<sup>®</sup> logistic scale ([www.ncsbn.org](http://www.ncsbn.org), December, 2003 & 2006 News Releases). The passing standards have continued to increase with every review. NCLEX-RN<sup>®</sup> success is defined as receiving a passing score on the exam on the first attempt. The NCLEX-RN<sup>®</sup> is a dichotomous variable and was coded as follows: 1 = *pass* on first attempt and 0 = *fail* on first attempt.

### **Independent Variables**

The independent variables included in this study were: 1) individual factors in the form of race/ethnicity, nursing course grades (NCG/ NGPA), and standardized examinations scores (HESI exit exam [E2]); and 2) financial support (aid) as the institutional factor.

**Race/ethnicity:** The concept of race and ethnicity are often used interchangeably and will be used as an independent variable in this study. It is a descriptive, demographic, categorical

variable providing background characteristics. Students self-report their racial/ethnicity affiliation on admission records. For the purpose of this study, race/ethnicity was coded as follows: 1 = White, 2 = Black/African American, and 3 = Hispanic. It is important to note that the demographic variable gender was included in the description of the sample, but not as a predictor of academic and NCLEX-RN<sup>®</sup> success. Gender was coded: 1= male and 2 = female.

**Nursing Course Grades (NCG)/Nursing Grade Point Averages (NGPA):** From the literature review, nursing course grades were found to be predictive of academic and NCLEX-RN<sup>®</sup> success. The nursing program uses a grading range that is different from most courses or other programs at the college. Students must obtain a grade of 75 = C or better to pass a didactic course. It is important to note that students who withdrew failing (W/F) were considered having obtained an F in the course even if the grade (F) is not reflected on their transcripts. However, students who withdrew for non-academic reasons obtain a W. This action does not affect their overall grade point average (GPA) or status in the nursing program. The NCG was coded as W/F and F = 0, W = 1, C = 2, B = 3, and A = 4. The NGPA was coded as a continuous variable from 0 to 4. The nursing department grade scoring ranges are shown in Table 3-5.

**The HESI Exit Exam (E2):** The E2 is a 150-item comprehensive exam that is based on NCLEX-RN<sup>®</sup> test blueprint and usually administered to students near the completion of the nursing curriculum. Its purpose is to measure their preparedness for the NCLEX-RN. The E2 further identifies students' strengths and weaknesses and the possible need for remediation prior to taking the licensure exam. HESI has four versions of the E2 available for RN students. In order to evaluate the success remediation, students are retested with a different version of the E2 (Morrison et al., 2003). "RN students serve as the norming group for the test items that are

included on the RN version of the E2” (Morrison et al., p. 41S, 2003). For the purpose of this study, individual students’ scores were analyzed as a continuous variable.

**Financial status/support:** Financial status/support was defined as money received from any funding source such as: Pell Grant, subsidized and unsubsidized loans, grants, stipend, and scholarships to pay for tuition, fees, and other school expenses. The coding was: financial recipient = 1, non-financial recipient =0. Students were considered recipients if they received one or more type of financial contribution toward their education. Students were considered non-financial recipients if they received nothing from the institution. One limitation regarding this variable is the fact that the researcher did not have information on students who may have received tuition reimbursement from their employer. Table 3-6 provides definitions, level, and coding for study variables.

## **Reliability & Validity of HESI E2**

### **Reliability of the HESI E2**

In order to determine the reliability of the HESI exams, HESI performs an item analysis on each exam that is administered and returned to the company for a composite report of the aggregate data. Calculation of a point biserial correlation coefficient assists in the process of obtaining discrimination data for each test item. A Kuder Richardson Formula 20 (KR-20 Reliability Coefficient) is calculated for every exam administered to establish a measure of the test’s overall reliability. The estimated reliability coefficients for these HESI exams ranged from 0.940 to 0.960, and the number of times the items were used on these exams ranged from 256 to 47,320 (Morrison et al., 2003).

### **Content Validity of the HESI E2**

Morrison et al., (2004) describe the content validity as: “the effectiveness of the test items in measuring the basic nursing knowledge and skills of students.” Before a test item is

incorporated into the HESI item bank, its content validity is established by nurse educators and clinicians. This ongoing process of establishing a test item relevance to entry level nursing practice is guided by the NCLEX-RN<sup>®</sup> test blueprints and syllabi from nursing programs. The HESI reviewers work really hard to assure that the E2 reflects the NCSBN's blueprints in test items distribution (Morrison et al., 2004).

### **Construct Validity of the E2**

Construct validity refers to whether a test measures specified traits or attributes at an abstract level adequately. In the case of the HESI exit exam (E2), the constructs reflect those found in the NCLEX-RN<sup>®</sup> test blueprints, and are identified by nursing faculties as well as by the NCSBN's practice analyses of recently graduated nurses. The E2 measures the constructs that are essential to entry level nursing practice. After taking the E2, HESI generates an individual report that provides individual and aggregate data on the student's performance in the subject area tested (Morrison et al., 2003). In recent years, the use of the E2 has grown exponentially, from 7,192 to 25,241 E2 exams administered. Morrison et al. (2003) further suggest that the increase of the E2 by nursing programs may be an indication that nursing faculty trust the data reported by the exam, "and such confidence provides an additional indication of construct validity" (p. 43S).

### **Criterion Validity of the E2**

In four annual validity studies of the E2, the researchers studied large national samples of nursing students from diploma, associate, and baccalaureate degree programs as well as practical nursing students. Aggregate data was collected from 19,554 subjects over four consecutive years. The standardized comprehensive examination was found to be highly accurate, between 96.42% and 98.46%, in predicting NCLEX-RN<sup>®</sup> success for all types of nursing students (Lauchner et al., 1999; Newman et al., 2000; Nibert & Young, 2001; Nibert, Young, Adamson, 2002). Many

researchers contend that the validity of a test, in this case the E2 can be established by the consequence or meaning attached to it. For example, many schools use the HESI exams as benchmark for progression and remediation (Nibert et al., 2003).

### **Data Analysis**

The descriptive and inferential statistics data were analyzed with the Statistical Product and Service Solutions (SPSS<sup>®</sup>) (version 19.0) program. The descriptive statistics included means, standard deviation and frequency distributions. Pearson Chi-square was used to test association between categorical variables and to measure the strength of the relationships among these variables. For the continuous data (i.e., HESI E2 scores and NGPA), *t*-test was used to compare two means for significance difference. The ANOVA was also conducted to compare means between groups.

### **Study Limitations**

This study has many limitations. This is a retrospective study, which uses a convenience sample of students' records. The sample includes students from White, Black/African American, Hispanic racial/ethnic backgrounds. Other demographic and student profile characteristics variables (i.e., age, marital status, family responsibilities, primary language, prior educational experience, learning styles, etc...) may have influenced the dependent variables of academic and NCLEX-RN<sup>®</sup> success, but were not examined in this study.

Next, this study is unable to account for all other institutional characteristics that may influence academic outcomes such as grades, graduation rates, etc... For example, this study exclusively focused on a public two-year ADN program. Therefore, this study is unable to compare students from programs at other types of institutions (e.g. private ADN, public or private BSN, & diploma programs). However, the enrollment rates for racial/ethnic students at these types of institutions raise additional questions about the value of these alternative pathways

into the nursing profession.

The data collection was from one ADN program in Southeastern United States. Therefore, these results are not representative of other ADN programs in community or state colleges in that region of the U.S. or nationally. Also, the ADN program does not suggest that it represents other types of nursing programs at four-year institutions. Besides, the advent of four-year nursing degree programs at historically two-year institutions raises new questions about the educational experiences of these nursing students. Therefore, this study is unable to explain students' educational experiences in these new nursing programs.

Nonetheless, this study provides valuable data about the educational outcomes of racial/ethnic students in a public two-year ADN program. Additionally, this study offers new data about the relationship between race/ethnicity and HESI E2 exam mean scores. Given the population increases in underrepresented racial/ethnic groups, this study provides valuable information to nursing faculty and administrators. Despite these limitations, this study hopes to advance the research literature on the issues of academic (retention) and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students.

### **Summary**

This chapter described the methodology and design that were used in this study. It also provided a description of the sample, data collection, the variables, the validity and the reliability of the standardized exams. The selected design was especially appropriate because the study involved examination of specific relationships using quantitative methodology. The study entailed collecting data using a systematic retrospective review of students' records and Board of nursing reports to obtain information about variables. Discussion of the data results will assist in answering the research questions. Chapter 4 presented a description of the findings and a visual representation of all data analysis conclusions.

Table 3-1. Description of the sample by cohort admission date

Admission Dates	Frequency	Percent
Spring 2005	60	9.5
Fall 2005	68	11.0
Spring 2006	81	13.1
Fall 2006	70	11.3
Spring 2007	81	13.1
Fall 2007	90	14.6
Spring 2008	79	12.8
Fall 2008	88	14.3
Total	N=617	100.0

Table 3-2. Description of the sample by gender

Demographics	Frequency	Percent
Gender		
Male	90	14.6
Female	527	85.4
Total	(N=617)	100

Table 3-3. Nursing students by race/ethnicity and gender

Race	White	Blacks/African American	Hispanic	Total
Gender				
	N -Percent	N -Percent	N -Percent	N -Percent
Male	54 60.0%	23 25.6%	13 14.4%	90 14.6%
Female	340 64.5%	114 21.6%	73 13.9%	527 85.4%
Total	394 63.9%	137 22.2%	86 13.9%	617 100%

Table 3-4. Nursing students by race/ethnicity and admission date

Race Admission Date	White	Black/African American	Hispanic	Total
Frequency	N	N	N	N
Percentage	%	%	%	%
Spring 2005	39 65%	17 28.3%	4 6.7%	63 100%
Fall 2005	49 72.1%	9 13.2%	10 14.7%	76 100%
Spring 2006	51 63.0%	21 25.9%	9 11.1%	86 100.0%
Fall 2006	47 67.1%	15 21.4%	8 11.4%	74 100.0%
Spring 2007	48 59.3%	15 18.5%	18 22.2%	84 100.0%
Fall 2007	57 63.3%	15 16.7%	18 20.0%	92 100.0%
Spring 2008	44 55.7%	22 27.8%	13 16.5%	85 100.0%
Fall 2008	59 67.0%	23 26.1%	6 6.8%	89 100.0%
Total	394 63.9%	137 22.2%	86 13.9%	617 100%

Table 3-5. Nursing program grading scale, letter grade and grade points

Letter Grades	A	B	C	F
Score ranges	90 -100	83 - 89	75 - 82	0 - 74
Grade points	4.00	3.00	2.00	0.00

Table 3-6. Summary of dependent and independent variables

Independent Variables	Measure	Type	Coding
	Individual Factors	Level	
Race/ethnicity	African American, Black, Hispanic, White	categorical	1=White, 2=African Americans, 3=Hispanics
Nursing course grades/	Grades obtained on nursing courses	categorical	W/F and F = 0, W=1, C = 2, B = 3, and A = 4
Nursing grade point average	Grade point average in nursing courses	Continuous	0 to 4
HESI E2	Minimum passing score required by ADN program	Continuous	0 to 1500
	Institutional Factors		
Financial support/aid	Money received from any funding source such as: Pell grant, loans, grants, stipend, and scholarships to pay for tuition, fees, and other school expenses	dichotomous	financial aid recipient = 1, non-financial aid recipient =0
Dependent Variables	Measure	Level	Coding
NCLEX-RN® Success	Passing the NCLEX-RN® for licensure on first attempt	dichotomous	0= Fail, 1= Pass
Academic Success	Progression through the program required curriculum	categorical	2= grad at 4 semesters, 1=grad > 4 semesters, 0= not graduated

## CHAPTER 4 RESULTS

The purpose of this study was to examine the relationship between the selected individual and institutional factors that influence the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students enrolled in an ADN program. The individual factors explored in this study are race/ethnicity, nursing course grades (NCG)/nursing grade point average (NGPA) for selected didactic courses, and HESI exit (E2) examination scores. The selected institutional factor is financial support.

This chapter presents the results of descriptive statistics and inferential analyses of study data accomplished using SPSS<sup>®</sup> 19.0 for Windows (2010) statistical package. The results are reported by question. First descriptive statistics are provided, which include frequency distributions, means and standard deviations of key variables followed by the results of the T-test and ANOVA statistical analyses are presented. The data was analyzed to address the following research question: What is the relationship between selected individual and institutional factors and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students in an ADN program?

### **Descriptive Statistics of Dependent Variables**

**Academic success.** The dependent variable of academic success reflected students' performance in selected nursing courses (didactic) and the HESI exit exam (E2), progressing through the program required curriculum in a sequential order without interruption or exit, within the specified time period of 4 semesters of full-time enrollment. A cross tabulation of the dependent variable, academic success, revealed that of the students (N=617) admitted between spring 2005 and fall 2008 to the ADN program, 66.8% (n=412) met the ADN program's curriculum requirements and completed within 4 semesters, between fall 2006 and spring 2010.

Of the remaining students, 33.2% (n = 205), 12.6% (n = 78) had delayed graduation, which means that they completed the ADN program in five semesters or more. The other 20.6% (n = 127) never completed the ADN program for academic or personal reasons; in other words, they voluntary or involuntary withdrew from the ADN program.

**NCLEX-RN<sup>®</sup> success.** The 490 students who completed the ADN program either on-time or late (between fall 2006 and fall 2010) were eligible to take the NCLEX-RN<sup>®</sup> after graduation. The overall first time pass rate for the group was 86.3% (n=423). Although this is a cumulative pass rate for 4 years, it is very close to the national figures (84.0% to 88.0%) published by NCSBN on a quarterly and yearly basis for that time period. Since the main focus of this study was to examine first-time pass rates, the progress of the other 72 students who failed the NCLEX-RN<sup>®</sup> on their first trial was not tracked.

### **Research Questions and Hypotheses**

The first research question asks: Is there a significant relationship between the nursing course grades and the mean nursing grade point average (NCG, NGPA) and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students? Hypothesis 1.a states: There is no significant difference in nursing course grades and in the mean nursing grade point average between racial/ethnic minority and White nursing students. Figures 4-1 and 4-2 and Tables 4-1 and 4-2 show the result of this analysis.

The results for the nursing fundamental course (NUR1023), using a cross tabulation analysis, showed that Black/African American nursing students were more likely (20.4%, n=28) than the other two racial/ethnic groups to earn a failing grade (F) in the nursing fundamental course, followed by Hispanics (17.4%, n=15), compared with only 9.1% (n=36) of White students. On the other hand, White nursing students were more likely to earn an A (3.8% n=15), and a higher percentage (40.1%, n=158) of them earned a B; in other words, about 78% of the As

and 75% of the Bs were earned by White nursing students (Figure 4-1). The most common grade earned by Black/African American and Hispanic students for this course was a C, with 56.9%,  $n=78$  and 47.7%,  $n=41$  respectively. The Chi-square test showed significant difference between race/ethnicity and NCG (1023),  $X^2(6, N = 609) = 29.986, p < .000$  (Table 4-1).

In the same way, the results for the medical/surgical course (NUR 1213), also revealed Black/African American nursing students to be more likely (14.9%,  $n=17$ ) than any other racial group to earn a failing grade (F), followed by Hispanics (10.0%,  $n=8$ ). Similar to the NUR 1023 nursing course, more White nursing students (9.4%,  $n=34$ ) had earned an A in this course. The Chi-square test showed significant difference between race/ethnicity and NCG (NUR 1213),  $X^2(6, N = 549) = 14.989, p < .020$  (Table 4-2 & Figure 4-1).

Additionally, mean nursing grade point averages (NGPA) for NUR 1023 and NUR 1213 were calculated for each racial group. The results for each nursing course respectively (NUR 1023 & NUR 1213) indicated that White nursing students had means  $M=2.28$  and  $M=2.36$ , followed by Hispanic with  $M=2.00$  and  $M=2.21$ , and Black/African American with  $M=1.79$  and  $M=2.04$ . The one-way ANOVA was computed to compare the three racial groups on their average performance in both courses. The results indicated that there were significant differences in the mean NGPA for NUR 1023 between racial groups,  $F(2, 614) = 14.364, p < .000$  (Table 4-4). Scheffe multiple comparisons found that for both nursing courses Black/African American nursing students had statistically significant lower nursing grade point averages than the other two groups (White and Hispanic) ( $p \leq 0.05$ ). The mean difference ( $MD$ ) and  $p$  values for NUR 1023 were as follows: White-Black/African American ( $MD = .496, p=.000$ ), White-Hispanic ( $MD=.284, p=.048$ ), and Black/African American-Hispanic ( $MD=-.212, p=.282$ ) (Table 4.5). Therefore, in light of these findings, the null hypothesis was rejected.

Likewise, significant differences were found in the mean NGPA for NUR 1213 between racial groups,  $F(2, 553) = 4.332, p < .014$ . Therefore, the null hypothesis was rejected. The mean difference, MD and p values for NUR 1213 were as follows: White-Black/African American ( $MD = .312, p = .016$ ), White-Hispanic ( $MD = .144, p = .513$ ), and Black/African American-Hispanic ( $MD = -.169, p = .518$ ). Therefore, the null hypothesis was rejected for White-Black/African American comparison. However, it is important to note that there was no significant difference between the White-Hispanic NGPA (Table 4-5).

Hypothesis 1.b states: There is no significant relationship between mean NGPA (NUR 1023 and NUR 1213) and NCLEX-RN<sup>®</sup> success (Tables 4-6 and 4-7). An independent samples t-test was conducted to compare the mean NGPA for NUR 1023 between students who passed the NCLEX-RN<sup>®</sup> ( $N=423, M=2.47, SD=.718$ ) and those who failed the NCLEX-RN<sup>®</sup> ( $N=67, M=2.03, SD=.627$ ). There was statistical significant difference between the two groups [ $t(488) = -4.696, p = .000$ ]. For NUR 1213, the difference in mean NGPA between students who passed the NCLEX-RN<sup>®</sup> ( $N=423, M=2.57, SD=.797$ ) and those who failed ( $N=67, M=1.96, SD=.638$ ) was also found to be statistically significant [ $t(488) = -5.966, p = .000$ ]. Therefore, the null hypothesis was rejected.

The second research question asks: Is there a significant relationship between the HESI exit exam (E2) scores and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students? Of the students admitted to the program, 79.6% ( $n=491$ ) had progressed to the last clinical course (NUR 2943L) and took the HESI E2 exam as required for successful completion of this course. The HESI E2 exam scores for these students ranged from 525 to 1147 with a mean score of  $M=839.21$  ( $SD = 103.821$ ).

Hypothesis 2.a states: There is no significant difference in HESI E2 scores between racial/ethnic minority and White nursing students. Tables 4-8 and 4-9 show the results of this analysis. A cross tabulation analysis of the HESI E2 examination scores for this sample per race/ethnicity revealed that White students earned scores from 577 to 1111 with the highest mean of 854.81 ( $SD = 100.650$ ); Black/African American earned scores from 525-1147 with a mean of 804.50 ( $SD = 108.440$ ); and Hispanic students earned scores from 621-1028 with a mean of 814.07 ( $SD = 96.043$ ). A one-way ANOVA test was conducted to compare the three racial/ethnic groups on their performance on the HESI E2 examination. The results showed significant differences in HESI E2 scores between racial groups,  $F(2, 488) = 11.603, p < .000$ . Therefore, the null hypothesis was rejected.

Scheffe multiple comparisons found that Black/African American nursing students HESI E2 scores were statistically significantly lower than the White group ( $p \leq 0.05$ ). The mean difference ( $MD$ ), and  $p$  values for HESI E2 were as follows: White-Black/African American ( $MD=50.313, p=.000$ ), White/Hispanic ( $MD=40.738, p=.012$ ), and Black/African American-Hispanic ( $MD=-9.575, p=.838$ ). Therefore, the null hypothesis was rejected. However, it is important to note that there was no significant difference between Black/African American-Hispanic nursing students HESI E2 scores (Table 4-10).

Hypothesis 2.b states: There is no significant difference in HESI E2 scores between nursing students who passed and those who fail the NCLEX-RN<sup>®</sup> exam. Tables 4-11 and 4-12 show the results of this analysis. ). In this study, the HESI E2 mean score for nursing students ( $N=423$ ) who passed the NCLEX-RN<sup>®</sup> was  $M=848.27, SD=103.184$  compared to a mean score of  $M=784.00, SD=89.818$  for those who failed ( $N=67$ ). An independent samples t-test was used to determine whether a significant difference existed between HESI E2 scores for students who

passed and those who failed the NCLEX-RN<sup>®</sup>. There was a statistical difference between the two groups [ $t(488)$ ,  $M=-64.267$ ,  $p=.000$ ]. Therefore, the null hypothesis was rejected.

Question three asks: Is there a significant relationship between financial support (financial aid) and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students? Hypothesis 3.a states: There is no significant difference in financial support (financial aid) between racial/ethnic minority and White nursing students. Nursing students belonging to racial/ethnic minority groups have reported finances as a major struggle interfering with their nursing educational experience. The data from this sample revealed that Black/African American nursing students ( $n= 110$ , 80.3%) were more likely to receive some form of financial aid. On the other hand, only 57%, ( $n=49$ ) of Hispanic nursing and about 59% of Whites nursing students ( $n=234$ ) were recipients of some form of financial aid. The Chi-square test showed significant difference between race/ethnicity and financial support/aid,  $X^2(2, N = 617) = 21.16, p < .001$ . The percentage of students who received financial aid differed by race/ethnicity; therefore, the null hypothesis was rejected. The percentages of financial support/aid by racial/ethnic group are displayed in Table 4-13.

Hypothesis 3.b states: There is no significant difference in academic success between nursing students who were financial aid recipients and non-financial aid recipients. Table 4-14 shows the results of this analysis. About 61% ( $n=77$ ) of the 127 students who did not complete the ADN program were financial aid recipients compared with 63.6 % ( $n=262$ ) of those who completed on time and 69.2% ( $n=54$ ) belonging to the group “delayed graduation”. Overall, the majority (64.5%,  $n=316$ ) of nursing students ( $n=490$ ) who completed the ADN program on-time or late received some form of financial aid. The Chi-square test showed no significant difference between academic success and financial support/aid,  $X^2(2, N = 617) = 1.55, p < .460$ . The

percentage of students who received financial aid did not differ by academic success.

Therefore, there was failure to reject the null hypothesis.

Hypothesis 3.c states: There is no significant difference in HESI E2 mean scores, NGPAs for NUR 1023 and NUR 1213 between nursing students who are financial aid recipients and those who were non-financial aid recipients. Results for this analysis are displayed in Tables 4-15 and 4-16. An independent samples t-test was conducted to compare the HESI E2 mean scores for students who were financial aid recipients ( $N=317$ ,  $M=836.55$ ,  $SD=106.774$ ) and those who were non-financial aid recipients ( $N=174$ ,  $M=844.06$ ,  $SD=98.328$ ). There was no statistical significance between the two groups [ $t(489)=-.767$ ,  $p=.444$ ]. Likewise, an independent samples t-test was conducted to compare the NGPA for NUR 1023 for students who had financial aid ( $N=393$ ,  $M=2.12$ ,  $SD=.959$ ) and those who did not have financial aid ( $N=224$ ,  $M=2.17$ ,  $SD=1.035$ ). There was no statistical significance between the two groups [ $t(615)=.582$ ,  $p=.561$ ]. Therefore, resulting in the failure to reject the null hypothesis.

An independent samples t-test was also conducted to compare the NGPA for NUR 1213 for students who received financial aid ( $N=358$ ,  $M=2.22$ ,  $SD=1.019$ ) and those who did not receive financial aid ( $N=198$ ,  $M=2.37$ ,  $SD=.998$ ). There was no statistical significance between the two groups [ $t(554) = 1.683$ ,  $p=.093$ ] resulting in the failure to reject the null hypothesis.

Question four asks: Is there a significant relationship between race/ethnicity and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students? Hypothesis 4.a states: There is no significant difference in academic success between racial/ethnic minority and White nursing students. Additional data was obtained on the racial/ethnic representation for academic success. Tables 4-17 and 4-18 show results for this analysis. Of the 412 students who completed the ADN program within 4 semesters, 67.2% ( $n = 277$ ) were White, followed by

19.2% (n = 79) Black/African American, 13.6% (n = 56) Hispanic. The total number of students who graduated from the program within 6 semesters came to  $N = 490$  (79.4%), when taking into consideration the 78 students who completed the ADN program late. This figure (79.4%) represents the program graduation rate, which is percentage of students who completed the ADN program in 150% of the stated program length. Of the 79.4% of nursing students who completed the ADN program, 52.7 % (n=325) were White, 15.9% (n=98) were Black/African American and 10.9% (n=67) were Hispanic.

The ADN program attrition rate by racial/ethnic group was as follows: 11.2% White, 6.3% Black/African American, and 3.1% Hispanic. But when looking at percentage within racial/ethnic group, Black/African American nursing students had the highest percentage (28.5%, n=39) of non-completers, followed by 22.1% (n = 19) of Hispanic, and only 17.5% (n= 69) of White nursing students. First semester failure attrition rate accounted for 13% of the sample. When considering each racial/ethnic group separately, the highest percentage of students who completed/graduated from the ADN program in time was predominantly from the White group with 70.3%, followed by Hispanics with 65.1%, and Black/African Americans with only 57.7%.

The graduation rate for each racial/ethnic group was as follows: 82.5% White, followed by 77.9% Hispanics, and 71.5% Black/African American nursing students. The overall graduation rate for the program was 79.4%. According to the National League for Nursing *NLN Data Review<sup>TM</sup>* for year 2008-2009, the graduation rate for racial/ethnic minority students from pre-licensure registered nursing programs (both ADN and BSN programs) was 24.5 percent in 2006. In this sample, 26.7% of racial/ethnic minority nursing students completed/graduated from the ADN program. This graduation rate exceeds the national average by 2.2%. The Chi-square test showed no significant difference between academic success and race/ethnicity,  $X^2(4, N = 617) =$

8.74,  $p < .068$ . However, it is important to note that students from Black/African American racial/ethnic background were less likely to successfully complete/graduate from the ADN program than those who belonged to White or Hispanic race/ethnicity.

Hypothesis 4.b states: There is no significant difference in the NCLEX-RN<sup>®</sup> success between racial/ethnic minority and White nursing students. Four hundred and ninety students from the original cohorts of students (N=617) admitted in to the ADN program had met the curriculum requirements and were eligible to sit for the NCLEX-RN<sup>®</sup> licensure examination. Of the 490 students who took the exam, 423 (86.3%) passed on their first trial and 67 (13.7%) failed. First time pass rates per racial/ethnic groups were very close with 86.6% (n=58) for Hispanic nursing students followed by 86.5% (n=281) for White and 85.7% (n=84) for Black/African American nursing students. The Chi-square test showed no significant difference between NCLEX-RN<sup>®</sup> first time pass rate and race/ethnicity,  $X^2 (2, N = 490) = 0.04, p < .980$ . The percentage of students who passed the NCLEX-RN<sup>®</sup> on their first trial did not differ by race/ethnicity. As a result, there was failure to reject the null hypothesis. Table 4-19 provide the results for this analysis.

### **Summary**

The findings and analysis presented in this chapter generated answers to the research question in this dissertation. Descriptive and inferential statistical analyses were used. The results of this study provided pertinent data about the relationships between selected individual and institutional variables and the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students in an ADN program. This study offers new data for mean HESI E2 scores comparisons by race/ethnicity, financial aid recipients and non-recipients groups and NCLEX-RN<sup>®</sup> success. The results provided evidence for assumptions and can be used to guide nursing

faculty as they strive to enhance the educational experience of racial/ethnic minority nursing students.

Table 4-1. Nursing course grade (NUR 1023) by race

			RACE			
			White	Black/AfAm	Hispanic	Total
NUR 1023 grades	F	Count	36	28	15	79
		% within 1023	45.6	35.4	19.0	100.0
		% within RACE	9.2	20.9	17.6	13.0
	C	Count	181	78	41	300
		% within 1023	60.3	26.0	13.7	100.0
		% within RACE	46.4	58.2	48.2	49.3
	B	Count	158	26	27	211
		% within 1023	74.9	12.3	12.8	100.0
		% within RACE	40.5	19.4	31.8	34.6
	A	Count	15	2	2	19
		% within 1023	78.9	10.5	10.5	100.0
		% within RACE	3.8	1.5	2.4	3.1
Total	Count	390	134	85	609	
	% within 1023	64.0	22.0	14.0	100.0	
	% within RACE	100.0	100.0	100.0	100.0	

$X^2 (6, N = 609) = 29.986, p < .000$

Table 4-2. Nursing course grade (NUR 1213) by race

			RACE			
			White	Black/AfAm	Hispanic	Total
NUR 1213 grades	F	Count	36	17	8	61
		% within 1213	59.0	27.9	13.1	100.0
		% within RACE	10.1	14.9	10.1	11.1
	C	Count	147	61	40	248
		% within 1213	59.3	24.6	16.1	100.0
		% within RACE	41.3	53.5	50.6	45.2
	B	Count	139	33	28	200
		% within 1213	69.5	16.5	14.0	100.0
		% within RACE	39.0	28.9	35.4	36.4
	A	Count	34	3	3	40
		% within 1213	85.0	7.5	7.5	100.0
		% within RACE	9.6	2.6	3.8	7.3
Total	Count	356	114	79	549	
	% within 1213	64.8	20.8	14.4	100.0	
	% within RACE	100.0	100.0	100.0	100.0	

$X^2 (6, N = 549) = 14.989, p < .020$

Table 4-3. Descriptives for NUR 1023 and NUR 1213 NGPAs by race/ethnicity

		N	Mean	Std. Deviation
NUR 1023	White	394	2.30	.918
	Black/AfAm	137	1.81	1.029
	Hispanic	86	2.01	1.063
	Total	617	2.15	.985
NUR 1213	White	362	2.38	1.018
	Black/AfAm	114	2.04	.999
	Hispanic	80	2.23	.933
	Total	556	2.29	1.010

Table 4-4. One-way ANOVA for NUR 1023 and NUR 1213 NGPAs by race/ethnicity

		Sum of Squares	df	Mean Square	F	Sig.
NUR 1023	Between Groups	25.961	2	12.981	13.96***	.000
	Within Groups	563.441	606	.930		
	Total	589.402	608			
NUR 1213	Between Groups	10.043	2	5.021	4.99**	.007
	Within Groups	548.486	546	1.005		
	Total	558.528	548			

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001

Table 4-5. Post Hoc tests NGPAs by race/ethnicity

Multiple Comparisons					
Scheffe					
Dependent Variables	(I) RACE	(J) RACE	Mean Difference (I-J)	Std. Error	Sig.
NUR 1023	White	Black/AfAm	.491 <sup>***</sup>	.097	.000
		Hispanic	.286 <sup>*</sup>	.115	.047
	Black/AfAm	White	-.491 <sup>***</sup>	.097	.000
		Hispanic	-.206	.134	.307
	Hispanic	White	-.286 <sup>*</sup>	.115	.047
		Black/AfAm	.206	.134	.307
NUR 1213	White	Black/AfAm	.335 <sup>**</sup>	.108	.008
		Hispanic	.151	.125	.479
	Black/AfAm	White	-.335 <sup>**</sup>	.108	.008
		Hispanic	-.184	.147	.456
	Hispanic	White	-.151	.125	.479
		Black/AfAm	.184	.147	.456

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001

Table 4-6. Group Statistics: Means NGPA for NCLEX-RN®

	NCLEX	N	Mean	Std. Deviation
NUR1023	Failed NCLEX	67	2.03	.627
	Passed NCLEX	423	2.47	.718
NUR1213	Failed NCLEX	67	1.96	.638
	Passed NCLEX	423	2.57	.797

Table 4-7. Independent Samples Test (NGPA) for NUR 1023 and NUR 1213

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference
NUR 1023	Equal variances assumed	33.08***	.000	-4.696	488	.000	-.436
NUR 1213	Equal variances assumed	35.73***	.000	-5.966	488	.000	-.610

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001

Table 4-8. Descriptives: HESI E2 examination scores by race/ethnicity

	N	Mean	Std. Deviation
White	326	854.81	100.650
Black/AfAm	98	804.50	108.440
Hispanic	67	814.07	96.043
Total	491	839.21	103.821

Table 4-9. One-way ANOVA for HESI E2 scores by race/ethnicity

		Sum of Squares	df	Mean Square	F	Sig.
HESI E2 scores	Between Groups	239763.259	2	119881.629	11.603***	.000
	Within Groups	5041824.713	488	10331.608		
	Total	5281587.971	490			

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001

Tale 4-10. Post Hoc tests HESI E2 scores by race/ethnicity

Multiple Comparisons				
Scheffe				
		Mean Difference		
HESI E2 (I) RACE	(J) RACE	(I-J)	Std. Error	Sig.
White	Black/AfAm	50.313***	11.710	.000
	Hispanic	40.738**	13.634	.012
Black/AfAm	White	-50.313***	11.710	.000
	Hispanic	-9.575	16.113	.838
Hispanic	White	-40.738**	13.634	.012
	Black/AfAm	9.575	16.113	.838

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001

Table 4-11. Group Statistics: HESI E2 examination mean scores by NCLEX-RN® status

	NCLEX	N	Mean	Std. Deviation
HESI	Failed NCLEX	67	784.00	89.818
	Passed NCLEX	423	848.27	103.184

Table 4-12. Independent Samples Test HESI E2 by NCLEX-RN® status

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference
HESI	Equal variances assumed	1.385	.240	-4.816	488	.000	-64.267

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001

Table 4-13. Financial support (aid) by race/ethnicity

RACE			Frequency	Percent	Valid Percent	Cumulative Percent
White	Valid	No FinAid	160	40.6	40.6	40.6
		Has FinAid	234	59.4	59.4	100.0
		Total	394	100.0	100.0	
Black/AfAm	Valid	No FinAid	27	19.7	19.7	19.7
		Has FinAid	110	80.3	80.3	100.0
		Total	137	100.0	100.0	
Hispanic	Valid	No FinAid	37	43.0	43.0	43.0
		Has FinAid	49	57.0	57.0	100.0
		Total	86	100.0	100.0	

$X^2 (2, N = 617) = 21.16, p < .001$

Table 4-14. Financial support (aid) by academic success

		ACADSUCCESS				
		No Grad	Delayed Grad	OnTime Grad	Total	
FAID	No FinAid	Count	50	24	150	224
		% within No FinAid	22.3%	10.7%	67.0%	100.0%
		% within ACADSUCCESS	39.4%	30.8%	36.4%	36.3%
	Has FinAid	Count	77	54	262	393
		% within Has FinAid	19.6%	13.7%	66.7%	100.0%
		% within ACADSUCCESS	60.6%	69.2%	63.6%	63.7%
Total	Count	127	78	412	617	
	% within FAID	20.6%	12.6%	66.8%	100.0%	
	% within ACADSUCCESS	100.0%	100.0%	100.0%	100.0%	

$X^2(2, N = 617) = 1.55, p < .460$

Table 4-15. Group Statistics: Financial aid by HESI E2 scores-NUR 1023-NUR 1213

	FAID	N	Mean	Std. Deviation
HESI	No FinAid	174	844.06	98.328
	Has FinAid	317	836.55	106.774
1023	No FinAid	224	2.17	1.035
	Has FinAid	393	2.12	.959
1213	No FinAid	198	2.37	.998
	Has FinAid	358	2.22	1.019

Table 4-16. Independent Samples Test Financial aid by HESI E2 scores-NUR 1023-NUR 1213

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference
HESI E2	Equal variances assumed	1.217	.271	.767	489	.444	7.514
NUR 1023	Equal variances assumed	3.458	.063	.582	615	.561	.048
NUR 1213	Equal variances assumed	.123	.726	1.683	554	.093	.151

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001

Table 4-17. Academic success by race/ethnicity

Race	Academic Success	Frequency	Percent
White	No Grad	69	17.5
	Delayed Grad	48	12.2
	OnTime Grad	277	70.3
	Total	394	100.0
Black/AfAm	No Grad	39	28.5
	Delayed Grad	19	13.9
	OnTime Grad	79	57.7
	Total	137	100.0
Hispanic	No Grad	19	22.1
	Delayed Grad	11	12.8
	OnTime Grad	56	65.1
	Total	86	100.0

$X^2(4, N = 617) = 8.74, p < .068$

Table 4-18. Comparison of enrollment-attrition-graduation rates by race/ethnicity

		White	Black/AfAm	Hispanic	Total Percent Racial/Ethnic Minority	Total
Enrollment	Frequency	394	137	86	223	617
	Valid Percent	63.9	22.2	13.9	36.1	100
Attrition	Frequency	69	39	19	58	127
	Valid Percent	11.2	6.3	3.1	9.4	20.6
	% within race	17.5	28.5	22.1	25.3	
Graduation	Frequency	325	98	67	165	490
	Valid Percent	52.7	15.9	10.85	26.7	79.4
	% within race	82.5	71.6	77.9	74.8	
	Valid Percent	100	100	100		100
	Percent					

Table 4-19. NCLEX-RN® Pass rates by race/ethnicity

RACE			Frequency	Valid Percent	Cumulative Percent
White	Valid	Failed NCLEX	44	13.5	13.5
		Passed NCLEX	281	86.5	100.0
		Total	325	100.0	
Black/AfAm	Valid	Failed NCLEX	14	14.3	14.3
		Passed NCLEX	84	85.7	100.0
		Total	98	100.0	
Hispanic	Valid	Failed NCLEX	9	13.4	13.4
		Passed NCLEX	58	86.6	100.0
		Total	67	100.0	

$X^2 (2, N = 490) = 0.04, p < .980$

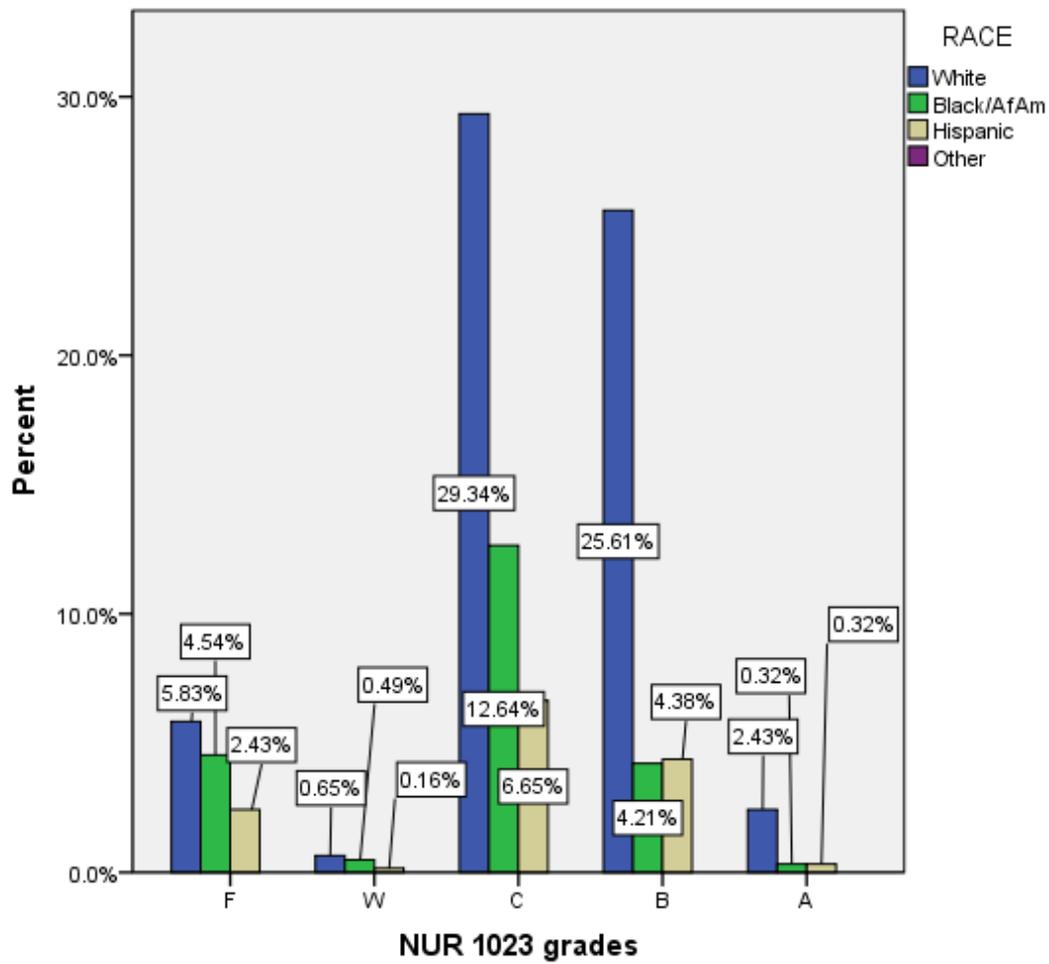


Figure 4-1. Grade distribution for NU 1023 by race/ethnicity

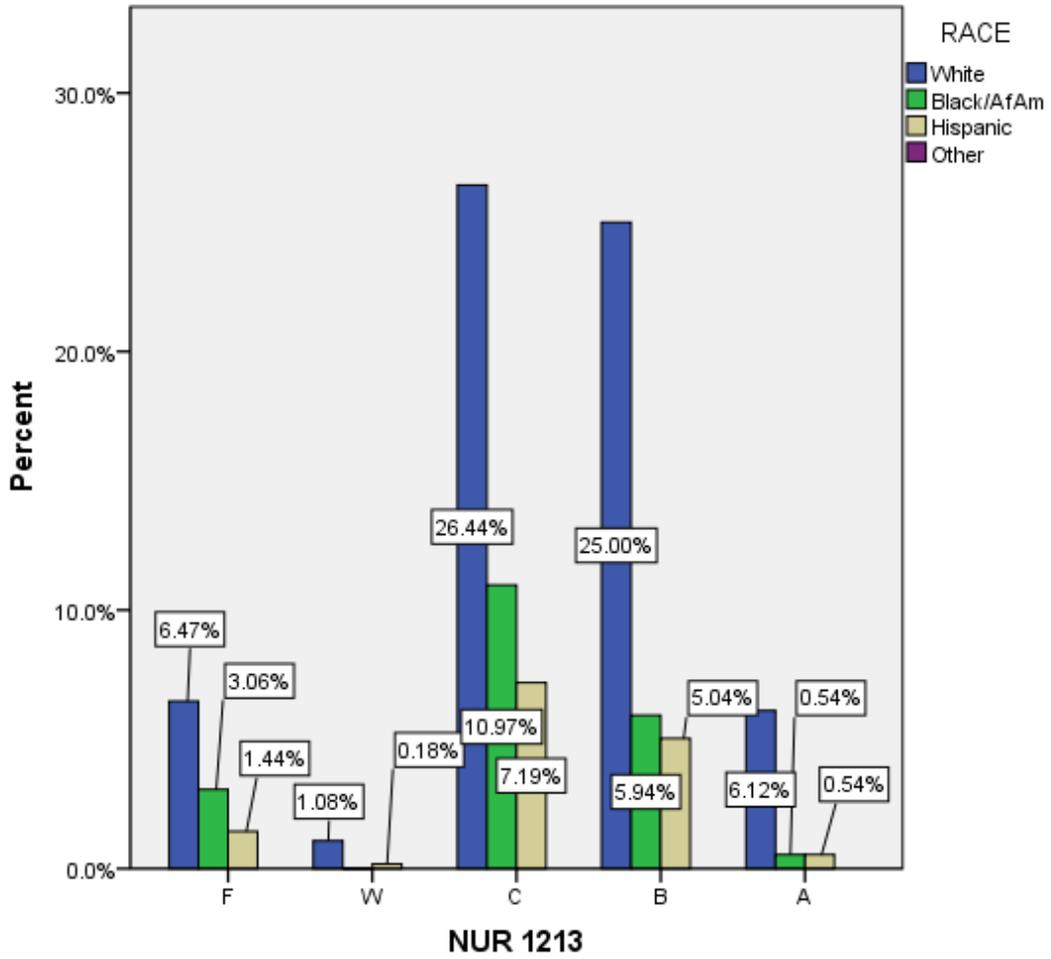


Figure 4-2. Grade distribution for NUR 1213 (12131) by race/ethnicity

## CHAPTER 5 DISCUSSION

The purpose of this study was to examine the relationship between the selected individual and institutional factors that influence the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students enrolled in an ADN program. The individual factors explored in this study were race/ethnicity, nursing course grades (NCG), nursing grade point average (NGPA), and HESI exit (E2) examination scores. The selected institutional factor was financial support/aid. The variables were selected based on a review of the literature and Marianne Jeffreys' theoretical framework the NURS model. The study used demographic and academic data to compare and contrast various educational outcomes between racial/ethnic minority and White nursing students. In particular, the study compared these groups in performance areas such as nursing course grades (NCG), nursing grade point average (NGPA), and HESI exit (E2) examination scores, academic success (graduation) and NCLEX-RN<sup>®</sup> pass rates. This chapter will present a brief description of Jeffreys' model and its relationship to this study's key findings along with interpretation in relation to the literature review. Finally the chapter will conclude with a summary of the findings.

Jeffreys' NURS (*Nursing Undergraduate Retention and Success*) model (Figure 2-1) formed the theoretical framework for this study. It is a very comprehensive model and exceeds the scope of this study. For this reason, variables were selected from Jeffreys' NURS model and led to the proposition of a smaller conceptual model (Figure 2-2). Drawing from Jeffreys' NURS model and the literature review, these key individual and institutional variables were used to illustrate their relationship with the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic minority nursing students. This study is unique in that it primarily focuses on specific groups of nursing students (Black African American, Hispanic & White).

Jeffreys' earlier NURS (*Nontraditional Undergraduate Retention and Success*) model primarily focused on the retention and success of nontraditional nursing students (2004). The new NURS model is geared toward the undergraduate nursing student (traditional and nontraditional) in general and is therefore applicable to this study sample. In developing the model, Jeffreys (2004) considered global and national immigration trends, the traditional and nontraditional student, the issue of attrition, the multifaceted process of nursing student retention and the complex interaction of influencing variables, and the lack of diversity in the nursing workforce. Jeffreys (2004, p.277) maintains, "The NURS model is flexible enough to be used to guide assessment at the individual, subgroup, course, program, institution, or multisite level." The author also recognizes that the NURS model is "tentative" and would need revision as new empirical data become available (ibid).

#### **Relationship between Race/Ethnicity and Academic and NCLEX-RN<sup>®</sup> Success**

Jeffreys' NURS model proposed that a student's decision to withdraw from or remain in a nursing program can be predicted by the interaction of student profile characteristics (i.e., race/ethnicity) student affective factors, academic factors, environmental factors (i.e., financial aid), professional integration factors, and outside surrounding factors. These interactions are predictive of academic outcomes (course grades/nursing grade GPA, HESI exit exam (E2) scores) and psychological outcomes (Jeffreys, 2004). Jeffreys (2004, p.10) asserts that:

The voluntary and/or involuntary decision to remain in a course, persist in the nursing program, graduate, take the RN licensing exam, and enter the nursing workforce and/or begin a more advanced nursing program occurs during and at the conclusion of each nursing course. (p.10)

As seen in the results of this study, 20.6% of all the students included in this study voluntarily or involuntarily withdrew.

According to Jeffreys' NURS model, "each student's profile characteristics (i.e., race/ethnicity) may have direct and/or indirect impact on retention" (Jeffreys 2004, p.30). Jeffreys (2004) further emphasizes that contrary to attrition, which may be voluntary or involuntary, retention is a voluntary decision. A student makes the decision to continue in the nursing program, graduate and take the NCLEX-RN<sup>®</sup>. Jeffreys (2004) considers the NCLEX-RN<sup>®</sup> as a component of retention, since the student has to make the choice to persist on the educational pathway toward becoming an RN.

In this study, race/ethnicity was found to be significantly related to students' academic success, which supports Jeffreys' model that postulated race/ethnicity directly or indirectly impacts student retention. Black/African American nursing students had a higher attrition rate (28.5%), a lower on-time completion rate (55.7%), and took longer to complete the ADN program than the other racial/ethnic groups (versus White and Hispanic) included in the sample. This finding is consistent with a recent study by Jeffreys (2007) who noted that Black nursing students had the highest percentage of voluntary attrition, took longer than Asians and Whites to complete the nursing program, and had the highest percentage of non-graduates. Similarly, Seago and Spetz (2005) found that African American nursing students had lower on-time completion rates than the statewide average and the lowest rate of success with only approximately 50% graduating.

Delayed graduation rate for Black/African American nursing students in this study mirrors earlier research studies. For example, Endres, (1997) found that "African American graduates who passed the NCLEX-RN<sup>®</sup> were more likely to require significantly more semesters to complete the nursing curriculum. Also Byrd et al. (1999) found that White students were more likely to graduate than racial/ethnic minorities. Conversely, Higgins's (2005) study of 213 ADN

students yielded no statistical significance between race and academic success. Gardner (2005) ascertained that the high attrition rate of ethnic/racial minority nursing students is a contributing factor to the underrepresentation of these individuals in the nursing profession.

An additional finding of interest in this study was the 20.6% attrition rate of the overall sample with more than half (54.4%) of these students being White, 30.6% being Black/African American, and 15.04% being Hispanic nursing students. Although this finding is close to the national figure (17.0%) reported by the NLN for ADN programs during academic year 2006-2007 (NLN 2008), it is still a great concern in light of the current and projected shortage in the RN workforce, especially in racial/ethnic minority communities, where this shortage is even more pronounced. The issue of retention is across the board within nursing education and deserves to be a priority because of the negative effects the shortage may cause on the U.S. healthcare system.

In this study, race/ethnicity was not found to be significantly related to students' NCLEX-RN<sup>®</sup> success. The first time NCLEX-RN<sup>®</sup> pass rate for all three racial/ethnic groups in this study was nearly comparable. Hispanic nursing students had the highest NCLEX-RN<sup>®</sup> first time pass rate (86.6%), followed by White (86.5%) and Black/African American (85.7%). Additionally, the overall ADN program first time pass rate was closely related to the national NCLEX-RN<sup>®</sup> pass rate for the time period of the study (fall 2006 to fall 2010). This finding of no significance between race/ethnicity and NCLEX-RN<sup>®</sup> success may not support Jeffreys' theory of race/ethnicity directly or indirectly influencing retention.

One explanation could be that as racial/ethnic minority nursing students progressed through the ADN program, and adapted to the rigor of the curriculum. In due course, they developed the necessary skills (study and critical thinking skills) enabling them to perform at

comparable level as their White counterparts. Another argument could be that those racial/ethnic minority nursing students who were underprepared had already failed out of the ADN program during the first year. Those who remained and took longer to complete the curriculum requirements (by having to repeat one course), were able to academically improve, and as a result, were successful in the NCLEX-RN®.

Based on the data from this study, researchers must use caution regarding drawing conclusions about the direct or indirect influence of race/ethnicity on the academic success of students. As suggested by Jeffreys' NURS model, researchers must take into account the interactions among the variables (in the model) leading to attrition or retention. Previous studies support the findings of this study. These researchers found no correlation between race/ethnicity and first-time pass rate in the NCLEX-RN® (Briscoe & Anema, 1999; Endres, 1997; Hardin, 2005; Higgins, 2005; Jeffreys, 2007; Washington & Perkel, 2001; Yin & Burger, 2003). For instance, Endres (1997) conducted a retrospective study to look at the strongest predictors of NCLEX-RN® success. In line with the results from this study, Endres (1997) concluded there were no significant differences between the passing and failing rates among African-American, Foreign-born, and Caucasian nursing students. Similarly, Jeffreys (2007) and Higgins (2005) did not find race/ethnicity to be a significant predictor of first-time NCLEX-RN® pass rate.

Contrary to this study's finding, a number of prior studies had demonstrated consistent association between race/ethnicity and NCLEX-RN® first time pass rate. Crow et al. (2004) found that "programs with higher percentages of White students were more likely to have higher passing rates than programs with smaller percentages; additionally, programs with higher percentages of Hispanic students reported lower pass rates" (p. 184). This was not the case in this study. Regardless of higher percentages of Whites in this ADN program, Blacks and Hispanics

comparatively succeeded in passing the licensure exam on their first attempt. Sayles, et al. (2003) found that African American students were less likely to be successful in the NCLEX-RN<sup>®</sup> than their White counterparts. Harris (2006) found that White nursing students were 0.48 times more likely to pass NCLEX-RN<sup>®</sup> the first-time than racial/ethnic minority students. These conflicting findings regarding NCLEX-RN<sup>®</sup> the first-time rates were independent of program type (ADN or BSN) or sample size. The results may have been influenced by other factors such as: cultural values and beliefs, self-efficacy, absence of enrichment program, satisfaction with the ADN program and stress. In order to yield results portraying the “whole” students, further research must be undertaken to examine variables such as: student affective factors, professional integration factors and psychological outcomes that may be influencing these students’ retention and success.

### **Relationship between NCG/NGPA and Academic Success**

Jeffreys’ NURS model identifies NCG and NGPA as essential academic outcome measures (2004). The “model proposes that persistence and attrition decisions occur during and after each individual nursing course” (Jeffreys, 2004, p.125). The data from this study revealed that Black/African American nursing students were more likely to earn a failing grade (F) in both NUR 1023 and NUR 1213. These low grades may partially explain the higher attrition rate and lower on-time completion/graduation rate for this group of students. Students often are unaware of the rigor of the nursing curriculum and may be often challenged by the required academic workload. Unfortunately, too many encounter academic failure due to these academic demands. The literature provides clarification for this phenomenon. Childs et al. (2004) wrote that “...many African American students are unaware of and unprepared for the amount of study required in college courses.” Amaro et al. (2006) discovered study workload as a barrier to success for ethnic minority nursing students. Another reason for the low NCG and NGPA may be the

socioeconomic status of the Black/African American students pursuing nursing degrees versus Whites. In addition to the academic workload, many of these students need to work in order to support themselves and/or their families. The employment responsibilities or hours represent a significant source of stress and competitor of time commitment for study. Regrettably, often times, their academic outcomes (NCG and NGPA) succumb to the other demands.

The data for this study revealed statistical difference in NCG between White and racial/ethnic minority nursing students for NUR 1023. However, analysis of NCG for NUR 1213 revealed no statistical difference between White and Hispanic nursing students, but the difference persisted between White and Black/African American nursing students. This result revealed that, as Hispanic nursing students progressed through the ADN program, their academic performance (outcome) greatly improved compared to their White counterparts. For this reason, the need to explore their lack of success during the first semester (NUR 1023) in the ADN program is warranted.

### **Relationship between NGPA and NCLEX-RN<sup>®</sup> Success**

There was statistical significant relationship between NGPA (for NUR 1023 and NUR 1213) and NCLEX-RN<sup>®</sup> Success. Students with lower NGPA were more likely to fail the NCLEX-RN<sup>®</sup>. These findings support Jeffreys' assumption that academic outcomes (NCG & NGPA) impact a nursing student attrition and retention. Several earlier studies presented similar findings. Byrd et al. (1999) concluded that the NUR 101 (nursing fundamental) course average was predictive of successful completion of the nursing program. Likewise, Jeffreys (2007) reported grades in MS1 (introductory nursing course and included contents from fundamentals and medical-surgical nursing) to have significantly influenced the type of retention, progression, graduation, and licensure. Similarly, Alexander and Brophy (1997) noted statistically significant differences in nursing course grades between graduates who passed and those who failed the

NCLEX-RN<sup>®</sup>; and Stuenkel's (2006) research further echoes that those who passed NCLEX-RN<sup>®</sup> held higher mean scores for nursing theory grades. Uyehara et al. (2007) found significant correlations between NCLEX-RN<sup>®</sup> success and nursing GPA, and course grades in Fundamental nursing course. Additional supportive findings by Seldomridge and DiBartolo (2004) indicated students who passed the NCLEX-RN<sup>®</sup> had higher mean test averages in both adult health I & II nursing courses compared to those who failed. These previous studies confirm this study's findings of the relationship between NCG/NGPA and academic and NCLEX-RN<sup>®</sup> success.

Conversely, Horton (2006) investigated the predictors of graduation and NCLEX-RN<sup>®</sup> success of 351 students who attended a small Midwestern BSN program from 1994-2005. The author concluded that the number of C grades earned in nursing courses were identified as predictors of graduation or NCLEX-RN<sup>®</sup> success. It is important to note that other factors such as language, learning styles, academic preparation not explored in this study may affect nursing course grades, and subsequently students' academic and NCLEX-RN<sup>®</sup> success.

The study data showed higher academic failure rate for racial/ethnic minority students and yet almost equal to better first time NCLEX-RN<sup>®</sup> pass rates than their White counterparts. The reasons beyond the difference between the academic and NCLEX-RN<sup>®</sup> success for racial/ethnic nursing students are discussed in previous sections and deserve further scrutiny. As it now stands, there is compelling evidence and plea to increase the ratio of racial/ethnic diversity in the RN workforce. This goal will materialize only when ADN programs retain and graduate their enrolled racial/ethnic minority students.

#### **Relationship between HESI E2 Exam Scores and Academic and NCLEX-RN<sup>®</sup> Success**

This study added HESI E2 exam scores as an academic outcome measure as depicted in Jeffreys' NURS model. The results from this study revealed a higher mean score for White nursing students and significant differences in mean HESI E2 scores between White and

racial/ethnic minority students. Additional analyses also yielded significant differences in mean HESI E2 scores between nursing students who passed and those who fail the NCLEX-RN<sup>®</sup>. These findings support Jeffreys' assumption that academic outcomes (HESI E2 exam scores) impact a nursing student attrition and retention. No earlier research has examined the difference between the mean HESI E2 scores between racial/ethnic groups. However, the previous E2 studies revealed significant differences in NCLEX-RN<sup>®</sup> failure rate between low-scoring and high-scoring students (Lauchner, et al., 1999; Newman et al., 2000; Nibert & Young, 2001; Nibert et al., 2002). Also, a multidimensional study by Hardin (2005) suggested ADN graduates with higher passing scores on the E2 had a higher NCLEX-RN<sup>®</sup> success rate. Once again, these findings support Jeffreys' assumption that academic outcomes (HESI E2 exam scores) impact a nursing student attrition and retention (NCLEX-RN<sup>®</sup> success).

The HESI E2 examination is a standardized test used to measure students' preparedness for the NCLEX-RN<sup>®</sup>. The nursing program uses the HESI E2 exam to measure students' preparedness for the NCLEX-RN<sup>®</sup>. When examining the scores for the last cohort (fall 2008), only one student obtained a score below 700. This may be due to the fact that the passing score was raised to 750 that same semester. It can only be assumed that students may be taking the E2 exam more seriously because of its impact on their academic status. This inquiry could only be explored with a survey or a qualitative study.

Other nursing programs (ADN and BSN) have established similar progression policies based on students' scores in standardized assessment exams. Students are often allowed to retake the HESI E2 multiple times until achievement of the minimum score set by the program. Nibert et al., (2003) reviewed 45 programs with progression policies where nursing students who did not meet minimal HESI E2 scores had either failed a key course, been denied eligibility for

graduation, or approval to take NCLEX-RN<sup>®</sup>. Likewise, Lewis' (2005) retrospective research identified significant difference between HESI E2 scores of students in nursing programs with benchmark policies than those in programs without progression policies. In the same way, Spector and Alexander (2006) indicated that progression or exit exams are valuable tools in predicting NCLEX-RN<sup>®</sup> success.

Conversely, Spurlock and Hanks (2004) questioned the ability of the HESI E2 to predict NCLEX-RN<sup>®</sup> failures; therefore, recommending nursing programs to consider multiple aspects for progression beyond the HESI E2. Spurlock and Hanks (2008) further cautioned against the practice of multiple retakes of the E2, as they have found that "only" students' first scores on the E2 is significantly related to NCLEX-RN<sup>®</sup> outcomes" (p.165). The additional scores decrease the strength of the relationship between the two variables. This practice may also give schools a false sense of security, because the initial scores on the E2 are the most reliable in predicting NCLEX-RN<sup>®</sup> success.

Based on the existing policy at the ADN program for this study, the racial/ethnic minority nursing students who scored low on the HESI E2 received additional remediation materials and were re-assessed with an HESI E2 to assure readiness for NCLEX-RN<sup>®</sup>. This may be the explanation for the comparable first time NCLEX-RN<sup>®</sup> pass rate among the racial/ethnic groups. One may conclude that when remediation is offered to low performing students, outcome results such as NCLEX-RN<sup>®</sup> first time pass rates are almost identical across all racial/ethnic groups.

### **Relationship between Financial Support/Aid and Academic and NCLEX-RN<sup>®</sup> Success**

Jeffreys' NURS model incorporates environmental factors (i.e., family emotional support, family responsibilities, family crisis, financial status, etc...) that are external to the academic process, but may significantly influence a student's academic achievement and retention. The environmental factor explored in this study was financial support/aid. The data

revealed no significant relationship between financial aid and academic and NCLEX-RN<sup>®</sup> success. No significant relationship was found between financial aid and the other independent variables either (race/ethnicity, NCG, NGPA, HESI E2 scores). However, in this study, only 57% of the Hispanic nursing students received some form of financial aid compared to 80% of the Black/African American and 59.4% of White nursing students.

Previous studies offer some explanation for this trend. Longerbeam, Sedlacek and Alatorre (2004) reported that Latinos are more likely to be concerned about finances and more likely to work; which may cause them to become ineligible for Pell Grant. At the same time, they are also unwilling to take out loans for tuition (Soroff, Rich, Rubin, Strickland & Plotnick, 2002), and many are unaware of additional financial options (Goetz, 2007). Unfortunately, the data from this study was unable to capture the related factors to this low percentage of financial aid recipients among Hispanics, and thus unable to present further discussion on this matter.

### **Summary**

Most findings from this study correlated with Jeffreys' NURS model. The NURS model served as a guide for this research study analysis and discussion. Students were tracked from ADN program entry to completion, as well as the NCLEX-RN pass-fail status. This discussion has also reflected on previously published studies that have addressed some or all of the variables explored in this study. There was significant a relationship between race/ethnicity and academic success, but none between race/ethnicity and NCLEX-RN<sup>®</sup> success. Therefore, the variable of race/ethnicity needs to be further explored along with other factors (i.e., academic factors, culture, socioeconomic status, professional integration factors & psychological outcomes, etc...) that may be inherent to racial/ethnic groups. Nonetheless, it is extremely important for administrators and faculty to pay close attention to underlying barriers to the academic success and retention of these groups.

The significance between NGPA and academic and NCLEX-RN<sup>®</sup> success was an expected finding, as previously proven. Students who earn a passing grade in their nursing courses or those with a high NGPA are more likely to graduate from the ADN program and pass the NCLEX-RN<sup>®</sup> on their first trial. Although this study did not find statistical significance between financial aid status and academic and NCLEX-RN<sup>®</sup> success, other research have shown finances to influence racial/ethnic minority nursing students' academic and NCLEX-RN<sup>®</sup> success (Amaro et al., 2006; Anders et al., 2007; Evans, 2007; Gordon & Copes, 2010; Nugent et al., 2004; Stewart, 2005; Taxis, 2006; Wilson, 2007); therefore, this variable should not be dismissed when dealing with these students.

One desired outcome for this study was to provide nurse educators with data that would disclose the relationships between selected individual factors (NCG, NGPA, & HESI exit (E2) exam scores), and institutional factor (financial support/aid) and academic and NCLEX-RN<sup>®</sup> success for racial/ethnic nursing students. It is anticipated that these findings will offer some guidance to college administrators and nursing faculty as they examine and revise curriculum and instructional approaches to meet the learning needs and challenges of all at-risk nursing students. As these adjustments are implemented, they will promote successful completion of the ADN program and success on the NCLEX-RN<sup>®</sup> may increase. Another desired outcome was to offer information that would facilitate early recognition of at-risk students. This early identification would allow faculty's provision of the necessary counseling and support to promote academic success and the probability of on-time graduation.

## CHAPTER 6 IMPLICATIONS

### **Policy Recommendations**

The 2010 U.S. Census report provides evidence of a growing racial/ethnic minority population. Hispanics now account for about 16.0% and Blacks/African Americans make up 12.6% of the total U.S. population. While this inevitable demographic trend is occurring, the 2008 NSSRN reports a sustained homogeneous (83.2% White) RN workforce (HRSA, September 22, 2010). This disproportionate representation of racial/ethnic minorities in the RN workforce has been going on for decades. If this problematic situation is not solved, it will have disastrous effects on the U.S. healthcare system. Research shows the lack of minority health professionals to be linked to the nation's widening gap in the healthcare status between minority and majority populations (Sullivan Commission, 2004). Ensuring equal representation of racial/ethnic minority in the RN workforce is not simply a matter of "equal opportunity", but one of responsiveness to a major obligation to reduce healthcare disparities among racial/ethnic minority groups, and consequently improve the healthcare of the nation.

Hispanics continue to be the most underrepresented minority group in the RN workforce while experiencing the fastest growth within the general U.S. population. Unfortunately, the findings from this study do not offer much optimism for an impending change for the Hispanic population. The study results indicated they had the lowest enrollment rate, which means that even a 100% retention rate would not adjust the existing disproportion. Additional results from this study revealed high attrition rate for Black/African Americans, overall higher academic failure rates (Lower NCG, NGPA and HESI E2 scores) for both Blacks/African Americans and Hispanics, and yet they have comparable NCLEX-RN<sup>®</sup> pass rates to their White peers. It is important to note that while the Black/African American segment of the sample was reflective of

the local demographic, the high attrition rate is still alarming as it negatively affects not only the racial/ethnic RN workforce diversity, but also the current and projected RN workforce shortage. In order to improve the disparity in the RN workforce ADN programs need to enroll, retain, and graduate higher percentages of racial/ethnic minority students to compensate for the persistent underrepresentation.

In this study, academic and NCLEX-RN<sup>®</sup> success are indication of retention, degree completion and considered positive outcomes for all stakeholders, from top college administrators, to deans and directors, to faculty and most significantly students, especially those belonging to racial/ethnic minority groups. As mentioned earlier in this paper, higher retention and graduation rates support President Obama's higher education reform for America to reclaim its leadership educational status in the world by 2020. Also, the Sullivan Commission and the IOM call to increase diversity in the RN workforce translate in higher number of awarded postsecondary degrees. Unfortunately, in spite of these recommendations by national leaders, the racial/ethnic minority underrepresentation in the RN workforce persists, as confirmed by the results of this study of one particular nursing program in South Florida. If this program is reflective of the national trends in nursing programs, then nursing school administrators, policy makers, and local communities must recommit to improving the racial/ethnic representation in the nursing professionals.

Many policy implications can be drawn from the results of this study. Higher education administrators, nurse educators, policy makers, and the like, have an enormous obligation to partake in the preparation of the racial/ethnic minority registered nurses. Policies and initiatives to promote racial/ethnic minority students academic and NCLEX-RN<sup>®</sup> success are necessary to

achieve this goal. Based on the study findings and discussions, the following policy recommendations are proposed.

**Institutional and departmental policies to use data in the decision-making process.**

A policy recommendation would be for the college and the ADN program to make a commitment to establish data-driven policies. The data generated by this study shed light on the obligation for the state college administrators and faculty to consider and address the challenges and needs of racial/ethnic minority nursing students. It is crucial to increase their participation in nursing education and consequently their representation in the RN workforce. It is anticipated that these results will prompt discussions and determine new course of actions. Moreover, the materialization of the proposed recommendations would only be made possible if the ADN program director and faculty receive support from college administrators. The implementation of any new program will have considerable implications for faculty workload, as additional time must be allotted for planning, implementation, and program evaluation.

**Institutional and departmental policies to recruit additional Hispanic students into the nursing profession.** The overall underrepresentation of Hispanic students in the ADN program was related to low enrollment (13.2%). The College is strategically located in Southeastern United States where there is a high concentration (19%) of Hispanics and must seize the opportunity to attract and educate more students from Hispanic background into the nursing profession. The college needs to re-examine its current recruitment and enrollment strategies, and employ innovative approaches to attract these students. A policy recommendation would be to have a recruitment goal of 3.0% increase of Hispanic students per year, for the next five years into the ADN program. Research found that the lack of college/career guidance from

high school causes racial/ethnic minority nursing students to be underprepared for college (Gardner, 2005; Goetz, 2007; & Jones, 1992).

The College could start with forming collaboration with two middle schools and two high schools that are located in areas with highest racial/ethnic minority in the County. This partnership would include the K-12 guidance counselors, the college's academic advisors, nursing program specialist and faculty, racial/ethnic minority nurses from the community, and a couple of healthcare facilities. The emphasis of the partnership would be on promoting racial/ethnic minority (especially Hispanics) inclusion in nursing. The K-12 guidance counselors would assist students in course selection that would get them ready for college-level work. The collaborative team could provide workshops for parents and students to educate them on opportunities in the nursing field at the college level.

**ADN program policies to retain and graduate additional Hispanic, Black/African American, and all at-risk nursing students.** The data from this study revealed a 28.5% attrition rate for Black/African American nursing students and an overall attrition rate of 20.6% for all students in this study. These students represent the at-risk group that did not make it through the ADN program. The higher attrition rates for the racial/ethnic minority students had a negative impact on their academic success, especially Black nursing students. The ADN program needs to set a goal to increase both retention and NCLEX-RN<sup>®</sup> first time pass rates by 5.0% for the next five academic years for all racial/ethnic groups.

Although not captured by this study, the study sample included students from Haitian background who self-identified as Black/African Americans and have English as a second language (ESOL) and face the same linguistic and learning styles challenges as the Hispanic nursing students. Also, some of the Hispanic students were first generation in the U.S and are

ESOL students. The lack of mastery of the English language is a common barrier faced by many ESOL students aspiring to enter college (nursing school). These students may be fluent in the English language but still struggle with reading, comprehension and writing. Compounding the language issue is the variety in learning styles. Seago and Spetz, (2005) raised the questions about White nursing faculty not taking into consideration various learning styles and culture as they plan lessons and teach contents. Some teaching styles are more effective for some specific learning styles. Therefore, in order to promote student engagement and learning, all faculty must take into consideration the different learning styles and incorporate various components in their classroom presentations.

A potential policy recommendation to improve Hispanic, Black/African American, and all at-risk nursing students' retention rates could be to focus energy on the lowest quartile of students. This policy would benefit all students regardless of racial/ethnic background and would lead to several programmatic initiatives. For example the ADN nursing department could establish an "enrichment program" for the at-risk group. A literature review on current "best practices" related to retention in nursing education revealed the significance of professional integration factors (i.e., nursing faculty advisement/helpfulness, peer mentoring/tutoring, professional events & memberships, enrichment programs, etc...) to an undergraduate nursing student's retention and success as described in the NURS model (Jeffreys, 2004).

Gardner (2005a) developed and implemented the Minority Retention Project at California State University School of Nursing. The purpose of the project was to enhance the integration of racial/ethnic minority students into a supportive learning environment. The following strategies were used: 1) A mentoring network comprised of working minority RNs from the community who worked with minority nursing students. These nurses served as role models, friends,

confidants, and a support system for the students. 2) A program coordinator who provided students with information about additional educational support services (library tours, writing centers, and financial services) on campus. 3) Classes on study and test-taking skills. The retention rate was 100% for the 2003-2004 academic year as a result (Gardner, 2005a).

Symes, Tart, Travis, and Toombs (2002) reported close to similar results as Gardner's (2005). The implementation of their retention program yielded an 89.0% retention rate for at-risk students. Nursing faculty identified at-risk students early and provided academic support, which ranged from teaching a student how to highlight a text to assisting in dealing with family issues or facilitating a peer support group. Faculty also noted that some students did not seek early assistance and ended up with a failing grade in the course. This lack of initiation toward faculty, from racial/ethnic minority students, is an expression of some cultural norms that consider it rude to speak up or ask questions of someone in a superior position (Symes et al., 2002). This finding is supported by Amaro et al. (2006) who reported that ethnic minority students felt they did not get the assistance they needed to be successful.

Taxis (2006) conducted an investigation of the experiences of nine Latina/Hispanic senior students and graduates from a BSN program with regard to institutional factors that influenced their retention and graduation. Experiencing caring relationships with institutional agents were among the key factors extracted from the data analysis of individual interviews, focus groups and questionnaire responses. In the same way, Amaro et al. (2006) studied the perceptions of 17 ethnically diverse nursing students regarding their educational barriers and how they coped with these barriers. The authors found nursing faculty who served as mentors, who tutored students, who were patient, and who provided encouragement were key players in

the success of minority students. The professional integration factors are powerful influences on the academic and NCLEX-RN<sup>®</sup> success of racial/ethnic nursing students.

Consequently, the ADN director and faculty would either duplicate one of these programs or borrow components from each one that would best meet the specific needs of those at-risk students. Such enrichment program would need to include policies such as: mandatory faculty mentoring, peer/faculty tutoring and/or learning groups, and workshops attendance for all students identified as at-risk. The majority of these students are unfamiliar with rigor of nursing school and need to develop great study habits that incorporate critical thinking skills.

The faculty mentoring would consist of mandatory one on one student/faculty meetings at different points in the semester, students would develop with faculty's assistance a plan of success for the semester with follow-up meetings. In order to engage the students in the learning process, classroom instructions would be delivered in ways to engage each of the learning styles. The learning group sessions would include review of lectures using additional instructional activities to facilitate comprehension of nursing concepts and promote study skills, along with critical thinking skills and test taking skills. The workshops would cover topics on time management, study and critical thinking skills. These approaches yielded effective outcomes in the aforementioned programs and the following ones: the Mentorship Model for the Retention of Minority Students (Nugent et al. 2004), The "Coppin Academy for Pre-Nursing Success" (CAPS) at Coppin State University Helene Fuld School of Nursing (Gordon & Copes, 2010), the recruitment and retention project at UTEP-SON for the economically disadvantaged Hispanic nursing students (Anders et al., 2007), the Minority Retention Project (Gardner, 2005a), and the NGN project from Clayton College and State University (Wilson, 2007).

Another potential academic policy would be for racial/ethnic minority nursing students to have membership and be actively involved in racial/ethnic minority professional nursing organization, as this would be great source of inspiration for these students. This would also create an opportunity for students to find racial/ethnic minority nurse mentors who may have had similar experiences and able to provide guidance on how to navigate through nursing school. Such enrichment program would promote academic and NCLEX-RN<sup>®</sup> success. In light of the overall high attrition rate for the ADN program, the changing racial/ethnic demographic in the U.S. and the RN workforce shortage, it is imperative to prioritize the needs and challenges of not only the racial/ethnic minority nursing students, but also all those at-risk students. With the right elements in place success can be achieved.

**Institutional commitment to establish an improved financial aid application process.**

The data from this study showed that only about 57% of Hispanic nursing students received some form of financial aid. Students' qualification/eligibility for financial aid may affect their decision to attend college. A policy recommendation would be to have a mandatory financial aid workshop attendance for all high school students and their parents as a requirement for high school graduation. Since financial aid guidelines do change, a similar mandate would benefit new and returning college students. In order to increase awareness of financial aid opportunities, the college may partner with the K-12 system and organize workshops throughout the year for parents and students to inform them about all types of financial aid available for racial/ethnic minority students and the financial aid processes. Also, some of these workshops could be designated to assist parents and students complete the financial aid forms prior to eligibility deadlines. Financial literacy about college affordability is an essential factor in enrollment and

retention of racial/ethnic minority nursing students. The lack of financial knowledge may be one of the reasons for the low enrollment of Hispanics in the ADN program.

**Institutional priority to allocate additional funds to the ADN program.** The proposed recommendations would require both human and financial resources and must be supported by high-level college administrators and State Legislature. A policy recommendation would be to make the enrollment, retention and graduation of racial/ethnic minority in the ADN program a top priority for the next five years. The need to achieve greater racial/ethnic minority diversity in the RN workforce greatly depends on nursing education. The current state of affairs might be an opportunity for top college administrators to partner with leaders from private and public health organizations to lobby for funds at the State level. Data from this study and evidence from the nursing industry could be presented, along with discussions on their impact on the health outcomes and the disparities between racial/ethnic majority and minority groups. In addition, the Dean would need to work closely with the college grant office to identify available grants geared toward student retention. Most importantly, any initiative that is instituted would need to plan for sustainability when funds from the state or grants run dry.

College administrators and nursing faculty have the responsibility to establish the necessary programs to deal with the individual and institutional factors that are preventing the success of racial/ethnic minorities in nursing education and contributing to their persistent underrepresentation in the nursing workforce. Enrollment without a strategic retention plan is futile. If these trends persist, it is unlikely that the ADN program will graduate the sufficient number of racial/ethnic minority nurses to respond to the nursing profession racial/ethnic diversity challenge. As the racial/ethnic minority population in the US continues to exponentially grow, especially the Hispanic segment of the population, their educational progress would not

only benefit the individual, but also the healthcare system within their residential communities, states, and the nation as a whole. For this very reason, it is imperative that top-level college administrators, deans of nursing, nursing program directors and faculty focus on addressing the educational needs and success of the racial/ethnic minority nursing students.

### **Future Directions for New Studies**

Understanding the factors relating to racial/ethnic minority nursing is of great significance. As a result, the following studies are proposed for further research. This was a quantitative study that examined the records students, who have completed the ADN program and passed the NCLEX-RN<sup>®</sup>, or have withdrawn voluntarily or involuntarily from the program. It would be worthwhile to conduct a prospective study that examines additional variables such as enrollment status, overall grade point average, income and need-based, and immigration status as this may affect eligibility for financial aid, along with program-specific factors (i.e., The students would be tracked from admission into the ADN program through taking the NCLEX-RN<sup>®</sup>. This would allow early identification of at-risk students as well as program-specific factors that contribute to students' academic success or failure. Additionally, the data would provide opportunities for curriculum change, implementation of innovative teaching methodologies, improved financial and academic advising, and ultimately student success.

Grades in nursing courses (NCG/NGPA) were an issue for Black/African American students. This represents a roadblock to the academic success of this particular group of students and a challenge for both nurse educators and students to overcome. A future study could be designed and based on a diversity model, to examine the relationship between students' learning styles, primary language, cultural values and beliefs, academic preparation and academic success. The results would provide evidence for both faculty and students as they engage in the teaching and learning process. In order to meet the educational needs of racial/ethnic minority

students, faculty would develop and implement innovative teaching methodologies that provide equal learning opportunities.

No significant difference was found in NCLEX-RN<sup>®</sup> pass rates among the different racial groups. This is evidence that once the students developed the required study and critical thinking skills in the first year of the ADN program, they continued to grow and were ready for the NCLEX-RN<sup>®</sup>. However, one great concern remains regarding the higher attrition rates and lower performance (in terms of NCG and NGPA) of Black/African American and Hispanic nursing students in comparison with their White counterparts. A qualitative study that investigates the educational experience (reasons for exiting and/or stopping out) of racial/ethnic minority students in nursing school would provide valuable cues for college administrators and nursing faculty.

Cultural sensitivity and competency are taught to nursing students in relation to patient care. However, the practice of cultural sensitivity and competency in nursing education remains a challenge and may influence racial/ethnic minority students' success and achievement. According to Wilson, Andrews, and Leners (2006), institutional barriers that hinder ethnic participation in nursing include lack of faculty sensitivity to cultural differences and institutional racism. A future study that explores the level of cultural sensitivity and competency of nurse educators and the influence of their interactions with racial/ethnic minority students would benefit both faculty and students.

The disproportion of the racial/ethnic minority in the registered nursing profession has been linked to the health disparities experienced by minority patients. It would be important to conduct a clinical study that would first survey the current racial/ethnic representation within the major local hospitals in addition to investigating the healthcare disparity index in the community.

The results may prompt modification in staffing and the healthcare delivery system. In order to ensure parity in health care delivery to racial/ethnic minority groups, it is imminent to increase their ratio within the registered nursing workforce. The demographic shifts in the U.S population present unique challenges and opportunities in nursing education.

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## BIOGRAPHICAL SKETCH

Louise Aurélien was born in Port-au-Prince, Haïti to M. Jean-Louis Aurélien and Sophana Calixte-Aurélien. After high school, she moved to the United States to pursue higher education. She started out as an LPN (Licensed Practical Nurse), and then obtained her Baccalaureate in Science Nursing (BSN) from the University of Massachusetts in Boston. She then went on to complete her Masters in Science with a Primary Care focus (Family track) from Northeastern University in Boston, Massachusetts. She is a Family Nurse Practitioner. She has worked in different areas in Nursing, from long-term care, to medical surgical, to maternal child health, and school health centers (adolescent population), etc... She has been a part of the Nursing profession for over 20 years.

In 2003, Louise moved to Florida and first joined the faculty at Palm Beach State College (then Palm Beach Community College) as an adjunct in October of 2003, and was subsequently hired full-time in January of 2004. She earned tenure in 2007. In 2007, she was accepted into the LEAD (Leadership Educational Administration Doctorate) program at the University of Florida (UF) (Concentration: Higher Education Administration) and completed in August 2011. Louise enjoys the beach, reading, spending time with her family and friends. After completing her Doctorate in Education at UF, she hopes to have time to travel for leisure and volunteering.