2017

Relationship Between Student Characteristics and Attrition Among Associate Degree Nursing Students

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COLLEGE OF EDUCATION

This is to certify that the doctoral study by

Wendy Watson

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2017

Abstract

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MSN, Ramapo College, 2009

BSN, New Jersey City University, 2006

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

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July 2017

Abstract

High nursing student attrition has been a pervasive problem in the nursing program at the research site of this study. The purpose of this project study was to investigate the relationship between attrition and nursing student characteristics, including age, gender, ethnicity, English as Second Language (ESL) background, licensed practical nurse (LPN) licensure, grade point average (GPA), the number of preadmission college credits, and the Test of Essential Academic Skills (TEAS) scores. This correlational study of archival data was guided by Jeffreys's nursing undergraduate retention and success model and included a convenience sample of 240 students admitted to the program between the Spring 2011 and Fall 2013 semesters. Point biserial and phi coefficient statistical analyses indicated that significant relationships existed between attrition and ethnicity, GPA, TEAS scores, college credits, and LPN status. There were no significant relationships between attrition and age, gender, and ESL background. Student characteristics correlated with higher attrition included ethnic minority background, more college credits, lower TEAS composite and math scores, lower GPA scores, and not having LPN licensure. These research results were the basis for policy recommendations for changes to the admission process within the nursing program and for early identification of students at risk for attrition, with the goal of providing early supportive measures. The overall goal of the policy recommendations was to decrease attrition at the local research site, which may help foster positive social change by promoting the educational and professional progress of nursing students. Nursing student attrition can negatively affect a nursing program's finances and reputation. For students, attrition represents lost time, lost finances, and a limited possibility for achieving socioeconomic progress.

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Dedication

I would like to dedicate this accomplishment to my beloved grandmother, who is no longer physically with me but whose strength and encouragement accompanied me throughout this journey. I would also like to dedicate this professional and personal achievement to my husband, David, and to my children, Anthony, Bryan, Amy, and Benny. Thank you for being so understanding whenever I could not spend time with you because I needed to complete school work. Finally, I would like to dedicate this accomplishment to my mother for all her encouragement during the past several years.

Acknowledgments

I would like to take this opportunity to give special thanks to my committee chairperson, Dr. Edson. Your guidance, support, and encouragement have been invaluable and have helped me achieve this wonderful accomplishment. Thank you for sharing your time and expertise with me. Thank you for providing the resources I needed to grow and accomplish my educational goals. I would also like to thank my second committee person, Dr. Reid-Hector, and my university research reviewers, Dr. Powell-Leake and Dr. Baltes. All your guidance and contributions have helped to make this day possible. This journey has been exciting and at times challenging, but most of all, the experience has been extremely rewarding. Thank you!

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Section 1: The Problem

Introduction

High attrition can negatively affect the public's perceptions about a nursing program, and it represents lost time and finances for students. High attrition can also affect the community at large and the nursing profession due to the existing nursing shortage (Knudson, 2012; Shelton, 2012). Shelton (2012) stated that the national nursing shortage will worsen and that there will be a need for about 285,000 additional registered nurses by 2020. Locally, in the state where the research was conducted, the nursing shortage is expected to grow to about 25,000 registered nurses by the year 2030 (USR Healthcare, 2015). Other projections estimated that there will be a surplus of about 20,000 registered nurses in the state in the year 2025 (U.S. Department of Health and Human Services, 2014). However, these projections were based on current nursing workforce trends, and therefore, evolving health care delivery models that focus on health management and illness prevention will contribute to currently unknown but likely increased demands for new nurses (U.S. Department of Health and Human Services, 2014).

Nursing student attrition can impact the nursing faculty shortage as well. Knudson (2012) noted that in 2011 alone, 76,000 nursing students who were qualified for admissions could not be admitted to nursing programs, primarily because of inadequate numbers of nursing faculty. The American Association of Colleges of Nursing (AACN; 2015a) has reported that in the academic year 2014 to 2015, 1,236 positions for full-time nursing faculty among 714 nursing schools within the United States remained unfilled.

Of those vacancies, 8.8% were in the North Atlantic United States (AACN, 2015a). The nursing faculty shortage in the local setting could worsen because the average age of the nursing faculty workforce in the state where the research site is located is 56 years (AACN, 2015b). Nationally, attrition from public colleges represents a multimillion-dollar loss for taxpayers and community colleges each year (American Institute for Research, 2011).

Definition of the Problem

The problem within an associate degree nursing program in the northeastern United States is a high student attrition rate. A gap has existed between the number of students who are admitted to the program and the number of students who graduate from the program. Despite using selective admission criteria, the average program attrition rate was 45.9% among five nursing cohorts that entered the program between Fall 2010 and Spring 2012 (see Table 1).

Table 1

Attrition by Year, From 2010 to 2012

Cohort entry (term/year)	Total students	# graduated in six consecutive semesters)	Attrition rate
Fall 2010 (day program)	55	28	49.1%
Fall 2011 (day program)	61	26	57.4%
Spring 2010 (evening program)	40	23	42.5%
Spring 2011(evening program)	35	23	34.5%
Spring 2012 (evening program)	31	20	35.5%
Total	222	120	45.9%

Note. Each fall semester a cohort of incoming nursing students is admitted into the day nursing program, and each spring semester another cohort of incoming nursing students is admitted into the evening program. The data were adapted from internal institutional records.

The problem of high student attrition among associate degree nursing students has existed beyond the local level as well. The National League for Nursing (n.d.) noted that the attrition rate for full-time associate degree nursing students in the year 2006–2007 was 20%. Nursing student attrition may be related to student characteristics such as age, gender, ethnicity, background language, standardized test scores, and grade point average (GPA), among others (Bond, Dumas, Gilden, Loftin, & Newman, 2012; Davis, Davis, & Williams, 2010; Ginsberg & Wlodkowski, 2010; Jeffreys, 2012; Shelton, 2012).

In this project study, I investigated the relationship between attrition and student characteristics and provided information for early identification of students who might be at risk of attrition within the nursing program. Early identification of these students can provide the nursing faculty within the program an opportunity to implement supportive student interventions in a timely manner, thereby reducing student attrition. For this project study, student attrition referred to students who were admitted to the nursing program but who did not graduate from the program within a specified program duration for reasons of voluntary withdrawal and academic failure, including program dismissal (see Jeffreys, 2012). The study site nursing program is designed to be completed in four semesters for genetic nursing students who want to become registered nurses (RN). For students who already have licensed practical nurse (LPN) licensure and want to become RN, the program is designed to be completed in three semesters. Students in the program can repeat a nursing course once and could, therefore, graduate in five semesters for genetic students or four semesters LPN-RN students. According to the research site's

catalog, students who graduate within six semesters (or 150% of the program length) are considered to have successfully completed the program at the research site. Therefore, in my study, attrition referred to students who graduated beyond six semesters or who did not graduate.

Rationale

Evidence of the Problem at the Local Level

The nursing program is part of a community college located in the northeastern United States. Attrition within the nursing program at the research site starts with the first nursing course and continues through the length of the program. Classroom institutional records showed that in the fall semester of 2014 (day program cohort), only 52% of the students in the first nursing course were successful in achieving a course minimum passing grade of 74.5% or higher. Attrition rates increase further in the three remaining semesters of the nursing program as nursing students receive academic dismissals from the program after failing a second nursing course that has a clinical component. For nursing cohorts entering the program between Fall 2010 and Spring 2012, the program attrition rates ranged between 34.5% and 57.4% (see Table 1).

According to the nursing program's catalog, students are considered for admission to the nursing program after they have successfully completed all the prerequisite courses with a grade of C or better. Members of the admission committee in the nursing program use a selective admission process in which students are ranked for admission using a point scale system. As shown in Tables 2 and 3, the point scale system is based on the scores on the Test of Essential Academic Skills (TEAS), which is a

nursing entrance exam (Assessment Technology Institute [ATI], 2014). Students are also ranked based on the number of credits obtained before entering the nursing program and the prior cumulative GPA scores. Despite using the selective admission criteria, nursing student attrition remained high within the nursing program.

Table 2

TEAS Scores for Admission Criteria

Percent correct on TEAS test	Number of points awarded toward student admission ranking
49 or below	0
50–54	1
55–59	2
60–64	3
65–69	4
70–74	5
75–79	6
80–89	7
90–99	8

Note. A minimum score of 50% is required for each section of the TEAS exam (English, math, reading).

Table 3

GPA Scores and Number of Credits for Admission Criteria

GPA	Credits	Points	GPA	Credits	Points
3.5–4.0	27–34	12	2.5–3.0	27–34	10
	19–26	8		19–26	6
	12–18	4		12–18	2
3.1–3.4	27–34	11	2.0–2.4	27–34	9
	19–26	7		19–26	5
	12–18	3		12–18	1

Note. Any student with a prior course withdrawal or a grade of D or F within the past five years will have one point deducted for each occurrence.

The nursing program is part of a community college which serves a large number of students from ethnic minority backgrounds. According to the institutional profile, in

the Fall 2012 semester about 75% of more than 9,000 admitted students came from ethnic minority backgrounds, and almost 20% of students were English as second language (ESL) learners. These ethnic minority percentages are higher than the national average for other associate degree programs, which were about 50% (American Association of Community Colleges, 2015). According to Ginsberg and Wlodkowski (2010), lack of academic success and high attrition rates are problems often associated with students from lower socioeconomic and ethnic minority backgrounds. Ginsberg and Wlodkowski (2010) also noted that graduation rates for these groups ranged from around 8% for students in associate degree programs and 7% for students in baccalaureate degree programs.

Within the nursing program, there is also a bridge program designated for licensed practical nurses to become registered nurses. Students who enter the program as LPNs are exempted from taking the first nursing course based on the assumption that these students possess certain experiences, skills, and knowledge obtained from their prior LPN programs. However, many LPN students struggle to succeed in the program. In the summer semester of 2014, internal institutional records showed that 27 LPN students were admitted to the program, and only 10 of those students completed the program and graduated successfully in the spring semester of 2015. Those numbers represented an attrition rate of 63.0% among the summer 2014 LPN cohort, from the start of the program to graduation (in the Spring 2015 semester). From the year 2010 to the year 2013, the program's attrition rates ranged between 25% and 46.4% (see Table 4).

Table 4

Attrition of LPN Students, From 2010 to 2013

Entry year	Total students	# graduated in five consecutive semesters)	Attrition rate
May 2010	27	16	40.7%
May 2011	16	12	25.0%
May 2012	22	14	36.4%
May 2013	28	15	46.4%
Totals	93	57	38.7% (average)

Note. LPN students enter the nursing program once per year in May, and the average attrition rate between May 2010 and May 2013 was 38.7%.

Evidence of the Problem From the Professional Literature

The problem of high nursing student attrition beyond the local setting has been well documented in the literature (Beauvais, Beauvais, DeNisco, & Stewart, 2014; Davis et at., 2010; Jeffreys, 2012; Shelton, 2012). Many researchers have studied nursing students' attrition in relation to student characteristics such as age, gender, race, and ethnicity (Bull, Fitzgerald, & Veal, 2012; Fontaine, 2014; Moceri, 2010). Other researchers have studied nursing student attrition as it relates to diverse language barriers (Andrew et al., 2011; Donnell, 2015; Mulready, 2013). Still, other researchers evaluated the relationship between nursing student attrition and academic factors such as prior course grades, overall GPA scores, and standardized test scores (Bosch, Doshier, & Gess-Newsome, 2012; Brenkus, Dugan, & Kowitlawakul, 2013; Burns, 2011). Most of the researchers concluded that there might be relationships between attrition and the noted student characteristics.

The purpose of this project study was to investigate any possible relationships between nursing student characteristics and attrition within a northeastern United States associate degree nursing program. The project study findings at the local site can be used for early identification of students who might be at risk of attrition so that supportive measures can be implemented in a timely manner. Early identification and early intervention may facilitate the decrease of nursing student attrition at the research site.

Definitions

For this project study, I defined the associated terms as follows:

Assessment Technology Institute (ATI): The company that develops the TEAS standardized tests (ATI, 2014).

Associate degree nursing program: A 2-year nursing program, which is usually located within a community college, where students are prepared for initial licensure as a registered nurse (Associate Degree in Nursing, n.d.).

Attrition: When students stop attendance to the nursing program (Jeffreys, 2012).

English as a second language (ESL): Students whose primary language is not English (Donnell, 2015).

Grade point average (GPA): An average of points for students' grades used by schools. GPA is based on a scale ranging from 0 to 4 points (College Board, 2015).

Involuntary attrition: When students stop attending the nursing program because of academic reasons, including failure or program dismissal (Jeffreys, 2012).

LPN: A nurse prepared to function as an entry-level nurse who usually works under the supervision of a RN. LPN educational programs usually last about 12 months

and are found within vocational technical schools and community college settings (Licensed Practical Nurse, 2015).

LPN bridge program: A nursing academic program that provides a pathway for LPN graduates to advance their education to higher nursing educational degrees, such as an associate degree in nursing (Licensed Practical Nurse, 2015).

Nontraditional undergraduate nursing student: Nursing students who are registered in "an entry-level undergraduate nursing program" including "diploma, associate degree, or generic baccalaureate" (Jeffreys, 2012, p. 9). These students also satisfy at least one of the following characteristics: male, at least 25 years of age, reside off campus, belong to an ethnic or racial minority, have dependent children, are part-time students, speak English is a second language, obtained a "general equivalency diploma" (GED), or "required remedial courses" (Jeffreys, 2012, p. 9).

Program retention: The continuous enrollment (part time or full time) in a nursing program and taking all of the necessary courses until the course requirements for program graduation are met (Jeffreys, 2012).

Program success: When a student has completed all the program's requirements for graduation (Jeffreys, 2012).

Student profile characteristics: Characteristics that the student had before starting nursing courses. These "profile characteristics" may "include age, ethnicity and race, gender, first language, prior educational experience, the family's educational background, prior work experience, and enrollment status" (Jeffreys, 2012, p. 13).

Test of Essential Academic Skills (TEAS): A nursing program entrance exam that is produced by ATI (ATI, 2014).

Traditional undergraduate nursing student: A nursing student registered in "an entry-level undergraduate nursing program" such as "diploma, associate degree, or generic baccalaureate" (Jeffreys, 2012, p. 9). The student also possesses one or more of the following characteristics: female, not older than 24 years, lives in or off campus, and attends school full time. In addition, the student is White, "not an ethnic or racial minority," speaks "English as a first language," does not have "dependent children," obtained a "U.S. high school diploma," and does not "require remedial classes" (Jeffreys, 2012, p. 9).

Voluntary attrition: Students stop attending the nursing program because of personal (nonacademic) reasons (Jeffreys, 2012).

Significance

In this project study, I examined possible relationships between nursing student characteristics and attrition within an associate degree nursing program. The project study was unique at the local institution. Although students in the nursing program have experienced high attrition rates for several years, a study to examine the relationship between student characteristics and attrition had not been previously conducted within the nursing program. The results obtained from this project study provided information that can be used for early identification of students at risk of attrition within the nursing program. Early identification of these students provides faculty with an opportunity for early interventions to help students succeed. In addition, the project study results yielded

information about the effectiveness of the nursing program's admission process and needed changes. Revisions to the admission process can help reduce attrition by allowing for the selection of nursing students who have the best chance of academic success within the nursing program.

Potential for Positive Social Change

The information I obtained from this project study has the potential to contribute to positive social change. The project study yielded information that can be used for early identification of nursing students at risk for attrition. Early identification can allow for the provision of supportive student interventions in a timely manner. Early interventions for students at risk of attrition can help reduce attrition levels within the nursing program and enhance the students' professional and socioeconomic status, thereby promoting positive social change. In addition, because the nursing program is housed within an ethnic minority-serving community college, providing early interventions to reduce attrition can contribute to social change by promoting ethnic equality among program graduates. Bond et al. (2012) reported that attrition rates among ethnic minority nursing students ranged between 15% and 85%. Within the United States, 37% of the population is composed of ethnic minority individuals (AACN, 2013a), and that number is anticipated to increase to 57% by the year 2060 (U.S. Census Bureau, 2010). Yet, only 19% of nursing workers are comprised of ethnic minorities (AACN, 2013a). Nursing leaders within professional nursing organizations have indicated that a multicultural nursing workforce is required to ensure the provision of quality and culturally competent nursing care; a multicultural nursing labor force

may help to reduce the disparities in health care affecting the nation (AACN, 2013a).

Research Questions and Hypotheses

I developed several research questions to guide this project study about the relationship between nursing student attrition and characteristics among associate degree nursing students. The dependent variable for the project study was nursing student attrition. The independent variables were comprised of several nursing characteristics. The study variables were incorporated into the project study's research questions, as follows:

Research Question 1: What is the relationship between the student characteristic of age and attrition within the study site associate degree nursing program?

$H_0$1: There is no relationship between the student characteristic of age and attrition within the study site associate degree nursing program.

H_a1: There is a significant relationship between the student characteristic of age and attrition within the study site associate degree nursing program.

Research Question 2: What is the relationship between the student characteristic of gender and attrition within the study site associate degree nursing program?

$H_0$2: There is no relationship between the student characteristic of gender and attrition within the study site associate degree nursing program.

H_a2: There is a significant relationship between the student characteristic of gender and attrition within the study site associate degree nursing program.

Research Question 3: What is the relationship between the student characteristic of ethnicity and attrition within the study site associate degree nursing program?

$H_0$3: There is no relationship between the student characteristic of ethnicity and attrition within the study site associate degree nursing program.

H_a3: There is a significant relationship between the student characteristic of ethnicity and attrition within the study site associate degree nursing program.

Research Question 4: What is the relationship between the preadmission student characteristic of GPA and attrition within the study site associate degree nursing program?

$H_0$4: There is no significant relationship between the preadmission student characteristic of GPA and attrition within the study site associate degree nursing program.

H_a4: There is a significant relationship between the preadmission student characteristic of GPA and attrition within the study site associate degree nursing program.

Research Question 5: What is the relationship between the number of prior (preadmission) college credits and attrition within the study site associate degree nursing program?

$H_0$5: There is no significant relationship between the number of prior (preadmission) college credits and attrition within the study site associate degree nursing program.

H_a5: There is a significant relationship between the number of prior (preadmission) college credits and attrition within the study site associate degree nursing program.

Research Question 6: What is the relationship between the TEAS test scores and attrition within the study site associate degree nursing program?

$H_0$6: There is no significant relationship between the TEAS test scores and attrition within the study site associate degree nursing program.

H_a6: There is a significant relationship between the TEAS test scores and attrition within the study site associate degree nursing program.

Research Question 7: What is the relationship between being an ESL nursing student and attrition within the study site associate degree nursing program?

$H_0$7: There is no significant relationship between being an ESL nursing student and attrition within the study site associate degree nursing program.

H_a7: There is a significant relationship between being an ESL nursing student and attrition within the study site associate degree nursing program.

Research Question 8: What is the relationship between having LPN licensure and attrition within the study site associate degree nursing program?

$H_0$8: There is no significant relationship between having LPN licensure and attrition within the study site associate degree nursing program.

H_a8: There is a significant relationship between having LPN licensure and attrition within the study site associate degree nursing program.

Review of the Literature

Student attrition in relation to student characteristics has been documented in the professional literature. Many researchers have studied student attrition in relation to specific student characteristics using both quantitative and qualitative approaches (see Blair & Herrera, 2015; Bosch et al., 2012; Donnell, 2015; Moceri, 2010; San Miguel, Townsend, & Waters, 2013). In this subsection, I will provide an overview of the framework that guided the project study. This section will also contain my review of the professional literature concerning student attrition.

Theoretical Foundation: The Framework

Jeffreys's nursing undergraduate retention and success (NURS) model served as the theoretical framework of this study. Jeffreys (2012) used the NURS model to explain how diverse factors affect nursing student attrition. Jeffreys (2015) named a number of factors related to student academic success. The author suggested that student academic success depends on a multifaceted interaction between student profile characteristics, student affective characteristics, student academic factors, and environmental factors. Student profile characteristics refer to those characteristics students have prior to starting a nursing program, such as age, gender, race, ethnicity, ESL, and prior educational skills and knowledge (Jeffreys, 2015). Student affective characteristics refer to students'

values and beliefs about their academic self-capabilities (Jeffreys, 2015). Student academic factors describe personal attributes such as study skills, study hours, and class attendance and schedule, as well as academic supportive services (Jeffreys, 2015). Environmental factors, on the other hand, refer to other external factors that can affect students' academic performance, such as finances, family support, family responsibilities, the number of hours worked, living situations, and transportation (Jeffreys, 2015).

In addition, the NURS model highlights several assumptions. Jeffreys (2015) assumed that nursing student retention is a priority issue for national and international educators and that student retention is a "dynamic and multidimensional phenomenon that is influenced by the interaction of multiple variables" (p. 426). Furthermore, the author explained that environmental factors, professional integration factors, psychological factors, prior academic performance, work experience, preprofessional integration, and socialization all impact student attrition. Within the NURS model, the author also stated that the best nursing student outcomes would be obtained "by focusing more comprehensively on success as going beyond minimal standards toward optimizing outcomes aimed at achieving peak performance potentials; and optimizing outcomes necessitates a holistic approach that focuses on proactive inclusive enrichment (PIE) and avoids exclusive remediation (ER)" (Jeffreys, 2015, p. 426).

Jeffreys's NURS model aligned well with this project study, as this model explains the relationship of nursing student attrition and student background characteristics. Some of the student characteristics discussed in the NURS model that pertain to the project study include Jeffreys's variables of age, gender, and ethnicity,

prenursing GPA, local institutional credits, transferred credits, and language background. According to Jeffreys (2012), nontraditional students are at higher risk for attrition. The author defined nontraditional undergraduate nursing students were students enrolled in a diploma, associate degree, or generic baccalaureate program and who were also 25 years or older, commuters, part-time students, males, an ethnic and racial minority, and spoke ESL. Other characteristics of nontraditional nursing students that Jeffreys (2012) described included having dependent children, having a general equivalency diploma, and requiring remedial courses.

One important purpose of the NURS model is to help identify students at risk of attrition (Jeffreys, 2015). Similarly, one of my goals with this project study was to obtain information to facilitate early identification of students that are at risk of attrition. Early identification of at-risk students can allow nursing faculty to implement academic interventions in a timely manner, with the end goal of reducing nursing student attrition.

Review of the Broader Problem

I conducted this literature review using online resources and databases. The majority of the articles I used in the literature review were located using the databases available through the Walden University online library, some of which included Academic Search Complete, CINAHL Plus With Full-Text, Education Research Complete, ERIC, and PsychINFO. Other external resources included the National League for Nursing and the Sigma Theta Tau International Nursing Society databases. My search was limited to articles published between 2010 and 2015. Keyword search terms included *attrition, retention, success, failure, nursing student, minority nursing*

students, associate degree nursing students, associate degree nursing programs, age, gender, ethnicity, language, ESL, LPN, LVN, licensed practical nurse, GPA, and *TEAS*, among others.

Age, Gender, Race, Ethnicity, and Language

Prior research has indicated the existence of a relationship between student characteristics and attrition. For instance, Donnell (2015) conducted a study that investigated the relationship between several student characteristics and nursing student attrition rates. The student characteristics included being a first-generation college student, being an ESL learner, ethnic background, age, and gender (Donnell, 2015). According to Donnell, the study results suggested that unsuccessful students are more likely to be older, Black, males, first-generation college students, and ESL students. In a similar quantitative study, Fontaine (2014) investigated the association between student demographics and program completion within an associate degree nursing program. Fontaine found that younger students had higher completion rates than older students. Both of these studies reinforce Jeffreys's (2012) NURS model, which explained that ethnic background, age, and language background are related to high attrition levels among nursing students.

Several other researchers have investigated similar student characteristics from quantitative and qualitative perspectives. San Miguel et al. (2013) argued that students from ESL backgrounds experience more challenges in nursing programs. The researchers explored the effects of an implemented ESL tutorial program, which was integrated into the first year of the nursing students' curriculum for students at risk of

attrition based on a diagnostic assessment test. The research participants expressed a sense of shame initially, related to scoring poorly on the diagnostic assessment tests but later developed feelings of comfort as a result of interacting with other ESL students in the tutorial groups. Overall, the participants felt that the tutoring program was helpful in improving their English proficiency. The findings of the study add support to other research studies discussed in this section that indicated the existence of a relationship between ESL students and higher incidence of challenges within nursing programs (Donnell, 2015; San Miguel et al., 2013). In addition, the tutoring program used by the researchers can provide a viable strategy to help reduce attrition among ESL nursing students.

Racial and ethnic backgrounds may present additional barriers to academic success for nursing students. Moceri (2010) conducted a descriptive qualitative study to explore the strategies used by Hispanic nursing students to overcome obstacles in nursing programs. The study results suggested that successful students are very motivated, maintain strong cultural and family bonds, and describe themselves as stubborn. Study results also indicated that the participants encountered institutional obstacles such as academic policies, nursing program routines, and faculty attitudes that were perceived as barriers. These findings aligned with the assertions made by Jeffrey's model, which suggested that students from ethnic minority backgrounds might face challenges, which increase the incidence of attrition among these groups.

In a similar qualitative study, Nadeau (2014) explored the experiences of Latina nursing students and the academic challenges they faced. Nadeau found that study

participants identified science courses, such as biology and chemistry, as their most challenging subjects. Participants also indicated that an attribute of perseverance and establishing connections with others and with nursing faculty influenced academic success. These findings might help explain some of the challenges ethnic minority students encounter within academic nursing settings.

Some of the academic challenges faced by students from ethnic minority backgrounds might be associated with language issues. Andrew et al. (2011) presented the results of a quantitative study investigating the impact of diverse language background on nursing student attrition and program completion. The authors reported that the two most predictive student characteristics in program completion within a minimum expected time frame were higher GPAs and being a native English speaker (when compared with nonnative English speakers). In another study, Mulready (2013) presented the results of a qualitative research study that explored the experiences of associate degree nursing students identified as ESL learners and their perceived barriers to academic success. Mulready indicated that students who learn English together with the language of nursing and health care need more time to learn and face more academic challenges than other groups. The findings of these two studies provided additional justification for my inclusion of student characteristics of GPA and language background in this project study.

Besides GPA and language background, ethnic background has also been associated with increased incidence of student attrition. Bull et al. (2012) explored the experiences of ethnically diverse nursing students to examine barriers to academic

persistence faced by students from diverse backgrounds within nursing programs. The researchers identified themes that presented barriers to academic success, including "not feeling connected to the college of nursing" and "difficulty with utilizing technology," as well as student perceptions of being "physically present in the environment but not socially integrated or fully accepted" (p. 325). In a qualitative study, Dapremont (2014) found that Black nursing students perceived that having a daily routine and meeting with diverse peer study groups had positive effects on academic success in a nursing program. Oosterbroek, Ponoma, and Sedgwick (2014) found that students from ethnic minority backgrounds encountered challenges developing a sense of belonging and interacting with faculty, peers, and nurses in the clinical setting. These findings present another perspective on the many challenges faced by students from ethnic minority backgrounds within the nursing academic settings and add to the expanding research evidence suggesting the association between ethnic background and attrition. Consequently, I also included these variables of student race and ethnicity in this project study.

Another research study yielded contradictory results concerning language background and attrition. Cantwell, Gundersen, Napierkowski, and Naqvi (2015) investigated the effects of a program implemented to provide academic support for ethnic minority students within a nursing program. The researchers evaluated the program's results in relation to student attrition and standardized test scores using the TEAS. The study results did not indicate significant differences in the risk of attrition among the study participants that were based on standardized test scores, race, and ethnicity. These findings are inconsistent with other research literature I reviewed regarding student

attrition and other standardized tests scores. The project study I conducted also investigated the possible relationship between nursing student attrition and TEAS scores.

Literature outside of nursing education also supports the existence of a relationship between student characteristics and student attrition. Bornovalova, Hunt, and Lucio (2012) used data from a large educational longitudinal study conducted by the National Center for Statistics, which included a nationally representative participant sample of 14,796 students. The authors found that male gender is significantly related to a risk of academic failure and that female students tend to have higher GPAs. The study results also indicated that race has a significant relationship with GPA. Students from Asian backgrounds had the highest GPA averages, followed by White students, Hispanic students, and Black students. These findings are similar to other research results I reviewed and supported the theoretical framework selected for this project study, which also investigated race, ethnicity, and GPA scores.

Prior Course Grades, GPA, Credits, and Standardized Test Scores

Besides the influences of age, gender, race, ethnicity, and language, other researchers have suggested a relationship between nursing student attrition, course grades, and overall GPA scores. Bosch et al. (2012) investigated nursing student characteristics, such as GPA scores and prior course grades, in relation to attrition among bilingual nursing students. Their research results indicated that prior grades in science courses and GPA prior to entering the nursing program are predictive of academic persistence. Similarly, Burns (2011) conducted a correlational study investigating the relationship between preadmission test scores and nursing student attrition. The study

findings suggested that there is a relationship between preadmission GPA and attrition. The results of these two studies also supported the assertions of the theoretical framework I chose for this project study.

In another quantitative study, Brenkus et al. (2013) investigated which student characteristic was the most influential predictor of success for students in the first semester of a nursing program. Some of the student characteristics that the researchers investigated included age, preadmission standing (GPA), standardized admissions test scores, and first-semester test scores. The researchers' findings suggested that there is no relationship between age and first-semester academic success. However, they found that prior GPA and standardized admissions test scores are related to semester academic success. The authors suggested that a minimum GPA of 3.0 should be required as a criterion for nursing program admission.

The findings presented by Brenkus et al. (2013) regarding age contradicted the NURS model (Jeffreys, 2012), which was the theoretical framework I used for the project study. The Brenkus et al. (2013) findings about age also contradicted other study findings that suggested the existence of a relationship between students' age and attrition (Donnell, 2015; Fontaine, 2014). However, the findings presented by Brenkus et al. (2013) regarding the relationship between prior student GPA and attrition is supported by the theoretical framework of the project study and by prior research findings (Donnell, 2015; Fontaine, 2014; Jeffreys, 2012). In this project study, I included both students' age and prior GPA as research variables.

Other researchers have investigated the relationship of prior academic performance and nursing student attrition. Blair and Herrera (2015) conducted a quantitative study to examine the relationship between prior science course grades (specifically, human pathology) and success in an upper-level nursing course. The researchers found that the grades students obtained in the human pathology course were predictive of success in the upper-level nursing course. In another study, Antonious, Morin, Schiffman, and Torregosa (2015) found that preprogram entrance GPA is predictive of nursing program performance. These findings support the notion that grades prior to entering the nursing program and grades in prenursing science courses are predictive of student success in nursing programs. The assertions made by these researchers regarding attrition and students' prior coursework grades, GPA, and standardized test scores support the assertions contained in the NURS model.

Prior coursework in terms of prenursing preparation might have an impact on nursing student attrition. Edmonds (2013) conducted a qualitative study to explore the effect of an introductory nursing course on nursing student attrition due to voluntary withdrawal. The introductory nursing course targeted prenursing students before entering the nursing program. The course introduced students to diverse topics of relevance to nursing, such as the history of the nursing profession, stress and burnout in nursing, different educational degrees in nursing, and nursing licensure. The study's participants stated that the introductory course had a positive effect in orienting them to the realities of nursing education and the nursing profession. Edmonds (2013) noted that this finding was important because students who have realistic expectations about the demands of

nursing programs, nursing education, and the nursing profession might make a more informed decision about pursuing a nursing education, which in turn might keep voluntary attrition levels low. Participants of the study conducted by Edmonds (2013) also stated that the course promoted connections and the establishment of relationships with other prospective nursing students and with nursing faculty who taught the introductory course. Building connections and mentorship relationships with faculty have been documented in the literature as being beneficial to nursing students' success (Jeffreys, 2012; Shelton, 2012).

Another variable of interest in this project study was the relationship between the number of preadmission credits and attrition. The number of preadmission credits is one of the criteria used for program admission decisions at the research site. Therefore, I included preadmission credits as one of the variables for my project study. However, there was a lack of literature in regard to preadmission credits and attrition. Some of the databases I searched included Academic Search Complete, CINAHL Plus With Full-Text, Education Research Complete, ERIC, and PsychINFO. The search was limited to articles published between 2010 and 2016. Some of the search terms included *success, student success, nursing student success, retention, attrition, failure, admission, admission criteria, credits, admission credits, preadmission credits,* and *prior college credits.* Despite using multiple databases and various search terms, I was not able to locate information about preadmission credits.

Up to this point, most of the articles located and reviewed focused on attrition in regard to associate degree nursing students or baccalaureate nursing students. However,

another area of personal interest that was investigated within the project study related to attrition among LPN-to-RN bridge students. In the next section, I will present a discussion related to the literature findings about LPN students.

LPN Nursing Students

Success among nursing students with prior LPN licensure was another area of interest for this project study. However, an exhaustive literature search about LPN status and its relationship to nursing student attrition revealed that available literature on the subject was lacking. The National League for Nursing databases, the Sigma Theta Tau International Nursing Society Library, the Walden University databases, as well as other Internet sites, were searched with minimal success. Some of the search terms used were *LPN, licensed practical nurse, licensed vocational nurse,* and *LVN*. The search revealed only a few studies related to LPN students in bridge nursing programs.

Students with prior LPN licensure may encounter obstacles in bridge nursing programs. Melrose and Wishart (2013) conducted a qualitative study to explore the experiences in the clinical practicum setting of LPN students in a baccalaureate bridge program. The researchers indicated that LPN students face challenges related to negative biases in the clinical setting that interfere with academic performance. Patients and other hospital staff treated students who were already RNs better than they did LPN students.

Gordon, Janzen, Melrose, and Miller (2013) conducted another qualitative study to explore and understand the transition process from LPN student to baccalaureate nurse and found similar results. Although these studies presented interesting information, the studies did not encompass my research interest, as these studies focused on the transition

from LPN to a baccalaureate graduate. My research interest pertained to LPN students transitioning to associate degree graduates. In addition, these studies were conducted in Canada.

Barra (2013) conducted a quantitative study to investigate the effects of a medical mathematics course on attrition among African American students within an LPN-to-RN associate degree bridge program. After implementing the changes, attrition decreased from 50% to a range between 8% and 34% over three years. The research findings were expected to help explain the challenges that LPN students appear to face within the nursing program where I conducted the project study. This study was interesting because it took place within an associate degree program in my state, which corresponds to the type of program and location of my study. The study also addressed race, ethnicity, and LPN status, which are student characteristics investigated in the project study I conducted.

Other Student Characteristics

Several researchers have indicated that attrition may be related to other characteristics besides those previously discussed. For example, Beauvais et al. (2014) and Fernandez et al. (2012) discussed studies that investigated the relationship between emotional intelligence and academic success among nursing students. These researchers suggested that emotional intelligence is related to academic success. In another study, Shelton (2012) presented the results of a quantitative research study performed with the purpose of examining the role of student self-efficacy in relation to nursing student academic success. The results suggested that perceived faculty support and self-efficacy

are related to both persistence and academic performance. In another similar study, Reyes and Taylor (2012) investigated the relationship between students' resilience and self-efficacy and the test grades obtained among nursing students at the start and at the end of one nursing semester. Self-efficacy was described as one's beliefs regarding one's performance capabilities, and self-resilience was defined as one's belief about the ability to depend on oneself. The researchers found a weak correlation between test scores, resilience, and self-efficacy. In another qualitative research study, Williams (2010) examined factors that are associated with student persistence in nursing programs. The researcher suggested that nurturing personal connections with students could improve student motivation and retention. Although the theoretical framework for the project study I conducted aligned with these studies about other student characteristics, these additional characteristics were not included in my project study for feasibility reasons.

Implications

Studying the relationship between nursing student characteristics and attrition provided information for early identification of students who might be at risk of attrition in the nursing program. The early identification of students at risk for attrition can provide faculty with an opportunity to implement timely interventions to promote student success. Since I investigated the relationship between nursing student attrition in relation to several factors, the results of the project study provided information that I used for a comprehensive culminating project. For my project study, I developed a policy recommendations or a position paper in regard to the program's admission process at the research site. In the policy paper, I also included recommendations for early

identification of students who might be at risk for attrition along with supportive measures for these students.

First, with the investigation of nursing students' preadmission factors (which are used to make decisions about candidate admission), I designed a project to revise the program's admission process at the research site. The preadmission criteria used at the research site include preadmission GPA, prior (preadmission) number of college credits, and the scores on the TEAS entrance examinations. The project included the revision of the program's admission process, which included increasing the minimum TEAS composite score from 50% to 55%. Another revision based on the results of the study was to increase the minimum required math score from 50% to 55%. In addition, I recommended that the minimum required admission GPA be increased from 2.0 to 2.5.

I included recommendations for supportive services for ethnic minority students including the implementation of a student peer mentorship program aligning ethnic minority nursing students in the upper nursing courses with ethnic minority nursing students in the lower nursing courses. Besides the peer mentorship program, I recommended a faculty mentorship program to pair students with faculty members throughout the nursing program. I also recommended that a student orientation course or informational session be developed and implemented to provide students with information about the demands of nursing education and the nursing profession in general. Students who have realistic expectations in regard to nursing education and the nursing profession may make more informed decisions about the challenges they will

face. The orientation program or informational session could be delivered to students electronically or in a face-to-face format.

Summary

The problem of student attrition in nursing programs has been documented in the professional literature. The literature that I reviewed in this section pointed to the existence of high attrition levels beyond the local site as well. The literature also indicated that nursing student attrition might be related to specific student characteristics. Conducting a correlational project study provided information that I used to recommend revisions to the study site's admissions process. The information I obtained from my study also provided information to assist with early identification of nursing students who might be at risk of attrition. The early identification of these students would allow nursing program administrators and nursing faculty to provide timely student support measures. Timely interventions for students at risk of attrition will help promote student success and ultimately reduce attrition within the nursing program, thereby promoting positive social change. In the next section of this project study, I will describe the project study's methodology. Some of the specific areas that I will discuss in the methodology section include the sampling procedures, data collection, data analysis, and findings.

Section 2: The Methodology

Introduction

A crucial criterion of any research methodology is that it aligns appropriately with the research strategies, research methods, and the type of data gathered and analyzed in order to answer the study's research questions (Ghoshal, Sinha, & Taylor, 2008). In this section, I will present the study methodology I employed to align with the goals of the project study. Some of the areas that I will discuss in the methodology section include the research design and approach, population and sampling, data collection and data analysis, assumptions, limitations, and findings. I will conclude this section with a discussion of the procedures that I used to ensure the protection of the participants' rights.

Research Design and Approach

Research designs and approaches refer to specific methods used to conduct research studies (Marchand-Martella, Martella, Morgan, & Nelson, 2013). Researchers tend to use qualitative designs, quantitative designs, or mixed methods designs (Bogdan & Biklen, 2007; Creswell, 2009, 2012; Merriam, 2009). In this project study, I incorporated a quantitative design with a correlational approach. Quantitative research is suitable when numerical data are gathered and analyzed to answer the research questions in a study (Muijs, 2011). Since I used archival numerical data, a quantitative study was appropriate. The goal of a correlational study is to examine the relationship between variables of interest with the use of statistical analysis (Marchand-Martella et al., 2013). A correlational design was appropriate because I investigated the relationships between

selected nursing student characteristics and nursing student attrition. The alternative, a qualitative research design, was not appropriate for the project study because qualitative research incorporates nonnumerical data to explore participants' perceptions or to understand the meaning that individuals construct about their experiences or contextual environments (Bogdan & Biklen, 2007; Creswell, 2009, 2012; Merriam, 2009). Qualitative research mainly incorporates the use of interviews and observations as data collection strategies (Bogdan & Biklen, 2007; Creswell, 2012; Merriam, 2009). Another common design used by researchers is mixed methods research, which combines quantitative as well as qualitative data collection and data analysis strategies in a single study (Creswell, 2009, 2012). Creswell (2009) stated that mixed methods designs are appropriate to use in research studies that incorporate both qualitative and quantitative research questions. A mixed methods design was not necessary for this project study as a quantitative-only design was adequate to answer the project study's research questions.

Setting and Sample

Research Site and Population

I conducted this project study in the nursing program of an associate degree community college located in the northeastern United States. I used City-Data (2015) to gather demographic data about the community college. The college is located in a densely populated area. Over 70% of the residents in the area were from Hispanic backgrounds, and about 30% were from Caucasian, African American, and other backgrounds.

The population in the project study was comprised of all of the nursing students admitted to the associate degree nursing program between the Spring 2011 and Fall 2013 semesters. These students had already completed the program, were currently in the program, failed, or withdrew from the program. Each year, between 75 and 95 students were admitted to the nursing program (for both the evening and the day nursing programs), which provided an available sampling pool of 333 students over the three years.

Sample

I employed a convenience sample extracted from the population using a simple random sampling strategy. A convenience sample involves the use of individuals who are available to the researchers (Marchand-Martella et al., 2013). One major disadvantage of using a convenience sample is that the researchers cannot generalize research results obtained from a research study (Marchand-Martella et al., 2013). However, in this case, a convenience sample was justifiable because the goal of this project study was to gain research knowledge on a specific population, not to generalize the results beyond the research site. In addition, a convenience sample is suitable when feasibility constraints limit the researchers' alternatives (Ghoshal et al., 2008; Stommel & Wills, 2004).

Sample Selection

To select the sample, I used simple random sampling. This type of sampling is used to ensure that participants are representative of the population and that each participant will have the same chance of being selected from the population (Marchand-

Martella et al., 2013; Creswell, 2012). Prior to data collection, I used archived student rosters to locate all students admitted to the nursing program within the desired time frames. I reviewed the rosters and removed any students who were duplicate entries (students who had repeated a course). I also removed students who entered the program prior to the spring of 2011. The resulting possible participant pool contained 333 students based on the inclusion and exclusion criteria. The records were organized and numbered from one to 333. Then, using random number generator software, I drew a simple random sample of 240 students from the pool of 333 students. The number of participants (240) was based on a sample size power analysis using G*Power software (Version 3.1.9.2), which indicated that a sample size of at least 220 students was appropriate for the project study. Although the G*Power sample size analysis indicated that the required sample size was 220, I selected a sample of 240 in case some records contained incomplete data or could not be located. Five of the selected student records could not be located and were omitted from the sample. Therefore, I collected data from 235 student records.

Within G*Power, I used an a priori power analysis in order to determine the required sample size using a two-tail correlation (point biserial), with a medium effect size of .30, an alpha probability error of .05, and a power of .95. The G*Power software did not contain settings for the second planned statistical test (phi coefficient); instead, I used the settings for the goodness of fit contingency test based on its similarities with the phi coefficient test. For the latter statistical test (the goodness of fit contingency), the

G*Power software was set using a priori power analysis, which included a medium effect size .30, an alpha probability error of .05, and a power of .95.

Inclusion and Exclusion Criteria

The only inclusion criteria in the project study were that the students had successfully met the program's admission criteria, were admitted to the nursing program, and started the program between the Spring 2011 and Fall 2013 semesters. For the project study, I used existing student archival data; therefore, no participant recruitment was necessary. Details of the process of gaining access to the archival data were included in the data collection and data analysis sections. The college where the project study took place has an agreement with another (alternate) community college where a small number of students can take courses (at that alternate institution) and graduate with an associate degree in nursing granted by the institution where I conducted this project study. Those students at the alternate site were excluded from the project study, as those students were very different from students at the research site in terms of cohort sizes, demographics, and nursing program success rates. The alternate campus is housed within a different community college, which is about 50 miles away from the research site. Students from the research site do not interact with students at the alternate site, and faculties from both sites have limited interaction. The alternate site has a limited capacity, 20 admitted students per year, whereas the primary site has the capacity to admit up to about 90 students per year. Internal institutional records showed that the alternate college has a higher nursing student success rate; usually over 60%. The alternate college also has different demographics from the primary college. Figures from the alternate site showed

that in Fall 2014 the alternate college had a student body composed of 85% Caucasian, and about 15% Hispanic/Latino, African American, and American Indian. In contrast, institutional records from the primary college showed that about 75% of the students came from ethnic minority backgrounds.

Instrumentation and Materials

I used a self-developed abstraction form to collect student data. As shown in Appendix B, the abstraction form was designed to collect information about the students' preadmission GPA scores, the number of preadmission credits, preadmission TEAS scores, and school ID numbers. Secondary archival student data from prior students in the nursing program were collected. Secondary data refers to existing information that is made available to the researcher and that has been collected by someone other than the researcher (Franks, O'Rourke, & Pienta, 2011). In order to use archival data, an appropriate match must be made between the data contained in the archives and the variables the researcher wants to investigate (Franks et al., 2011). All the research variables of interest were contained within the research site's internal institutional records.

Members of the admission committee in the nursing program collect student data using the TEAS entrance exam in order to make decisions regarding student admissions. The students make independent arrangements to take the TEAS exam, which is delivered in a computerized format at a selected testing center (ATI, 2014). The concepts measured by the TEAS include the students' basic academic preparation in the areas of reading, English, language usage, math, and science (ATI, 2014). However, members of

the admission committee at the research site use only scores in math, reading, and English for program admission purposes. As shown in Table 2, students must obtain a minimum TEAS passing score of 50%, which allots students one point. Students are allotted one additional point for each four points above the minimum passing score of 50%.

I used data abstraction forms and a Statistical Package for Social Sciences (SPSS) database for the collection and organization of data. I kept the data in a password-protected computer file, which was backed up to an additional external password-protected computer drive to prevent loss of data in case of file malfunction. Student data from the study site were made available in disaggregated format after I received approval from Walden University's institutional review board (IRB). The student data were linked to individual students; therefore, measures to protect students' identity were necessary. I will discuss these measures under the Protection of Participants' Rights subsection.

Instrument reliability and validity are important concepts in any research study. Instrument reliability refers to the instrument's ability to produce similar results or scores on repeated occasions; instrument validity, on the other hand, refers to the instrument's ability to measure what the researcher desires to measure (Linn & Miller, 2005). One of the variables that I investigated in this project study was standardized program entrance test scores using the TEAS test as an instrument. Admission officials who use the TEAS scores to make decisions about student admissions expect that students with higher TEAS scores will have better outcomes in the nursing program (ATI, 2014). To establish TEAS validity and reliability, the Assessment Technology Institute (n.d.) conducted a

study, in which data were collected from 3,084 nursing students between the years 2009 and 2011. Results of the study suggested that there was a significant statistical relationship between the students' scores and attrition, confirming the ability of the TEAS to predict students' likelihood of success or failure.

I used archival or existing nursing student data in this project study. Stommel and Wills (2004) suggested several issues for consideration when using archival data to conduct research studies. Researchers should be aware of possible issues with the reliability and validity of archival data (Stommel & Wills, 2004). Archival data have already been collected by someone other than the researcher; therefore, the researcher cannot ensure the quality of the data collection process (Stommel & Wills, 2004). Another possible issue with the use of archival data might be inaccurate data that result from changes in policies, procedures, or standards of which the researcher may not be aware (Stommel & Wills, 2004).

The project study I conducted involved the examination of nursing student attrition, which is based heavily on overall student course scores. In order for students to succeed in the nursing program, they must obtain a pass designation in the clinical component of the course and maintain a passing score of 74.5 or higher in the didactic portion of the nursing course. For the clinical component, the nursing faculty uses a standardized clinical evaluation tool to assess whether students have met the preset clinical objectives. Students receive a pass or fail designation for the clinical component of the course. Passing the didactic portion of the course is dependent on achieving a passing score in four or five unit exams and one cumulative final exam. The exams are

crafted using standardized test bank questions to help ensure test reliability. Before any question is used in an exam, a group of faculty reviews each exam question for clarity and content validity. I have been employed at the research site as a part-time nursing faculty member since the fall of 2009 and as a full-time nursing faculty member since the spring of 2011, and I am, therefore, familiar with the student testing and grading procedures, which up to the time of the study have remained the same.

Data Collection and Data Analysis

Before the data collection started, I secured approval from Walden University's IRB. The Walden's IRB approval number is 08-16-16-0397036. I also obtained approvals from the director of institutional research (IR) and the dean of the nursing program at the study site. I received a signed letter of cooperation and signed data usage agreement form from the director of IR at the research site. Once all appropriate approvals were granted, I made arrangements with the dean of the nursing program and with the director of IR at the research site to collect all pertinent student data. At the research site, staff from the IR office and the nursing program collect and archive raw student data for internal use. Student information within the IR office was maintained electronically, and student information within the nursing program (satellite site) was maintained in paper records.

The dependent research variable for the project study was nursing student attrition within the study site associate degree nursing program. The independent variables for the project study were nursing student characteristics including age, gender, ethnicity, ESL background, LPN licensure status, GPA, the number of prior college credits, and

standardized nursing entrance test scores using the TEAS. Information on all the variables of interest was collected from either the nursing programs (paper records) or the IR office (electronic databases). I collected data from a sample of students who were admitted to the nursing program between the spring of 2011 and the fall of 2013.

I carried out data collection in two stages. I conducted the first stage of data collection at the institution's nursing program located at a nearby satellite campus. The first stage of data collection involved reviewing the 235 student records in the sample and collecting data about preadmission GPA, preadmission credits, and TEAS scores. These were the three variables that were extracted from the nursing program's archival paper records using a self-developed abstraction form (see Appendix B). I also collected student school identification (ID) numbers for tracking purposes (to link students from the paper records to the electronic databases). I then entered the data from the abstraction forms into a newly created database in SPSS. The new electronic database contained each student school ID and all the student information that could be found within the nursing program paper records (preadmission GPA; the preadmission number of credits; and nursing entrance TEAS exam scores for math, English, and reading). I added additional columns for the remaining information needed and gave the new database to the director of IR at the study site (for data merging). The second stage of the data collection process began when the new database was given to the director of IR at the research facility to enable data merging, adding information on remaining research variables. Data about age, gender, ethnicity, ESL status, and LPN status were added to the database by the director of IR.

According to internal institutional records, staff at the research site collected the actual student birth dates (day, month, and year) for the age variable. In my study, I used that information to calculate students' ages at the start of the program. Other institutional records showed that the categories used to collect data for race and ethnicity included "Hispanic/Latino, American Indian/Alaskan Native, Asian, Black/African American, Native Hawaiian/Pacific Islander, and White". Since all LPN students must take an LPN transition course at the beginning of the nursing program, participation in that course was used to determine if students had LPN licensure prior to the start of the program. Additionally, the director of IR provided information about student attrition, graduation, and time to program completion. As noted in the section on definition of the problem, nursing student attrition referred to any student who started the nursing program but did not graduate from the program within six semesters (150% of the program length) due to voluntary withdrawal, academic failure, or program dismissal. Once the director of IR finalized the new database, the database was deidentified by removing the student ID numbers before returning it to me.

The database contained nominal data for the variables of gender, ethnicity, ESL background, LPN licensure status, and the dependent variable of attrition. Nominal data refers to information or variables that are categorical and are not ordered (Marchand-Martella et al., 2013). The database contained interval data for the variables of age, GPA scores, TEAS scores, and the number of prior credits. Interval data refers to information that contains equal intervals that can be organized from a lower point to a higher point or vice versa. Because interval data can be organized in equal intervals, the data can be

used to compare differences in higher or lower performances (Marchand-Martella et al., 2013).

After data collection, I cleaned the data and prepared it for analysis. To prepare the data, I reviewed the database for any inaccuracies or incomplete data (see Creswell, 2012). For each variable, I completed frequencies analysis in SPSS to determine if any of the data were out of the expected ranges. I found two entries for age (14 and 16 years) and some program entry dates that were outside the expected range (prior to the year 2010). I contacted the director of IR, and it was determined that the age entries were probably clerical errors, but that information could not be obtained at that point (those data points were left as missing for the two ages). I also discussed with the director of IR the issue that although some students are admitted to the institution as prenursing students, actual admission to the program is a separate process, and therefore I needed to know when the students started the nursing program (took the first nursing course) rather than when they were admitted to the institution. That information was recollected, and the database was updated with the correct program entry dates.

After cleaning and coding the database, I used SPSS for data analysis. SPSS is a computer software package that permits researchers to perform complicated statistical analysis more quickly and easily (Feeney & Kirkpatrick, 2015; Li & Lomax, 2011). Using the SPSS program, I first performed a descriptive statistical analysis. A descriptive analysis allows researchers to describe the data sets (Marchand-Martella et al., 2013). Descriptive statistics summarize sets of data for easier presentation and may be presented in tables, graphs, or single numbers such as averages or percentages (Linn &

Miller, 2005). Descriptive statistics can include measures of central tendency as well as measures of variability (Linn & Miller, 2005; Marchand-Martella et al., 2013).

Then, I used inferential analysis using the SPSS software to test the research hypotheses and answer each of the research questions in the project study (Marchand-Martella et al., 2013). Inferential statistics allow researchers to make inferences about a study population based on the analysis of a selected sample (Linn & Miller, 2005; Marchand-Martella et al., 2013). The specific statistical tests that I used to analyze the data included point biserial and phi coefficient. The point biserial statistical test is appropriate for use when one of the variables is nominal (or categorical) and the other variable is numerical or continuous; on the other hand, the phi coefficient is appropriate to use when the variables are nominal and dichotomous (Marchand-Martella et al., 2013).

I used several research questions in this study that aligned with each of the nursing student variables I investigated. The first three research questions involved the variables of age, gender, and ethnicity. The first research question in the study was: What is the relationship between student characteristics of age and attrition within the study site associate degree nursing program? To investigate the possible relationship between age and attrition, I used the point biserial test. The second research question in the project study was: What is the relationship between the student characteristic of gender and attrition within the study site associate degree nursing program? The third research question was: What is the relationship between the student characteristic of ethnicity and attrition within the study site associate degree nursing program? To

investigate the possible relationship between gender and attrition as well as the relationship between ethnicity and attrition, I used the phi coefficient test.

I also used research questions for the student characteristics of GPA, preadmission college credits, and TEAS scores. In regard to GPA, the fourth research question was: What is the relationship between the preadmission student characteristic of GPA and attrition within the study site associate degree nursing program? For the number of preadmission credits, the fifth research question in the project study was: What is the relationship between the number of prior (preadmission) college credits and attrition within the study site associate degree nursing program? The sixth research question was: What is the relationship between the TEAS test scores and attrition within the study site associate degree nursing program? To investigate the fourth, fifth, and sixth research questions, I used the point biserial test.

The final two research questions of this project study related to ESL status and LPN licensure. For ESL, the seventh research question was: What is the relationship between being an ESL nursing student and attrition within the study site associate degree nursing program? In regard to LPN licensure, the eighth research question was: What is the relationship between having LPN licensure and attrition within the study site associate degree nursing program? To investigate the possible relationship between ESL status and attrition and LPN status and attrition, I used the phi coefficient statistical test.

Assumptions, Limitations, and Scope and Delimitations

Assumptions

One assumption in this project study was that the student characteristics or variables selected might have a relationship with the issue under investigation (nursing student attrition). It was also assumed that the issue of nursing student attrition represents a meaningful challenge to nursing faculty, nursing program administrators, and, most importantly, to nursing students. I anticipated that the sample, the data, and the research methods would provide useful research information to help with early identification of nursing students at risk for attrition in the associate nursing program. I presumed that early identification of students who might be at risk for attrition and the provision of supportive educational measures would help reduce nursing student attrition.

Limitations

The research method and approach selected (correlational) limited the project study. Correlational research can provide evidence of the existence of a possible relationship among variables, but cause and effect relationships among variables cannot be established in the manner that experimental research can provide (Creswell, 2012; Marchand-Martella et al., 2013). However, the use of correlational research is justifiable in most educational research because the researcher is often not able to manipulate the research situation, as would be required by an experimental study (Creswell, 2012). In the project study, I incorporated a convenience sample, restricted to a single site, which limited the ability to generalize the research results beyond the local institution.

Scope and Delimitations

The scope of the project study encompassed specific nursing student characteristics (age, gender, ethnicity, ESL status, LPN status, the number of prior credits, GPA, and TEAS scores). These variables represented the project study's independent variables. In addition, nursing student attrition was the dependent variable for the project study. These variables were selected based on records from the nursing program indicating the existence of high levels of attrition. I selected the independent variables based on evidence from an extensive literature review and the NURS model, which suggested possible relationships between the project study's independent and dependent variables. In terms of project study delimitations, I was able to control which students (records) were included or excluded from the project study. The inclusion and exclusion parameters were chosen to help ensure that the students selected had similar characteristics. I discussed the details regarding the inclusion and exclusion criteria in the setting and sample subsection.

Protection of Participants' Rights

To conduct this study, I used archival data from the research site's institutional records; therefore, there were no actual research participants. In order to ensure the protection of the students whose records I selected for this study, individual students were deidentified by removing all personal student identifiers. The only student identifier maintained for tracking purposes was the student ID number; however, the data were deidentified (removed ID numbers) as soon as the data collection was completed. I protected the data gathered and the research results by storing the information in a

password-encrypted flash drive. I stored the flash drive in a locked filing cabinet. I will destroy the information contained within the flash drive after five years have elapsed.

Data Analysis Results

I collected data in 240 cases. Before data analysis, I cleaned the data by visual inspection. In addition, I performed analyses of missing and out of range values. Out of the 240 cases, five cases were removed during data cleaning for varied reasons. For example, I removed three from the database because the program start dates were outside the desired data collection time frame. The desired data collection time frame was from the spring of 2011 to the fall of 2013. However, the three out of range program start dates were in 1999, 2000, and 2010. I removed two other cases from the database because the program start dates were missing, which made it impossible to calculate the program completion length and determine if it was within the six semesters (or 150% of the program length). After removing the five cases, 235 valid cases were used for data analysis. Of the sample of 235 students, 84 students (35.7%) graduated within six semesters or 150% of the program length, and 151 (64.3%) did not graduate within six semesters. The program attrition rate of 64.3% was higher than the attrition rates between Fall 2010 and Spring 2012, which was 45.9% (see Table 1). The results are similar to the usual attrition ranges for the nursing program. Institutional records showed that the program attrition rates for the nursing program tend to be about 50%.

I examined all continuous data for outliers both visually and with box-and-whiskers displays in SPSS. Outliers refer to scores or values in the data set that are different or occur away from most the rest of the values in the rest of the data set

(Chawsheen & Latiff, 2006; Dawson, 2011; Marchand-Martella et al., 2013). Outliers can affect the data analysis results and produce inaccurate correlation coefficient results (Marchand-Martella et al., 2013). I investigated all outliers for possible errors in my data entry. However, because I used archival data, it was impossible to determine if outliers with plausible ranges were caused by errors in data entry at the time of the original data collection. Box-and-whiskers plots incorporate the interquartile method to determine the presence of outliers (Chawsheen & Latiff, 2006; Dowson, 2011). Mild outliers lie within closer proximity to the expected interquartile range, but extreme outliers lie much farther away from the expected interquartile range (Chawsheen & Latiff, 2006; Dowson, 2011) and can, therefore, exert a greater effect on the results of the data analysis For those reasons, any mild outliers encountered were included in the data analysis, and any extreme outliers I found were removed before data analysis.

I performed all data analyses using SPSS version 21. I conducted phi coefficient statistical tests to analyze nominal variables (gender, ethnicity, LPN status, and ESL status). In addition, I used point biserial statistical tests to analyze continuous variables (age, preadmission GPA, the number of preadmission credits, and TEAS scores). I used listwise exclusions in all analyses to ensure that any data points with missing data were excluded from data analysis.

The goal of the analysis was to investigate any possible relationships between nursing student attrition and the noted variables. As discussed earlier, nursing student attrition referred to students who were admitted to the nursing program but did not graduate from the program within a specified time frame, for various reasons. The

specified time frame for graduation was six semesters or 150% of the program length, which was four semesters. Based on the 2015 catalog for the research site, this time frame is used by the research institution to determine student successful program completion. For data analysis, students who graduated from the nursing program within six semesters I coded as 1. Students who did not graduate from the program, or who graduated from the program after six semesters, I coded as 2 (a code of 2 represented program attrition).

Age Variable

I collected information for the age variable on 233 out of 235 records reviewed. Using a box-and-whiskers display in SPSS, I determined that the data did not contain any extreme outliers. As shown in Figure 1, I found four mild outliers for data point entries, corresponding to the ages of 54, 57, 57, and 58. These four mild outliers were left in the database for analysis.

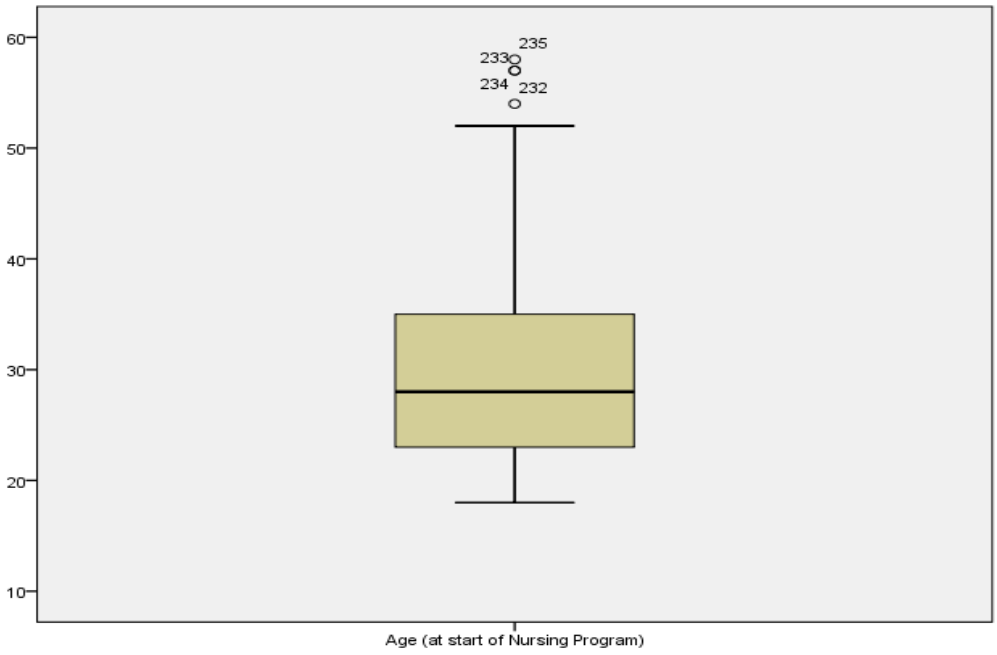

Figure 1. Outlier analysis for age.

Out of the 235 cases for data analysis, two records contained ages out of the expected range (14 and 16 years). Since that archival information could not be verified, those two data points were left as missing in SPSS. Therefore, a total of 233 participants were included in the analysis. The missing data were excluded by listwise exclusion in SPSS. The ages ranged between 18 and 58. The mean age of the participants was 30.22, with a standard deviation of 9.073. The ages collected pertain to the students' ages at the start of the nursing program rather than admission to the institution or the beginning of the prenursing major at the institution. The rationale for that differentiation is that students can be admitted to the institution, but admission to the nursing program is separate from admission to the institution. Members of the admission committee at the

research site consider students for admissions to the nursing program after students have taken a predetermined number of prerequisite courses.

The research question and hypothesis associated with the age variable were stated as follows:

Research Question 1: What is the relationship between the student characteristic of age and attrition within the study site associate degree nursing program?

$H_0$1: There is no relationship between the student characteristic of age and attrition within the study site associate degree nursing program.

H_a1: There is a significant relationship between the student characteristic of age and attrition within the study site associate degree nursing program.

I analyzed the data for the age variable in SPSS by completing a point biserial analysis. Test results indicated a weak negative correlation coefficient (*r* value) of -.075. A weak correlation means that the strength of an association between variables is weak or that only a slight relationship exists (Creswell, 2012; Marchand-Martella et al., 2013). Correlation coefficient sizes of .20 to .35 represent weak relationships (Creswell, 2012). Therefore, a correlation coefficient of -.075 indicated that the variables of age and attrition had a very weak relationship. In a negative relationship, the variables move in opposite directions with one variable value increasing as the other variable value is decreasing (Creswell, 2012; Marchand-Martella et al., 2013; Triola, 2012). Figure 2 depicts the nature of the negative correlation, showing that as age increased, student attrition decreased. For data analysis, I coded as 1 students who graduated within six semesters (or 150% of the program length). Students who did not graduate from the

program or who graduated after six semesters, I coded as 2 (a code of 2 indicated program attrition). As shown in Table 5, the analysis for age and attrition also yielded a two-tailed significance value of .253, which is larger than the preselected *p* value of .05. The results supported the conclusion of failure to reject the null hypothesis, and I, therefore, concluded that no significant relationship existed between age and attrition within the associate degree nursing program (see Creswell, 2012; Feeney & Kirkpatrick, 2015; Triola, 2012).

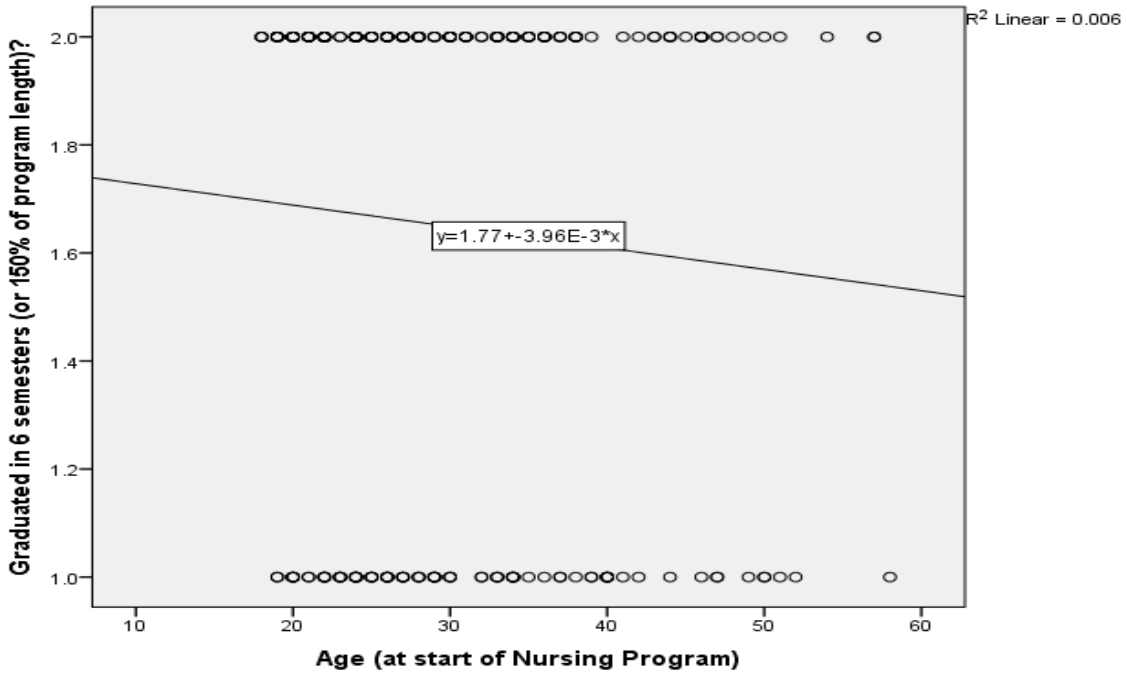

Figure 2. The relationship between age and attrition.

Table 5

Age and Attrition

		Age	Graduated in six semesters
Age	Pearson correlation	1	-.075
	Sig. (two-tailed)		.253
	N	233	233
Graduated in six semesters	Pearson correlation	-.075	1
	Sig. (two-tailed)	.253	
	N	233	233

Note. Age at the start of the nursing program. Attrition refers to students who were admitted and started the program but did not graduate within six semesters. Correlation is not significant ($p = .253$).

Gender Variable

I analyzed data for the gender variable using all 235 cases because there were no missing data. There was a total of 40 (17%) male and 195 (83%) female students in the sample. The sample was selected using a random number generator, and these proportions of male to female students are consistent with those found within the nursing program. As illustrated in Table 6, 36.4% of female students graduated within six semesters as compared to 32.5% of male students.

Table 6

Gender and Program Completion

		Gender		
		Male	Female	Total
Graduated in six semesters	Yes	13 (32.5%)	71 (36.4%)	84
	No	27 (67.5%)	124 (63.5%)	151
Total		40 (17% of sample)	195 (83% of sample)	235

Note. Makeup of the sample by gender and comparison of program completion based on gender. Program completion is based on six semesters or 150% of the expected program length.

The research question and hypothesis associated with the gender variable were stated as follows:

Research Question 2: What is the relationship between the student characteristic of gender and attrition within the study site associate degree nursing program?

$H_0$2: There is no relationship between the student characteristic of gender and attrition within the study site associate degree nursing program.

H_a2: There is a significant relationship between the student characteristic of gender and attrition within the study site associate degree nursing program.

For data analysis, I coded male students as 1 and female students as 2. Additionally, I coded as 1 students who graduated within six semesters, and students who did not graduate or who graduated after six semesters, I coded as 2 (a code of 2 indicated program attrition). The phi coefficient test was used, which yielded a coefficient of -.031. The results indicated a weak negative correlation (r = -.031). That type of relationship represented only a slight correlation, in which as the value of one variable increases, the value of the other variable decreases (see Creswell, 2012; Triola, 2012). As shown in Figure 3, as membership in the female gender group increased, attrition decreased. A slightly higher percentage of female students than male students completed the program within six semesters (36.4% of females compared to 32.5% of males). Analysis results yield a two-tailed significance value of .638. However, because the significance value of .638 was greater than .05, there was evidence to fail to reject the null hypothesis. As presented in Table 7, the evidence suggested that there was no

significant relationship between gender and nursing student attrition within the associate degree nursing program.

Table 7

Gender and Attrition

		Value	Approx. sig.
Nominal by nominal	Phi coefficient	-.031	.638
N of valid cases		235	

Note. Correlation is not significant ($p = .638$).

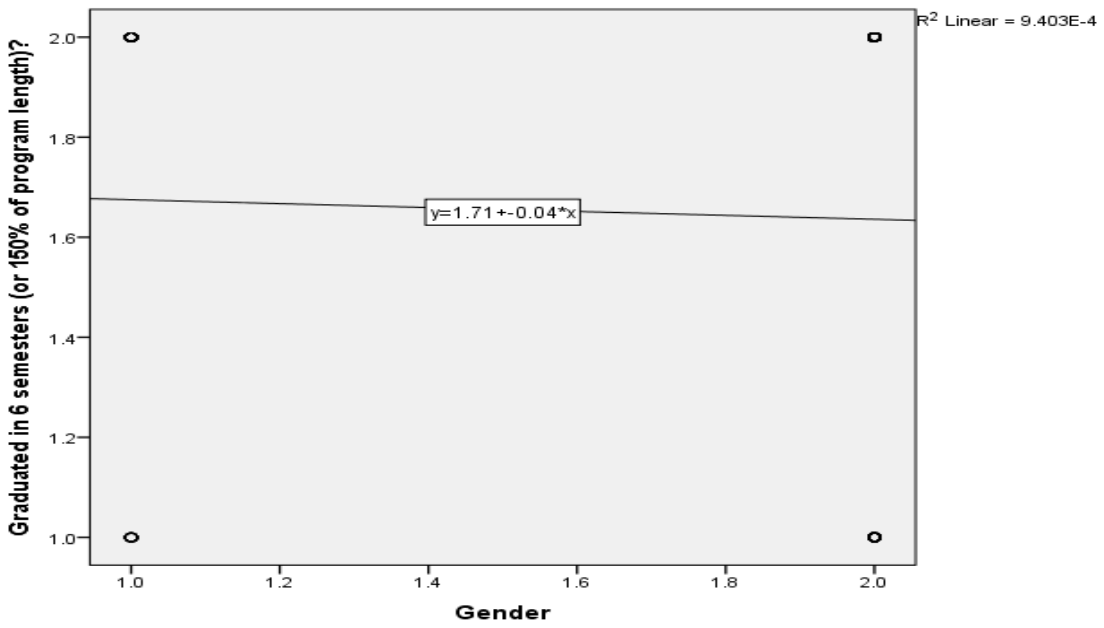

Figure 3. The relationship between gender and attrition.

Ethnicity Variable

I collected variable information on ethnicity using the classifications used at the research site. Based on the institutional profile for 2015, this classification included "Hispanic/Latino, American Indian/Alaskan Native, Asian, Black/African American,

Native Hawaiian/Pacific Islander, and White" The database contained 22 missing cases in which students did not report their race/ethnicity. Therefore, out of the 235 sample size, 213 valid cases were analyzed using listwise exclusions. For the data analysis, I coded the ethnicity variable as 1 for ethnic minority and as 2 for nonminority. I labeled White individuals as nonminority (2), and any other categories, I labeled as ethnic minority (1). In addition, I coded students who graduated within six semesters as 1, and students who did not graduate from the program or who graduated after six semesters I coded as 2 (a code of 2 indicated program attrition). There were 148 ethnic minority students (69.5%) and 65 nonminority students (30.5%). These proportions were expected, as the research site was a community college which served a large number of ethnic minority students.

The research question and hypothesis associated with the ethnicity variable were stated as follows:

Research Question 3: What is the relationship between the student characteristic of ethnicity and attrition within the study site associate degree nursing program?

$H_0$3: There is no relationship between the student characteristic of ethnicity and attrition within the study site associate degree nursing program.

H_a3: There is a significant relationship between the student characteristic of ethnicity and attrition within the study site associate degree nursing program.

I used the phi coefficient test to evaluate any possible relationship between ethnicity and nursing student attrition. The test produced a correlation coefficient of

-.152 and a two-tailed significance value of .026 (r = -.152, p = .026). The results indicated a weak negative correlation with statistical significance. A weak relationship is one in which the strength of the correlation between the variables is minimal, and the negative nature of the correlation indicates that as one variable increases, the other variable decreases (Creswell, 2012; Marchand-Martella et al., 2013; Triola, 2012). In this case, as shown in Figure 4, as membership in the nonminority (White) group increased, attrition decreased. Based on the statistical analyses, there was evidence to reject the null hypothesis and conclude that there was a significant relationship between ethnicity and nursing student attrition within the associate degree nursing program. As shown in Table 8, 31 (47.69%) of White/nonminority students graduated in six semesters as compared to 47 (31.75%) of ethnic minority students. These findings align with some of the assertions of the theoretical framework used to guide the project study, as well as some of the literature findings. The NURS model developed by Jeffreys (2012) and Donnell (2015) supported the assertion that students from ethnic minority backgrounds had more attrition than nonminority students. Bull et al. (2012), Dapremont (2014), and Oosterbroek et al. (2014) also found that students from ethnic minority backgrounds faced more challenges.

Table 8

Ethnicity and Program Completion

		Ethnic minority or nonminority (White)		Total
		Yes (ethnic minority)	No (nonminority)	
Graduated in six semesters	Yes	47 (31.75%)	31 (47.69%)	78
	No	101 (68.25%)	34 (52.31%)	135
Total		148 (69.5% of the sample)	65 (30.5% of the sample)	213

Note. Graduation rates based on ethnicity (ethnic minority versus nonminority). Nonminority refers to White students.

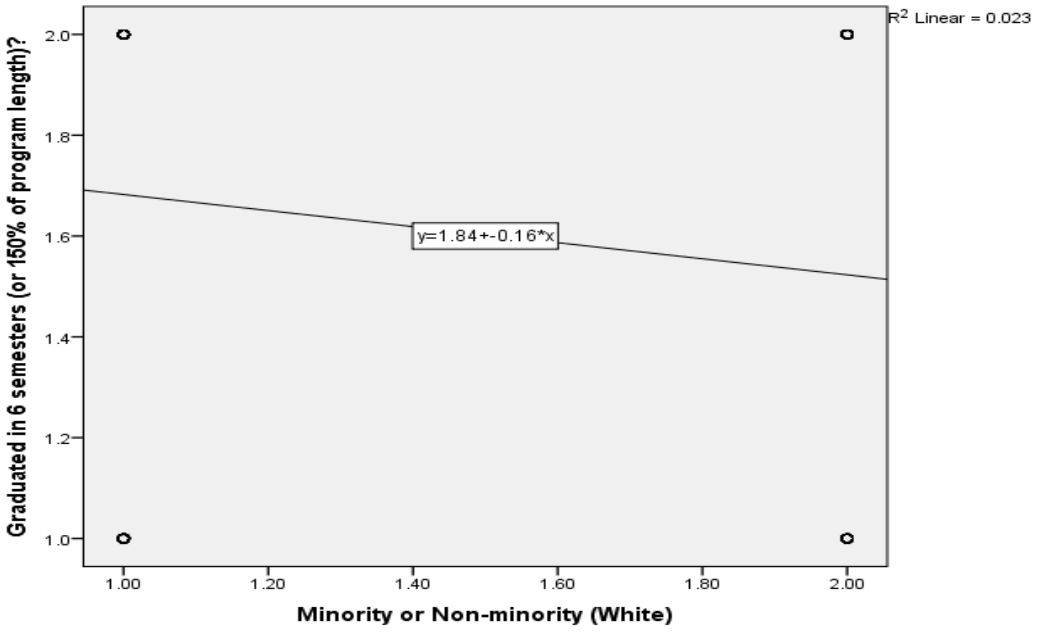

Figure 4. The relationship between ethnicity and attrition.

GPA Variable

I collected information for the GPA variable on all 235 records reviewed (there were no missing cases). The GPA scores ranged between 2.0 and 4.0. The mean GPA score was 3.28, with a standard deviation of .427. Using a box-and-whiskers display in

SPSS, I found no extreme outliers in the data set. In Figure 5, I display two mild outliers for data point entries corresponding to a GPA of 2.0 and a GPA of 2.12. These two mild outliers were left in the database for analysis.

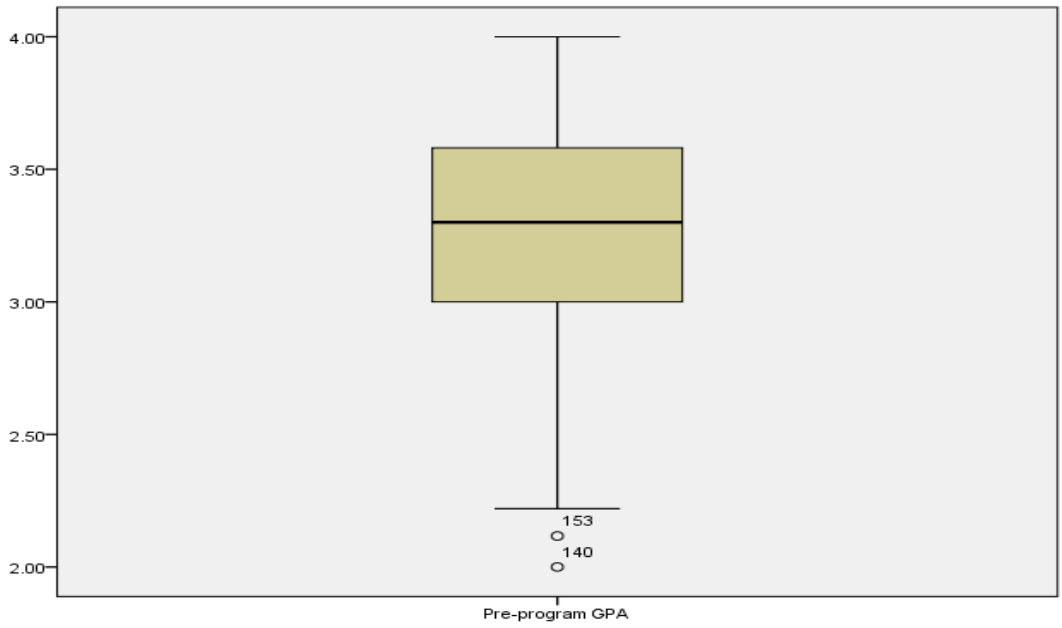

Figure 5. Outlier analysis for GPA.

The research question and hypothesis associated with the GPA variable were stated as follows:

Research Question 4: What is the relationship between the preadmission student characteristic of GPA and attrition within the study site associate degree nursing program?

$H_0$4: There is no significant relationship between the preadmission student characteristic of GPA and attrition within the study site associate degree nursing program.

H_a4: There is a significant relationship between the preadmission student characteristic of GPA and attrition within the study site associate degree nursing program.

For data analysis, I coded as 1 students who graduated within six semesters and students who did not graduate from the program or who graduated after six semesters, I coded as 2 (a code of 2 indicated program attrition). A point biserial analysis yielded a correlation coefficient of -.272 (r = -.272). As illustrated in Table 9, this result indicated a weak negative relationship between GPA and attrition. The strength of the relationship was a weak one, which indicated that there was only a slight relationship between GPA and attrition (see Creswell, 2012; Marchand-Martella et al., 2013; Triola, 2012). The analysis also yielded a two-tailed significance level of .000 (p = .000). This result provided evidence to reject the null hypothesis and conclude that there was a significant relationship between GPA and attrition. Figure 4 depicted the negative nature of the relationship in which as student GPA scores increased, attrition decreased. These results support the project study's theoretical framework, which suggested that higher GPA scores are associated with less attrition (Jeffreys, 2012). Similarly, Bosch et al. (2012), Burns (2011), and Brenkus et al. (2013) indicated that higher GPA scores are associated with less attrition.

Table 9

GPA and Attrition

		GPA	Graduated in six semesters
GPA	Pearson correlation	1	-.272**
	Sig. (two-tailed)		.000
Graduated in semesters	Pearson correlation	-.272**	1
	Sig. (two-tailed)	.000	

Note. N = 233 calculated by listwise exclusion. **Correlation is significant at .01 level (two-tailed).

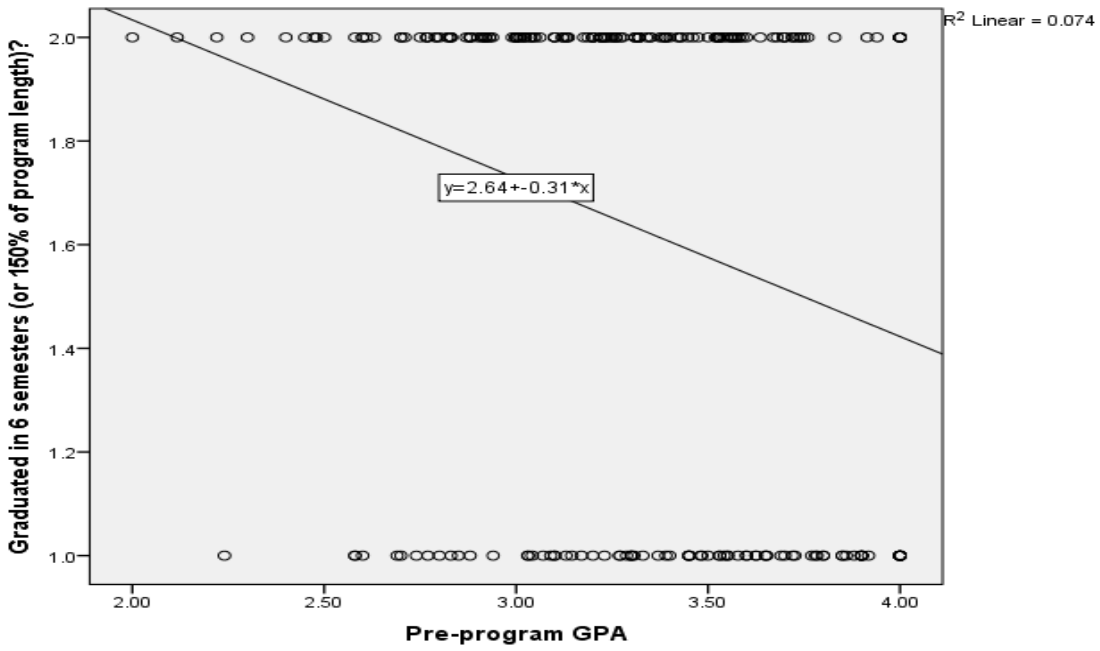

Figure 6. The relationship between GPA and attrition.

College Credits Variable

Data analysis for the preadmission credits variable included all 235 cases, as there were no missing cases. Preadmission credits ranged from 16 to 116, with a mean of 42.64 credits and a standard deviation of 16.3. Using a box-and-whiskers display in

SPSS, I found eight mild and two extreme outliers in the data set. In Figure 7, I present the eight mild outliers for data point entries corresponding to values ranging from 76 to 100 credits and two extreme values corresponding to 102 credits and 116 credits. Only the two extreme outliers were removed from the data set before data analysis. These two extreme outliers are plausible values because it was possible for students to be admitted to the nursing program with preadmission credits of 102 and 112. For example, if students had a college degree prior to being admitted to the nursing program, the two outliers would be correct values. Because I used archival data, it was impossible to corroborate the two extreme outlier values. In my experience teaching at the research site, there have been a few occasions when students were admitted to the nursing program and already had associate degrees or baccalaureate degrees in a field other than nursing. For comparison purposes, the data analysis was conducted with and without the two extreme outlier values.

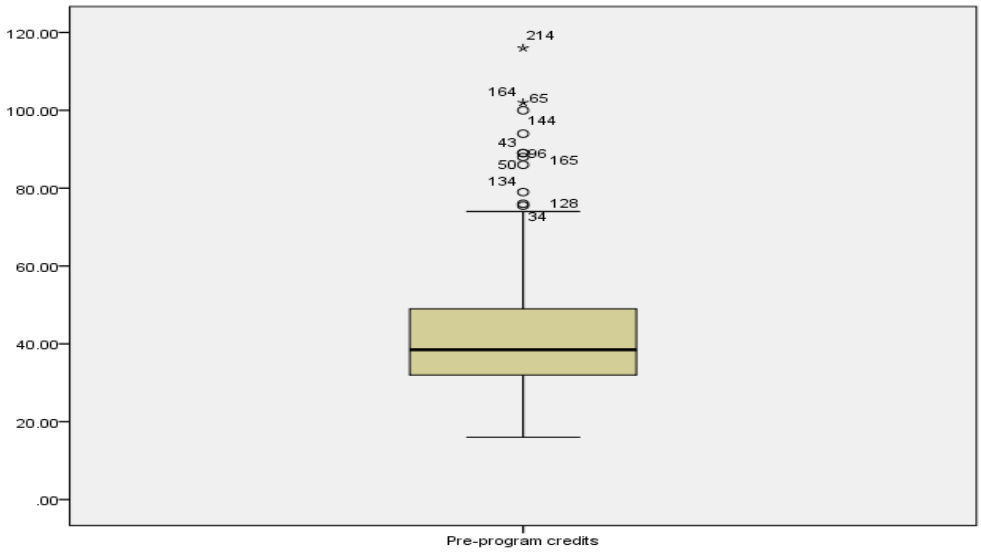

Figure 7. Outlier analysis for college credits.

The research question and hypothesis associated with the preadmission number of credits variable were stated as follows:

Research Question 5: What is the relationship between the number of prior (preadmission) college credits and attrition within the study site associate degree nursing program?

$H_0$5: There is no significant relationship between the number of prior (preadmission) college credits and attrition within the study site associate degree nursing program.

H_a5: There is a significant relationship between the number of prior (preadmission) college credits and attrition within the study site associate degree nursing program.

I performed a point biserial statistical analysis to evaluate a possible relationship between the number of prior college credits and attrition at the research site. After removing two extreme outliers in the data set, I conducted the data analysis on 233 cases. Once again, I coded as 1 students who graduated within six semesters, and students who did not graduate from the program or who graduated after six semesters, I coded as 2 (a code of 2 indicated program attrition). As depicted in Table 10, statistical analysis generated a correlation coefficient of .164 (r = .164). The correlation coefficient suggested a weak positive relationship denoting only a slight relationship between the variables (see Creswell, 2012; Marchand-Martella et al., 2013). In Figure 8, I illustrated the nature of the positive relationship in which, as the preadmission number of credits increased, attrition also increased (see Creswell, 2012; Triola, 2012). The relationship

between the number of college credits and attrition was significant, with a significance value of .012 (p = .012). There was evidence to reject the null hypothesis and conclude that a significant relationship existed between the number of prior (preadmission) college credits and attrition within the associate degree nursing program.

Table 10

Preadmission Credits and Attrition

		Preprogram credits	Graduated in six semesters
Preprogram credits	Pearson correlation	1	.164
	Sig. (two-tailed)		.012
Graduated in six semesters	Pearson correlation	.164	1
	Sig. (two-tailed)	.012	

Note. N = 233. Correlation is significant (p = .012).

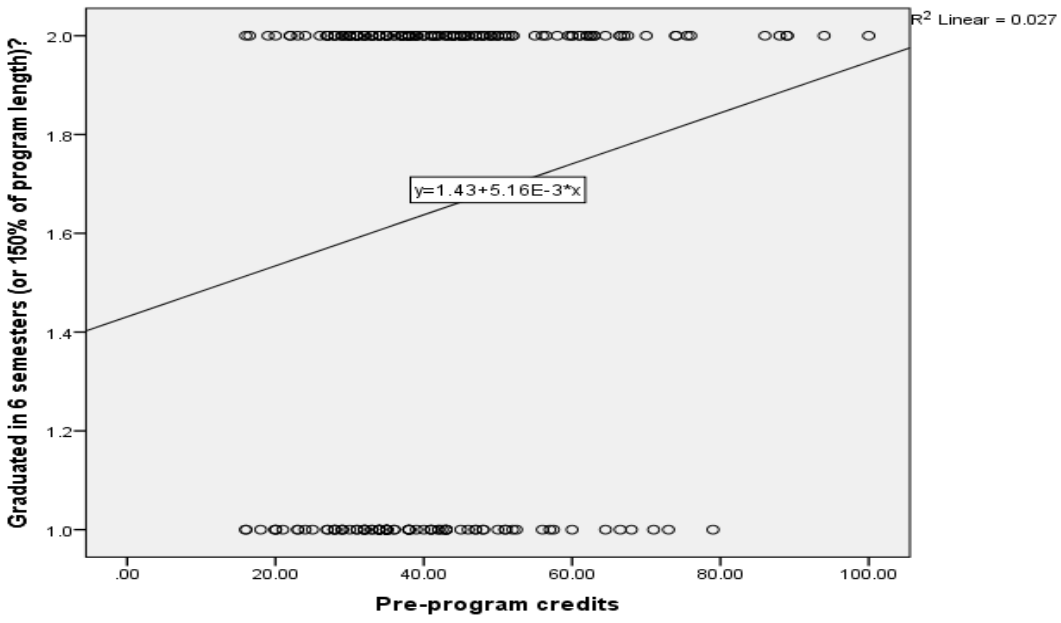

Figure 8. The relationship between preadmission credits and attrition.

As noted earlier, I also conducted the data analysis for preadmission credits including the two extreme outliers. The results of the second data analysis revealed a correlation coefficient of .104 (r = .104). The correlation coefficient suggested a weak positive relationship, denoting only a slight relationship between the variables (see Creswell, 2012; Marchand-Martella et al., 2013). In this positive relationship, as the preadmission number of credits increased, attrition also increased (see Creswell, 2012; Triola, 2012). However, based on the significance value of .113 (p = .113), there was evidence to fail to reject the null hypothesis and conclude that no significant relationship existed between the number of prior (preadmission) college credits and attrition within the associate degree nursing program. The data analysis without the two extreme outliers yielded a statistically significant correlation, but the analysis with the two outliers revealed no significant statistical relationship between attrition and the number of preadmission credits. Due to these contradictory results and the lack of literature on attrition in relation to preadmission credits, I would refrain from making judgments or recommendations based on these results.

TEAS Variable

I conducted data analysis using listwise exclusion on 163 cases out of the sample size of 235. There were two reasons why only 163 cases contained TEAS information. The first reason is that LPN students do not take the TEAS entrance exams. The second reason is that before the Fall of 2010, there was another entrance exam for program admission at the research site. To include students with TEAS scores, I selected the data collection time frame from Spring 2011 until Fall 2013. However, at the time, I was not

aware that entrance exam scores are valid for a period of three years at the research site. This meant that some students who were admitted to the program during and after the spring of 2011 had the previous entrance examination scores rather than the TEAS scores.

Members of the admissions committee at the research site use three of the assessment areas of the TEAS test for program admissions. These assessment areas include TEAS results in math, English or verbal language use, and reading comprehension. To answer the project study's research questions, a TEAS composite score was used by computing the mean score of the three assessment areas of the TEAS scores. However, because the research site uses each assessment area individually to make decisions about program admissions, I conducted analyses using each assessment area of the TEAS test. Composite TEAS scores ranged between 51.90 and 91.27, with a mean score of 71.14 and a standard deviation of 8.05.

The research question and hypothesis associated with the TEAS variable were stated as follows:

Research Question 6: What is the relationship between the TEAS test scores and attrition within the study site associate degree nursing program?

$H_0$6: There is no significant relationship between the TEAS test scores and attrition within the study site associate degree nursing program.

H_a6: There is a significant relationship between the TEAS test scores and attrition within the study site associate degree nursing program.

For the purpose of data analysis, I coded students who graduated within six semesters as 1 and students who did not graduate from the program or who graduated after six semesters, I coded as 2 (a code of 2 represented program attrition). I used a box-and-whiskers display analysis in SPSS and found no outliers in the data set (see Figure 9). As illustrated in Table 11, a point biserial analysis generated a correlation coefficient (*r* value) of -.219. Results also indicate a two-tailed significance (*p* value) of .005. The correlation coefficient indicated a weak negative relationship between the variables. I depicted this negative relationship in Figure 10 when as TEAS composite scores increased, student attrition decreased. As noted by Creswell (2012), a weak relationship suggests that there is only a slight association between the variables under analysis. Yet, because the *p* value is smaller than the preselected significance level of .05, there was evidence to reject the null hypothesis and conclude that there was a significant relationship between the TEAS test scores and attrition within the associate degree nursing program. These results aligned with some of the literature findings that suggested that standardized entrance exam scores are associated with academic success (Brenkus et al., 2013; Burns, 2011).

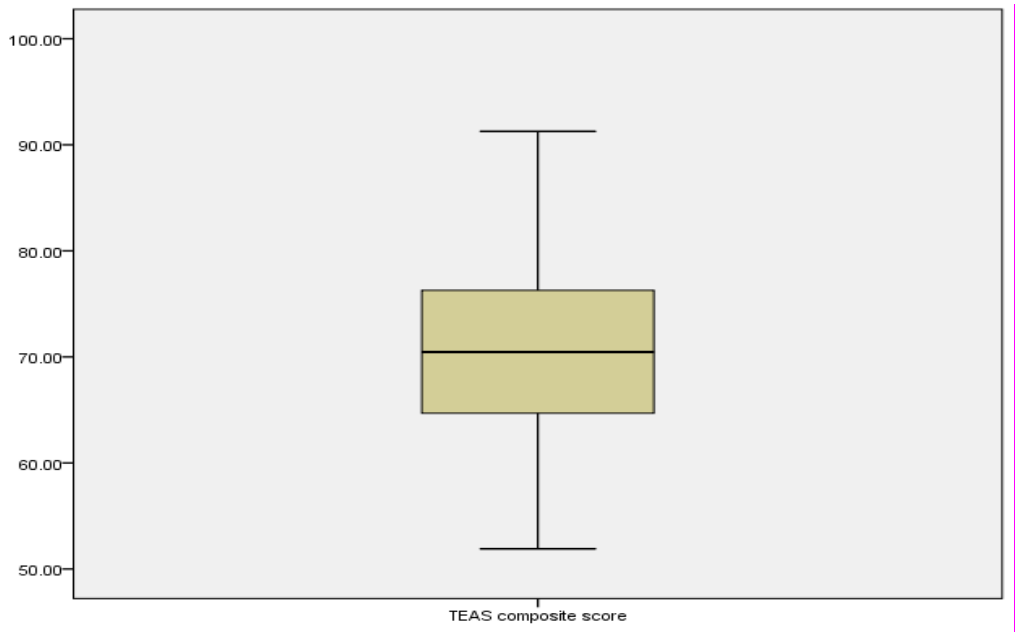

Figure 9. Outlier analysis for TEAS composite.

Table 11

TEAS Composite Score and Attrition

		TEAS composite score	Graduated in six semesters
TEAS composite Score	Pearson correlation Sig. (two-tailed)	1	-.219** .005
Graduated in six semesters	Pearson correlation Sig. (two-tailed)	-.219** .005	1

Note. N = 163 calculated by listwise exclusion. **Correlation is significant at .01 level (two-tailed).

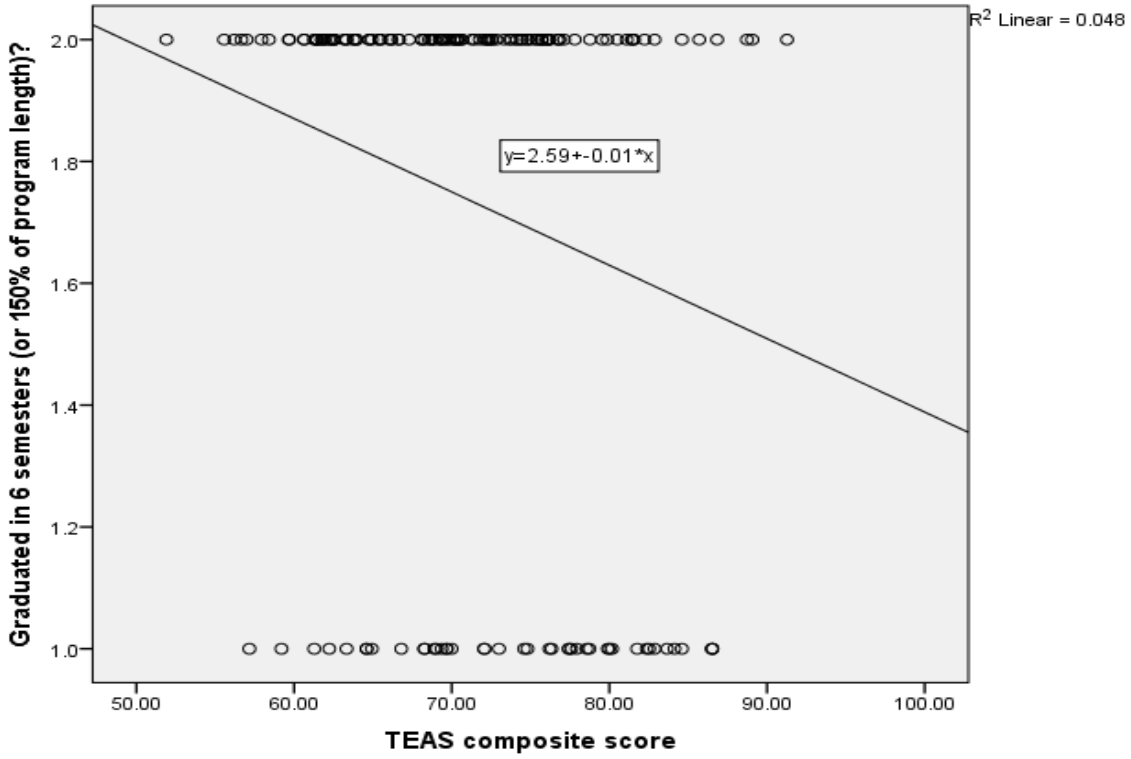

Figure 10. The relationship between TEAS composite scores and attrition.

TEAS math. I also analyzed the TEAS results using the math scores exclusively. A point biserial analysis yielded a correlation coefficient of -.195 and a two-tailed significance value of .013 (r = -.195, p = .013). Based on these results, there was a weak negative relationship between the TEAS math scores and attrition. With a p value of .013, there was evidence to conclude that there was a significant relationship between the TEAS scores in math and attrition. As shown in Figure 11, as attrition decreased, the TEAS math scores increased.

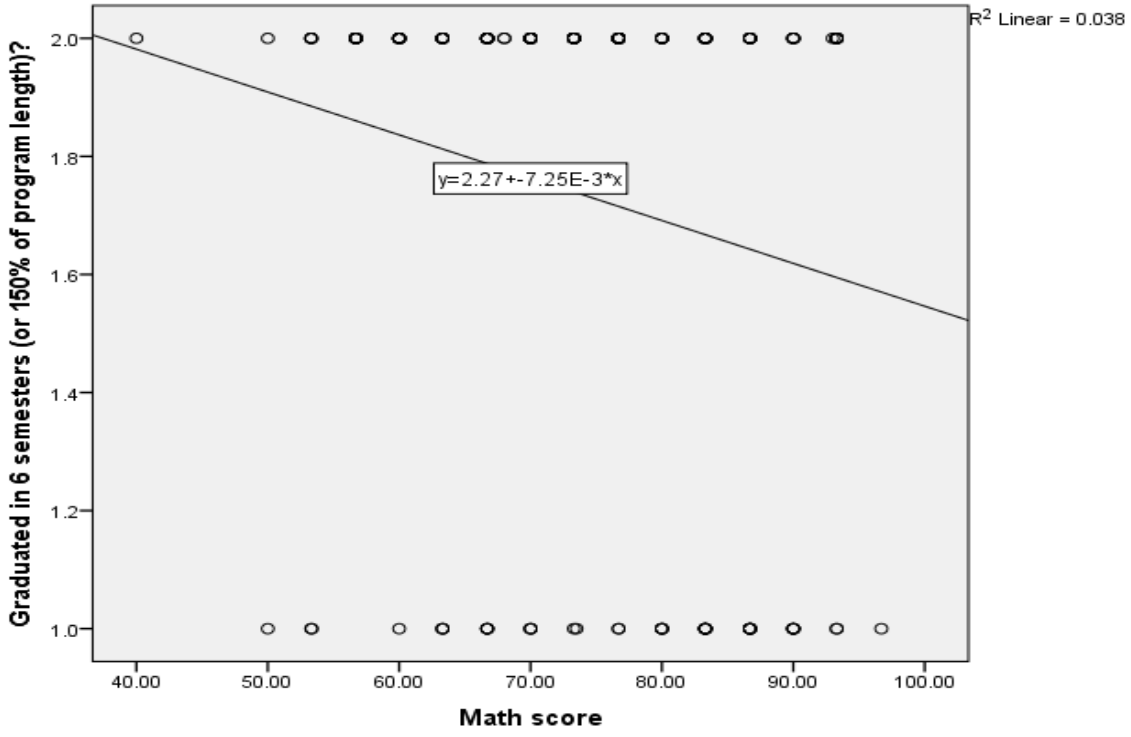

Figure 11. The relationship between TEAS math scores and attrition.

TEAS English. Analysis of the TEAS scores in English language usage produced a correlation coefficient of -.142, with a two-tailed significance of .071 (r = -.142, p = .071). These results indicated a weak negative correlation between the TEAS scores in English and attrition. However, with a p value of .071, there was evidence to conclude that there was no significant relationship between the TEAS English test scores and attrition.

TEAS reading. Analysis of the reading scores in the TEAS test yielded a correlation coefficient of -.149 and a significance value of .058 (r = -.149, p = .058). The results indicated a weak negative relationship between the variables. Since the p value

was larger than .05, there was evidence to conclude that there was no significant relationship between the TEAS test scores in reading and attrition.

ESL Variable

I collected information on students with ESL background on all 235 cases (there were no missing cases). Out of the sample of 235 students, only 20 (8.5%) of the students were from an ESL background, and 215 (91.5%) of the students were non-ESL students. Only students who took ESL courses were identified as ESL students; therefore, there were likely many other students in the sample who might have spoken English as a second language but were not identified. Because I used archival data, these additional students could not be identified at that point. As shown in Table 12, out of the 20 ESL students, 11(55%) graduated within six semesters, and out of the 215 non-ESL students, 73 (33.95%) graduated within six semesters.

Table 12

ESL and Program Completion

		ESL		Total
		1 (yes)	2 (no)	
Graduated in six semesters	Yes	11 (55%)	73 (33.95%)	84
	No	9 (45%)	142 (66.05%)	151
Total		20 (8.5% of sample)	215 (91.5% of sample)	235

Note. Graduation rates based on ESL background. More ESL students graduated within six semesters (55%) than non-ESL students (33.95%).

The research question and hypothesis associated with the ESL background variable were stated as follows:

Research Question 7: What is the relationship between being an ESL nursing student and attrition within the study site associate degree nursing program?

$H_0$7: There is no significant relationship between being an ESL nursing student and attrition within the study site associate degree nursing.

H_a7: There is a significant relationship between being an ESL nursing student and attrition within the study site associate degree nursing.

For data analysis, I coded students who graduated within six semesters as 1 and students who did not graduate from the program or who graduated after six semesters, I coded as 2. A code of 2 represented program attrition. I also coded students who had an ESL background as 1, and students who did not have an ESL background (non-ESL, I coded as 2. Data analysis produced a phi coefficient correlation of .123 (r = .123), which indicated a weak positive relationship between the ESL variable and attrition. Weak relationship denotes a slight or minimal association between two variables (Creswell, 2012; Marchand-Martella et al., 2013). In Figure 12, I illustrate the positive nature of the relationship in which, as membership in the non-ESL group increased, attrition also increased. Stated alternatively, having an ESL background was associated with lesser attrition. The data analysis also yielded a two-tailed significance value of .060 (p = .060). As seen in Table 13, with a p value of .060, which is larger than the preselected significance level (p value) of .05, the results indicated that there was evidence to fail to

reject the null hypothesis and conclude that there was no significant relationship between being an ESL nursing student and attrition within the associate degree nursing program.

Table 13

ESL and Attrition

		Value	Approx. sig.
Nominal by nominal	Phi coefficient	.123	.060
N of valid cases		235	

Note. Correlation is not significant ($p = .060$).

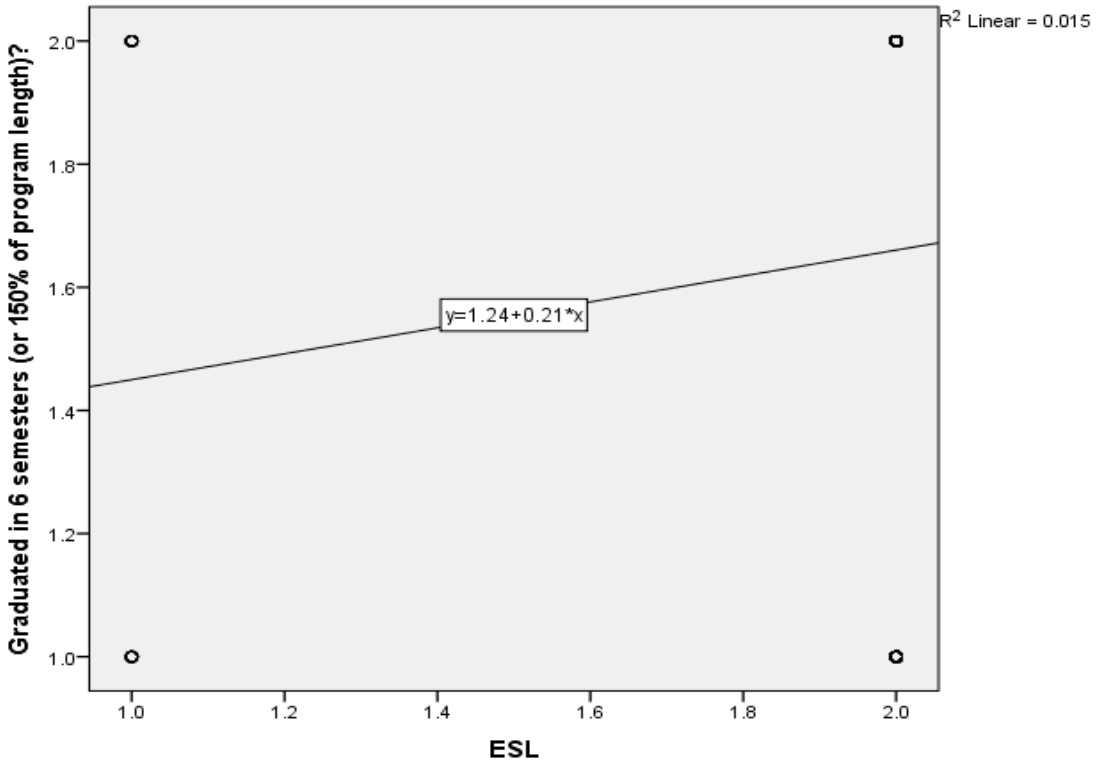

Figure 12. The relationship between ESL background and attrition.

LPN Licensure Variable

At the research facility, all students who have LPN licensure are required to take an LPN transition course. Students who took the LPN transition course were then identified as LPN students during data collection. There were no missing cases for the LPN variable (all 235 cases were included in the data analysis). As shown in Table 14, out of the sample of 235 students, 46 (19.6%) were LPN students, and 189 (80.4%) were non-LPN students. Out of the 46 LPN students, 27 (58.69%) graduated within six semesters. Out of the 189 non-LPN students, 57 (30.15%) graduated within six semesters. These proportions are consistent with the usual proportions found at the research facility.

Table 14

LPN and Program Completion

		LPN/took the LPN transition course		Total
		1 (yes)	2 (no)	
Graduated in six semesters	Yes	27 (58.69%)	57 (30.15%)	84
	No	19 (41.3%)	132 (69.8%)	151
Total		46 (19.6% of sample)	189 (80.4% of sample)	235

Note. All LPN students at the research facility took the LPN transition course, which was used to identify LPN versus non-LPN students.

The research question and hypothesis associated with the LPN licensure variable were stated as follows:

Research Question 8: What is the relationship between having LPN licensure and attrition within the study site associate degree nursing program?

$H_0$8: There is no significant relationship between having LPN licensure and attrition within the study site associate degree nursing program.

H_a8: There is a significant relationship between having LPN licensure and attrition within the study site associate degree nursing program.

For data analysis, I coded as 1 students who were LPN (took the LPN transition course). I coded as 2 students who were non-LPN (did not take the LPN transition course). In addition, I coded as 1 students who graduated from the program within six semesters. Students who did not graduate or who graduated after six semesters, I coded as 2 (a code of 2 represented program attrition). I performed a phi coefficient analysis to evaluate any possible relationships between having LPN licensure and attrition. As depicted in Table 15, analyses produced a correlation coefficient of .236 (r = .236). These results suggest a weak positive relationship between not having LPN licensure and attrition. A weak correlation denotes only a slight association between the variables. In Figure 13, I illustrate the positive nature of the relationship in which, as membership in the non-LPN group increased, attrition also increased. Data analyses also yielded a significance value of .000 (p = < .001). Based on this result, there was evidence to reject the null hypothesis and conclude that a significant relationship existed between LPN licensure and attrition within the associate degree nursing program. Therefore, having LPN licensure was correlated with achieving program graduation within six semesters and lower attrition. Although there was a lack of literature about LPN licensure and attrition, the authors of two studies suggested that LPN students face challenges that affect academic success negatively (Gordon et al., 2013; Melrose & Wishart, 2013). However, the results of the data analysis in this study indicated the opposite; LPN students had lower attrition rates than non-LPN students. Preliminary internal data from

the research site indicated that between 2010 and 2013, the attrition rates among LPN students were high and ranged between 25% and 46.4%.

Table 15

LPN Licensure and Attrition

		Value	Approx. sig.
Nominal by nominal	Phi coefficient	.236	.000
N of valid cases		235	

Note. **Correlation is significant at .01 level (two-tailed).

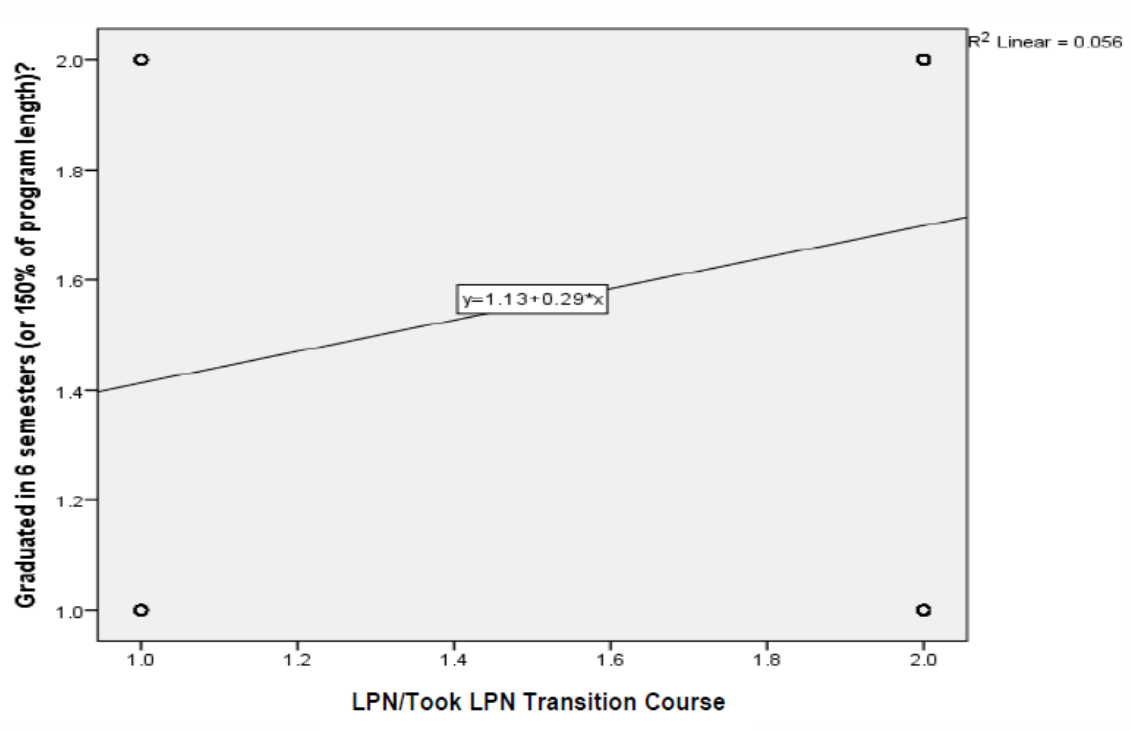

Figure 13. The relationship between LPN licensure and attrition.

The finding in regard to the relationship between LPN and attrition was surprising. During the literature review, I found a lack of literature in regard to LPN licensure and attrition. However, preliminary data from the research site indicated that

LPN students had high attrition rates. Because LPN students are exempt from taking the first nursing course, the usual LPN curriculum could be completed in three semesters (as compared to four semesters for non-LPN students). Therefore, 150% of the program completion for LPN students could be 4.5 or five semesters rather than the expected six semesters.

To determine if the differences in program length would influence the data analysis results, I reran the statistical analyses, using both five semesters and 4.5 semesters as 150% of the program length. I used the same coding for this analysis. I coded as 1 students who were LPN and I coded as 2 students who were non-LPN. Students who graduated within five semesters, I also coded as 1, and those who did not graduate or who graduated after five semesters I coded as 2, which represented attrition. Out of the 46 LPN students, 25 (54.35%) graduated within five semesters. As shown in Table 16, the results of the analysis based on five semesters (as 150% of the program length) were an r value of .206 and a p value of .002. Like the original analysis, these results indicated a significant weak positive relationship between not having LPN licensure and attrition. The strength of the relationship (weak) denoted that there was only a slight association between the variables, and the positive nature of the relationship indicated that attrition increased as membership on the non-LPN group increased. In Figure 10, I depicted the positive nature of the association between having LPN licensure and attrition based on five semesters.

Table 16

LPN Status and Attrition Based on five Semesters

		Value	Approx. sig.
Nominal by nominal	Phi coefficient	.206	.002
N of valid cases		235	

Note. The relationship was significant at the .05 level.

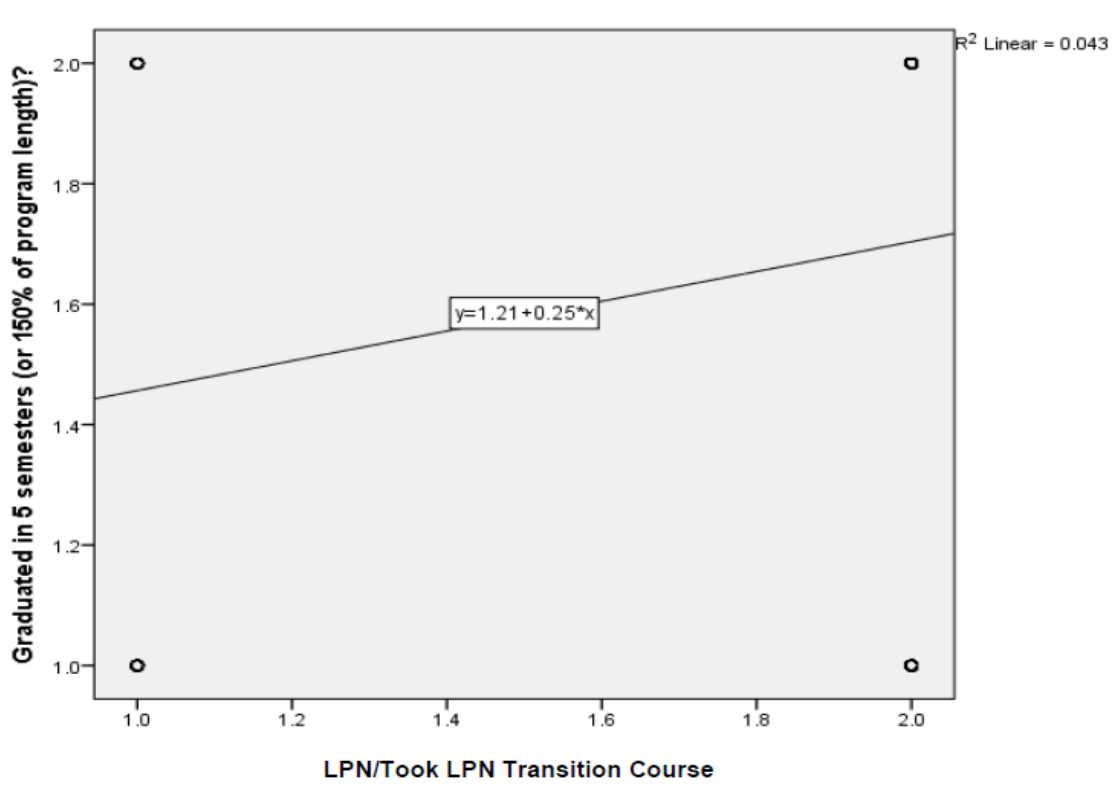

Figure 14. The relationship between LPN licensure and attrition based on five semesters.

For the analysis based on 4.5 semesters as 150% of the program length, I coded students who were LPN as 1 and I coded students who were non-LPN as 2. I also coded students who graduated within 4.5 semesters as 1, and students who did not graduate or who graduated after 4.5 semesters, I coded as 2 (a code of 2 represented attrition). Out of

the 46 LPN students, 22 (47.8%) graduated within 4.5 semesters. As illustrated in Table 17, data analyses yielded an *r* value of .153, which indicated a weak (slight) correlation between not having an LPN licensure and attrition. As shown in Figure 15, the nature of the relationship was positive, indicating that as membership in the non-LPN group increased, attrition also increased. Data analyses produced a *p* value of .019. These results were similar to the first two results and indicated a significant relationship between not having LPN licensure and attrition. In Table 18, I present comparisons of the analysis results based on the three different time frames.

Table 17

LPN Status and Attrition Based on 4.5 Semesters

		Value	Approx. sig.
Nominal by nominal	Phi coefficient	.153	.019
N of valid cases		235	

Note. The relationship was significant at the .05 level.

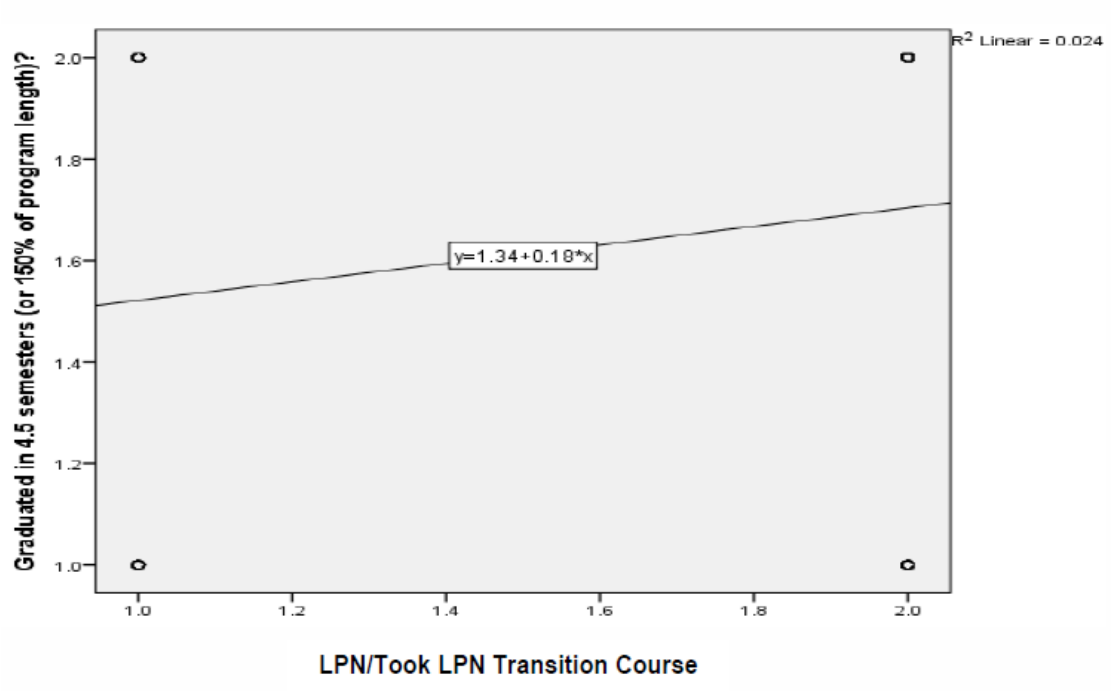

Figure 15. The relationship between LPN licensure and attrition based on 4.5 semesters.

Table 18

LPN and Attrition Using Different Time Frames

six semesters		five semesters		4.5 semesters	
Phi coefficient	.236	Phi coefficient	.206	Phi coefficient	.153
Approx. sig.	.000	Approx. sig.	.002	Approx. sig.	.019

Note. Comparison of *p* values and *r* values using different program completion time frames as 150% of the program length. Correlations were significant in all three cases (two-tailed).

Conclusion

In this project study, I included a discussion about the problem of nursing student attrition within an associate degree nursing program in the northeastern United States. I also detailed a quantitative correlational study in which I investigated possible relationships between certain student variables and nursing student attrition. Results of

statistical analyses indicated that significant relationships existed between attrition and ethnicity, GPA, TEAS scores, and LPN status. Analyses also indicated that no significant relationships existed between attrition and age, gender, ESL background, and preadmission college credits (the college credits variable yielded contradicting results). The research information I obtained from the statistical analyses pointed to the need for a revision of the program's admission criteria. In addition, the information obtained from the project study can be used for early identification of students who might be at risk of attrition. Early identification of these students can allow nursing faculty and nursing administrators at the research site the opportunity to implement supportive strategies in a timely manner. The main goal of early identification and intervention is to reduce nursing student attrition and increase student academic success. Promoting academic success has the potential to promote positive social change among the nursing students at the research site. In the next section (Section 3), I will describe a project I developed based on the findings of this study. I will also include a review of the literature concerning policies and strategies to address the problem of high nursing student attrition.

Section 3: The Project

Introduction

Overview of the Project

In the last section, I discussed the findings of this study that I conducted with the goal of evaluating any possible correlations between attrition and a selected number of student characteristics. In this section, I will detail the project (a policy recommendation paper) that I developed based on the results of my study and findings from a literature review. A copy of the project study can be found in Appendix A of this document.

Project Description and Goals

The goal of the policy recommendation was to suggest possible changes that may help reduce nursing student attrition. Within the policy, I recommended revisions to the program's admission process to select candidates who might have the best chance of academic success. I also recommended the implementation of early identification procedures for students at risk of attrition so that early supportive measures can be provided, thereby improving the students' chances of academic success. Finally, I recommended some supportive measures to help promote academic success among students identified at risk for attrition.

Rationale

I chose a policy recommendation for the project because it allowed me the opportunity to provide nursing program administrators and faculty suggestions that could address the problem of high nursing student attrition. The policy recommendations were based on the results of data analyses that I carried out to evaluate relationships between

several nursing student characteristics and the problem of nursing student attrition at the research site. The data analysis pointed to a possible need to revise the nursing program's admission process and to implement early identification measures for students at risk of attrition. The problem of high student attrition was addressed within the policy recommendation by the delineation of possible suggestions for the implementation of changes to the current admission process at the research site. I also recommended the establishment of an early identification system for students at risk for attrition, along with possible supportive student measures. I will provide the policy recommendations to the dean of nursing and other institutional administrators at the research site for consideration and possible adoption.

The Project: Addressing the Problem and Theoretical Framework

A policy recommendation paper was an appropriate genre for my project as it allowed me to present the findings of my correlational study. The policy recommendation paper also provided me with an opportunity to present possible solutions to the problem (high nursing student attrition) I investigated in my study. I based the strategies contained in my policy recommendation paper on the findings of the study I conducted at the research site. I also based the recommendations on strategies and recommendations found in the recent available literature. The policy paper's theoretical framework was Jeffreys's NURS model (Jeffreys, 2012). I used the NURS model as the underpinning foundational premise under which I conducted my study. Many of the recommendations mentioned within the NURS model were included and expanded throughout my policy recommendation paper.

Review of the Literature

The purpose of conducting this literature review was for me to gain detailed knowledge about the project's genre (policy recommendation). I also searched the literature to find evidence and appropriate strategies that would comprise the content of the policy recommendations (contained in Appendix A). For the literature review about the selected genre and for the content of the specific suggestions within the policy recommendations, I searched several of Walden's electronic databases. Some of these databases included Academic Search Complete, CINAHL Plus With Full-Text, Education Research Complete, ERIC, and PsychINFO. I limited the search to peer-reviewed publications between 2012 and 2017. For the strategies to be included in the policy recommendation paper, I used keyword search terms such as *admission criteria, nursing student admission, attrition, nursing student attrition, retention, nursing student success, student success, academic success, recommendations, strategies, learning environment, learning styles, teaching strategies, associate degree programs, minority students,* and *ethnicity*. This search yielded several publications.

For the project genre (policy recommendation), I used different keyword search terms such as *policy, policy recommendation, position papers, white papers, policy development, policy development process and nursing education, policy change, promoting change, facilitating change, change barriers,* and *change challenges*. However, this search yielded a limited number of articles or books on the subject. Initially, I restricted the search to peer-reviewed publications within the last five years (2012-2017), but even after removing those limitations, the search produced a limited

number of publications. Powell (2012) noted that although position papers are a well-suited strategy to disseminate policies, and position papers are found in abundance within practice fields, specific textbooks on the subject are lacking.

Project Genre: Policy Recommendation

Policy and policy recommendation. Policy refers to a set of rules, regulations, or guidelines that delineate specific actions, regulations, or procedures to be followed in specified situations (Tseng, 2012). A policy recommendation refers to written policy advice prepared and presented to individuals who usually have the power to make decisions in regard to the adoption of the recommended policy (Doyle, 2013). Routinely, policy papers are developed and presented in the form of white papers or reports (Herman, 2013; Mattern, 2013). According to Herman (2013), white papers tend to offer authoritarian viewpoints or offer possible solutions to existing problems. Mattern (2013), on the other hand, indicated that white papers are effective to educate and to persuade others. Similarly, Hyde, Sakamuro, and Stolley (2015) noted that a white paper is an authoritative or informative manuscript genre often used to present a position or offer solutions to a problem. Policies usually function at a system-wide level, influencing practices, behaviors, or actions of those within that system (Centers for Disease Control, 2015).

There are several types of policies, including public policy, health policy, social policy, and educational policy, among others. Public policy includes laws and regulations as well as mandates from government programs (Sabatier & Weible, 2014). Health policy refers to recommendations or actions with the goal of improving the health

status of society (World Health Organization, 2017). Social policy concerns governmental mandates to promote the protection or the welfare of society (Spicker, 2017). Educational policies are sets of rules governing the functioning of educational systems (Boundless Education Policy, 2016). Policies operate at different levels, such as national, state, local, or organizational (Centers for Disease Control, 2015). For this project (policy recommendation paper), I developed an educational policy at the organizational level.

A policy document should be written using simple and concise language, avoiding technical terms and jargon that might be difficult to understand for all readers of the policy (University of California Davis, 2011). Because policy readers may have time limitations, policy writers must craft time-sensitive, concise, logical, and persuasive arguments or recommendations (Biswas & Paczynska, 2015). Whenever possible, consultation and feedback from an institution's stakeholders should be requested during the policy development process (Isaac, n.d).

Policy and research. Developing policy recommendations based on research findings is important because research results can provide strong evidence to support the need for changes or recommendations (Tseng, 2012). Lingard (2013) also noted that policy development should be informed by evidence or research. Educational research is one important determining and contributing factor for the content, process, and implementation of policies. While empirical evidence is important in the policy development process, knowledge from professional and practical experiences may also play an important role in the policy development process (Calnan et al., 2011). My

policy recommendations were based on the results of my study as the foundation to create the policy recommendations. Additionally, I based the recommendations on strategies and information found within the current literature.

Policy and change. Individuals may not readily accept changes resulting from a policy implementation (Davidson, 2014; Gilley, Gilley, & Godek, 2009). Resistance to change can be related to a sense of comfort with familiar routines or fear of failure that changes could produce in individuals (Gasaway, 2014). However, ultimately policy development leading to change will come about due to a realization of needed changes or due to influences of public opinion (Brady, Bucholz, Duffy, & Hazelkorn, 2014). Mitchell (2013, p. 32) described a theoretical model in which individuals go through three stages related to change. The first stage was termed by Mitchell as "unfreezing," and this stage takes place when individuals realize that changes (or policies) are needed. Then the individual enters the second stage, named "moving," where actual changes or actions are initiated (Mitchell, 2013). The initiation of the changes or the implementation of a policy may lead to temporary instability or uncertainty among individuals affected by the changes (Mitchell, 2013). However, after a time, individuals tend to enter the third stage of the model, "refreezing," where equilibrium or normalization is regained, and changes are often made permanent. Following the refreezing stage, individuals may be rewarded with the intended or desired outcomes if the policy changes were effective (Mitchell, 2013).

Policy terminology. Many terms used in the policy writing process are incorrectly used in an interchangeable manner (Enaohwo, 2013). For example, many

individuals may misuse the terms of policy, process, and procedure. According to Enaohwo (2013), a policy refers to a framework or a set of rules put together to achieve a specific task. In the case of this paper, the purpose of the policy was to help reduce nursing student attrition at the research site where I conducted the study. The policy process, on the other hand, refers to a general outline that will enable policy users to reach specified policy goals (Enaohwo, 2013). This policy process is comparable to the template that I used to create my policy recommendation paper (included in Appendix A). Finally, policy procedures provide detailed steps that individuals must complete to achieve the task described within a policy (Enaohwo, 2013). In my policy paper, I equated the procedures to the specific recommendation and steps to implement each of the recommendations.

Basic components of a policy. Many policies are written in a white paper format with the objective of presenting solutions to a preexisting problem or issue (Herman, 2013). A policy paper provides guidance or recommendations that are based on expertise or research evidence (Herman, 2013). Herman (2013) recommended that policy writers use an executive summary as a starting point for the policy recommendation paper. The executive summary should summarize the key points of the document for the readers and should comprise about 5% (or less) of the total document length (Herman, 2013). According to Herman, some of the basic components of a policy paper include discussions regarding the problem, the evidence, recommendations, plans for evaluation, policy implications, and a conclusion.

As a first component in the policy writing process, the policy writer should include a description of the problem or issue to be addressed within the policy (Herman, 2013). The description of the problem should be based on evidence, maintaining as much objectivity as possible (Herman, 2013). While discussing the problem, the policy writer also presents qualitative or quantitative data that provide evidence of the existence of the problem or issue (Herman, 2013). The second component in the policy writing process involves the analysis of evidence, accompanied by suitable recommendations (Herman, 2013). The analysis of evidence and policy recommendations should follow a clear, persuasive, and logical examination of findings (Herman, 2013).

The third component of policy writing is the establishment of evaluation criteria (Herman, 2013). At this step, the policy writer should include a method for how the results of the policy will be evaluated and when the policy evaluation should be performed (Herman, 2013). After a policy has been implemented, it is important to perform a policy evaluation to determine the policy's effectiveness in regard to the policy's intended goals (Windham, 2017). The process of monitoring the implemented policy can facilitate policy continuity and help determine the policy's impact (Adugba, 2011). Evaluations can provide information about the effectiveness of a program or policy. Information obtained from evaluations, in turn, can be used to make decisions about policy revisions (Caffarella & Daffron, 2013). Evaluations could be performed after a predetermined period and based on intended goals of the policy (Boundless Policy Evaluation, 2016; Centers for Disease Control, 2015; Clark, 2013).

The fourth component of the policy writing process is the provision of implications relating to the problem and the policy implementation (Herman, 2013). In addition, there should be a discussion of feasibility and possible challenges to policy implementation, as well as possible strategies to overcome the challenges (Herman, 2013). Finally, the policy writer should include a conclusion containing a summary of the problem at hand, the evidence of the problem, the policy or recommendations, and the benefits of the policy implementation (Herman, 2013).

Policy Recommendations: Strategies to Address Attrition

Admission criteria. Nursing programs routinely use multiple admissions criteria to admit students who will have the best chance of academic success (Harper & Jones, 2013; McCabe & Shaffer, 2013). Some commonly used preadmission criteria include candidate interviews, GPA scores, critical thinking scales, intelligence quotient or IQ scores, and emotional intelligence scores (Antonious et al., 2015; Bosch et al., 2012; Clauson & Timer, 2011; Gale, Grant, Ooms, Marks-Maran, & Paget, 2016; Harper & Jones, 2013; McCabe & Shaffer, 2013). Despite the use of comprehensive admission criteria and student ranking systems, selecting the best candidates for nursing programs continues to be a challenging endeavor (Gale et al., 2016).

GPA score is one of the most frequently used criteria for nursing program admissions. The popularity of the use of GPA scores for admissions purposes is supported by several research studies where students with higher GPA scores tended to have less attrition (Antonious et al., 2015; Bosch et al., 2012; Clauson & Timer, 2011). Brenkus et al. (2013) recommended that nursing programs use a preadmission GPA score

of 3.0 as a minimum requirement for admissions. Crouch (2015) found that students with preadmission GPA scores between 2.5 and 2.99 were only somewhat successful, whereas students with GPA scores between 3.4 and 4.0 were extremely successful. The results of my study also provided evidence of a significant correlation between GPA scores and attrition, in which as preadmission GPA scores increased, attrition decreased. Therefore, based on results of my study and literature findings, I included a recommendation to increase the minimum required preadmission GPA at the research facility.

Standardized entrance examinations such as the TEAS are other common admission criteria among nursing programs (McCabe & Shaffer, 2013). The TEAS test has been found to be a valid predictive tool for nursing student attrition (ATI, 2014). Anderson, Cunningham, Manier, and Sarnosky (2014) found a significant correlation between TEAS scores and attrition, in which students with higher TEAS scores had less attrition. These authors suggested a model for admissions using a minimum TEAS score of 59%. The results of my study also revealed a significant correlation between TEAS scores and attrition at the research site (as TEAS scores increased, attrition decreased). Based on my study results and literature findings, I will recommend an increase to the minimum TEAS scores required for admissions at the research site.

Early identification. Early identification of students who might be at risk of attrition, with the goal of implementing timely supportive measures, can promote students' academic success (Jeffreys, 2012). Student characteristics that could be used for identification of at-risk students include lower preadmission GPA scores and lower preadmission TEAS scores (Anderson et al., 2014; Antonious et al., 2015; Bosch et al.,

2012; Clauson & Timer, 2011). Ethnicity is a third student characteristic that has been found to have significant correlation with attrition, in which students who belong to an ethnic minority background tend to have higher attrition (Cortez, Magdaleno, Najjar, Noone, & Wros, 2016; DeCrane, Edwards, Ferrell, Foli, & Tennant, 2016; DeCrane & Ferrell, 2016; Murray, 2015). In my study, belonging to an ethnic minority group had a significant correlation with attrition (as membership in an ethnic minority group increased, attrition also increased). Therefore, in my policy paper, I recommend that the students' ethnic background, GPA scores, and TEAS scores be used for early identification of students at risk of attrition.

Supportive measures: Faculty mentoring. Faculty support and mentoring have been found to be associated with student academic success. Results of a mixed methods study indicated that faculty support was correlated with higher student GPA scores (Raman, 2013). In addition, perceived faculty support was associated with higher student satisfaction (Raman, 2013). Based on the study results, Raman (2013) recommended that administrators and nursing faculty should explore how to increase faculty support toward students and increase faculty presence on campus. In another study, Cowan, Weeks, and Wicks (2015) found that academic success is improved among ethnic minority students through formal ties to a faculty member. Crooks (2013) indicated that mentorship programs and ethnic minority faculty who serve as role models for ethnic minority students are important factors that impact retention among ethnic minority nursing students.

Supportive measures: Peer mentoring. Peer support and coaching are other effective strategies that can be implemented as supportive measures for students at risk of attrition and students from ethnic minority backgrounds (Attwood, Everett, Glew, Salamonson, & Weaver, 2013). Bryer (2012) found significant grade improvements after nursing students participated in peer mentorship and tutoring. Attwood et al. (2013) implemented a peer mentoring program for students identified at risk for attrition, and in a follow-up survey study, the authors found that there were positive outcomes in regard to students' academic achievement, student connectedness, and student social integration. Student social integration and peer support are especially important when viewed from Tinto's student integration model. With this model, Tinto (1997) explained that student academic persistence could be enhanced through successful student academic and social integration. In a study, Campbell (2016) found that peer mentorship programs helped first-year nursing students to learn professional expectations and enhanced students' ability to deal with stressful situations.

Project Description

The project encompassed a policy recommendation paper with the goal of suggesting strategies that could help reduce the levels of nursing student attrition within the nursing program. The recommendations involved some revisions to the nursing program's current admissions process. The policy recommendations also included suggestions for the development of an early identification system for students who might be at risk for attrition. Finally, the recommendations included suggestions for student support measures for students who have been identified to be at high risk for attrition.

Resources and Existing Supports

There are no anticipated financial or space resources needed for the implementation of the recommended policy. However, I expect that human resources, such as the nursing faculty and members of the admissions committee, will be factors impacting the implementation of the policy recommendations. Some of the existing supports include the dean of the nursing program and nursing faculty, many of whom have verbalized a commitment to improving students' academic outcomes and reducing attrition.

Potential Barriers and Potential Solutions to Barriers

A potential barrier to the adoption of the policy recommendations might be a resistance to change. Resistance is a usual and inherent human reaction to change (Davidson, 2014; Gilley et al., 2009). This resistance to change may be due to individuals' natural disposition to become attached to familiar routines or because of the uneasy feelings that the unknown tends to produce **(**Davidson, 2014). Other potential barriers to change are associated with fear of failure, differences of opinions, self-interest, or satisfaction with the status quo (Gasaway, 2014).

Gilley et al. (2009) indicated that acceptance or resistance to change will be influenced by the way in which a planned policy or change is communicated within the institution. Early communication and slow (rather than radical) adoption of changes will minimize resistance to change. In addition, perceived involvement and collaboration of the affected parties can facilitate changes (Gilley et al., 2009; Isaac, n.d.). Persuading stakeholders of the potential benefits of the policy implementation can facilitate

acceptance of the policy. Also, changes should be communicated in a timely way: frequently and appropriately.

Implementation and Timetable

The project implementation consists of the completion of the policy recommendation paper (Appendix A) and its submission to the dean of nursing for consideration. In Appendix A, I included details regarding my specific policy recommendations, supporting evidence for the recommendations, and procedures to implement the policy. Once I submit the project (policy recommendations) to the dean of nursing for review, I anticipate that review by the dean of nursing and subsequently by the nursing faculty may take about one to two months. The adoption of the policy recommendations depends on whether the dean of nursing and nursing faculty at the study site accept all, or some, of the policy recommendations.

Roles and Responsibilities of Students and Others Involved

Students were not involved with the development, adoption, or implementation of the project (policy recommendations). I had the responsibility of the development of policy recommendations that were feasible, beneficial, and grounded in the available literature and research. Because I have been a faculty member at the study site and I am well known to the dean of nursing and the nursing faculty, I have ample opportunities to explain the policy recommendations and benefits. The dean of nursing, members of the admission committee, and nursing faculty will be responsible for reviewing the policy recommendations and making decisions regarding adoption of the policy recommendations.

Project Evaluation Plan

Policy evaluation involves a variety of processes or procedures used for the examination of the policy's content, execution, and intended or unintended effects (Windham, 2017). An evaluation plan is a process to secure evidence demonstrating whether an implemented program, or in this case an implemented policy, delivered the intended outcomes (Centers for Disease Control, 2015). Evaluation results can provide stakeholders with useful information to make decisions about whether to revise, continue, or cancel a program or policy (Caffarella & Daffron, 2013). Isaac (n.d.*)* indicated that it is common practice to preset a date for policy review, but the time frame for policy evaluation will depend on the specific nature of the policy.

Type of Evaluation and Justification

Evaluations can be performed from several standards or frameworks. For example, evaluations could be performed based on timing or outcomes (Boundless Policy Evaluation, 2016; Centers for Disease Control, 2015; Clark, 2013). For my project, I recommended evaluations based on time (formative and summative) and on outcomes (the intended and unintended impact of the policy). Selecting all three types of policy evaluations is justified because together, the three types of evaluations provide ongoing as well as time-lapse information about the policy and its effectiveness.

Clark (2013) described formative evaluations as those assessments performed on an ongoing basis to obtain preliminary data and determine if a policy is serving the intended purposes or if the policy needs any adjustments. To conduct the formative evaluations, I suggested the collection and review of noncritical data such as anecdotal

information (Boundless Policy Evaluation, 2016) from the members of the admissions committee. Part of the formative data includes information about policy implementation feasibility (based on available resources) and perceptions of the impact to stakeholders (students, faculty, and the college community in general).

Formative evaluations, on the other hand, are conducted at the end of a specified period to determine whether the intended outcomes were achieved (Clark, 2013). I recommend that the summative evaluations be conducted once per year. The summative evaluations include the collection of empirical evidence to evaluate if the intended outcomes of the policy were achieved. A more formal research and statistical analysis might be conducted to gather empirical results (Boundless Policy Evaluation, 2016). The policy evaluator should also investigate if unintended or negative outcomes were produced (Brady et al., 2014). In the case of unintended negative outcomes, the policy might need immediate revisions.

The formative evaluations also serve as outcome-based evaluations. In outcome-based policy evaluations, a policy evaluator investigates whether a policy yielded the intended policy outcomes (Brady et al., 2014). I recommended that the outcome-based evaluations be conducted through the collection of empirical data and data analysis to determine the effects of the policy in regard to the nursing students' attrition levels after the policy implementation. Therefore, the project's success will be measured by whether or not the intended policy goals were met. My expectation is that the policy implementation will lead to decreased nursing student attrition at the research site.

Overall Goals of the Project

The goal of the project (policy recommendation) was to help decrease nursing student attrition at the research site. Besides determining whether the overall intended goal (reducing attrition) was met, it will be important to assess whether any unintended or potentially negative outcomes of the policy occurred (Brady et al., 2014). For example, I would want to determine if the adoption of the policy would drastically decrease the size of the applicant pool of candidates due to the revised admission criteria and increased minimum required GPA and TEAS scores. A decrease in the qualified applicant pool could impact the nursing program and the college in a negative manner.

Key Stakeholders

Students. The students comprise one of the most important stakeholder groups for this project. The policy recommendations I developed are intended to provide direct benefits to the students at the college. First, the suggested revisions to the admissions criteria were designed with the goal of selecting candidates who have the highest chance of academic success. This will help reduce the number of students who are admitted to the nursing program but who do not graduate. These students could, in turn, seek less rigorous academic programs within the college, in which the students might have a better chance of success. In addition, the policy recommendations for the implementation of an early identification system may also help identify students who need extra support early in the academic process. Another recommendation is that those students who are identified to be at risk for attrition receive timely supportive measures that might increase the likelihood of academic success.

Nursing faculty. Faculty at the college has frequently noted the issue of student attrition within the nursing program. They have also noted the desire to reduce the levels of student attrition and to help students succeed. A recurrent theme among the faculty is the sense of satisfaction they feel when students are successful in the nursing program. If the policy recommendations are effective in reducing student attrition levels, faculty might be able to enjoy a sense of accomplishment and satisfaction, which seems to drive many individuals in the academic setting.

Nursing program and college-wide. The policy's intended outcome of reducing student attrition may be beneficial to the nursing program and at the college-wide level. Student attrition represents a multimillion-dollar loss for taxpayers and for community colleges each year (American Institute for Research, 2011); therefore, decreasing attrition may benefit the college financially. In addition, nursing programs must function under tight regulations from state boards of nursing and accreditation agencies. Pervasive high levels of nursing student attrition may endanger the nursing program's accreditation status (Accreditation Commission for Higher Education, 2013). High attrition rates may also negatively affect the nursing program's image. High attrition can lead to the loss of qualified students because many prospective students review program success outcomes to make decisions about school selections. High attrition levels may negatively affect the college's overall image, as well as employee morale.

Project Implications

Possible Social Change Implications

For nursing students, high attrition rates represent lost time and finances (Easton, Pryjmachuk, & Littlewood, 2008). High attrition could prevent the students from improving their socioeconomic and professional statuses. This is especially true among students served by the college who, for the most part, belong to ethnic minority and socially disadvantaged groups. Therefore, policy recommendations that could reduce attrition at the college have the potential to lead to positive social change for these students.

Project Importance for Stakeholders: Locally and Beyond

Community and health care facilities. Locally, reducing nursing student attrition will benefit the community because many of the college's students reside in close proximity to the college. These students' academic success could add more community residents who have a college education, are employed, and have financial stability. Once employed, these graduates can provide health care services to members of the community. In addition, many of the college's graduates gain employment in the local health care facilities where many of them underwent clinical education and training while in the nursing program. Therefore, college graduates provide local health care facilities with a constant pool of employment candidates.

Nursing profession. Reducing attrition and increasing the number of nursing professionals benefits the profession by helping combat the expected nursing shortage. By the year 2020, the demand for registered nurses will exceed the supply by about

285,000 nurses (Shelton (2012, p. 1). Also, because the college is an ethnic minority-serving institution, reducing attrition could increase ethnic minority nursing professionals who will be needed to facilitate the provision of quality and culturally competent nursing care and help reduce health care disparities (American Association of Colleges of Nursing, 2013).

Conclusion

In Section 3, I discussed detailed aspects of a project developed to help reduce nursing student attrition at the study site. In this section, I also provided summary findings of a literature review conducted to gain insights in regard to the project genre (policy recommendation). The project involved a policy recommendation paper that was based on results of a correlational study I conducted and on evidence found in the available literature. The project recommendations are in Appendix A of this document. In the next section (Section 4), I will provide overall reflections regarding the project development process.

Section 4: Reflections and Conclusions

Introduction

In this section, I will present a reflection on the overall project discussed in Section 3 (the policy recommendation paper). I will include an analysis of the strengths and limitations of the project, along with recommendations for alternate approaches that can be effective in addressing the limitations of the project. I will also discuss the concepts of scholarship in regard to the project development and its implications on leadership for change. Finally, I will reflect on the importance of the project's work and present the implications, applications, and possible directions for future research.

Project Strengths and Limitations

Project Strengths: Genre, Relevance, Evidence, and Feasibility

The genre I selected for the project presents one of the project's strengths. A policy recommendation or white paper provides an effective method to present recommendations. I conducted an extensive literature review to evaluate appropriate practices in the development of policy recommendation papers. The recommendations presented within the proposed policy paper are relevant to the institution because the project's recommendations are based on the findings of the study I conducted at the institution. Also, I based the recommendations contained within the policy paper on strategies supported by current professional literature on student attrition.

With the policy recommendations, I sought to address high nursing student attrition at the research site. The problem of high attrition has been an important and pervasive problem within the nursing program for years; therefore, the goal of the project

is relevant. The dean of nursing and the nursing faculty have implemented curricular strategies to improve academic success and reduce attrition. The recommendations I made to address the problem can be valuable for stakeholders at the institution, including students, institutional administrators, and faculty.

Another area of the project's strength is the feasibility of most of the recommendations. For example, I made suggestions to continue the use of prior college credits for admissions without changes. I also recommended continuing the process of LPN students' admissions as previously done. The recommendations to increase the GPA and TEAS scores for admissions will require minimal effort from members of the admission committee. For these two changes to be implemented, the recommendations would need to be approved and communicated to the members of the college community, including prospective students.

Project Limitations: Increased Demands and Lack of Compensation

Although policy papers can be appropriate methods to provide recommendations, the genre can have limitations due to a lack of stakeholders' willingness or available time to read the policy paper. Also, the recommendations for supportive measures found within my policy paper may be somewhat difficult to implement. The development and implementation of a faculty–student mentorship program may be problematic because faculty may find that participating in this mentorship program may increase their already heavy workloads. In addition, some faculty may not want to invest more working hours without monetary compensation.

My proposal for the peer–peer mentorship program may present similar challenges. Many of the higher-level students at the study site often complained that they did not have enough time and energy left for extracurricular activities. Students often struggled with the demands of school, work, and family life, among others. These students may feel that participating in a peer–peer mentorship program will require additional time and effort that they may not be able or willing to provide. Both faculty and students may feel that they do not have sufficient skills, experience, or knowledge to become a mentor.

Recommendations for Alternate Approaches

One way in which the limitations of the project's recommendations could be addressed is by increasing faculty and student mentorship knowledge and increasing the incentive for participation. Many of my faculty colleagues have stated that they teach because they find satisfaction in helping others grow. However, for faculty members, some possible additional incentives may include monetary compensation. However, providing monetary compensation would not be an easy alternative approach, as that would depend on administrative approvals and the overall financial status of the college. Instead of monetary compensation, some faculty might consider a reduction in workload or decreased committee work commitments in exchange for participation in the mentorship program.

Students may also require additional incentives to be persuaded to volunteer their time and efforts in the peer–peer mentorship program. Monetary compensation for the students presents the same challenges noted for faculty compensation, if not greater ones.

A possible incentive for students may be achieved by making an emphasis on the possibility of developing experience and leadership skills, which may be useful resume-builders upon graduation. This is feasible because peer mentors will be required to belong to the college's honor program as a criterion of participation. Another possibility would be to recruit students from the current nursing club within the nursing program. The club's main objectives are to provide community service and to engage in student support activities.

Scholarship, Project Development, and Leadership for Change

Scholarship in Education

As a faculty member, scholarship involves a search for continued growth and development. Scholarship necessitates a continued inquiry for knowledge while integrating the best available evidence into practice. The field of adult education, particularly nursing education, has experienced important emerging trends in the last several decades. These emerging trends represent evolving societal needs and priorities (Alfred & Nafukho, 2010), such as finding effective methods to decrease student attrition.

The creation, dissemination, and integration of new knowledge into educational practices are important requisites of scholarship in nursing education (AACN, 2013b). Continued scholarship in nursing education can facilitate the ever-increasing need to develop a larger, more diverse, and competent nursing workforce. My involvement in the development and implementation of this project has made invaluable contributions to scholarship development in my professional practice as a nursing faculty member.

Self as a Project Developer and the Project Development Process

During the project development, I considered other project genres, such as a faculty development program or curricular revision. However, in collaboration with my research chairperson, I determined that a policy recommendation paper would be the best project to disseminate the findings of my study and to make a valuable contribution to the research site. As a project developer and writer of the policy recommendations, I had two major concerns in mind: the relevance and feasibility of the project.

The policy recommendations are relevant because they are aimed at addressing nursing student attrition, which is a persistent problem within the nursing program at the research site. Except for the mentorship programs, the recommendations I make within the policy paper are feasible because most of them will require minimal effort or changes. I have included some discussions under the project's limitations that may help facilitate the adoption of the mentorship program. These suggestions will be shared with the dean of nursing and with the nursing faculty if the recommendations for the mentorship programs are adopted.

Leadership for Change

The natural human reaction to change is usually resistance. Therefore, persuasive abilities are some of the most important leadership skills that can facilitate change. To that end, I will emphasize the potential positive outcomes of the project (policy recommendations) for the students, for the faculty, and for the institution in general. I will also emphasize the feasibility of the policy recommendations and serve as a resource

person to ease the implementation of any recommended changes in case of adoption of the policy changes.

I believe that the best type of leadership is the one enforced by example and collaboration. Therefore, I will volunteer to present educational sessions to the dean of the nursing program and the faculty explaining how changes can be implemented. I also became a member of the program's admission committee to provide assistance in the policy implementation, monitoring, and evaluation in case the policy recommendations are adopted.

Self as a Scholar

The project development process has provided me with the opportunity to engage in professional scholarship. The process also promoted my growth as a scholar, practitioner, and project developer. As a scholar, the journey has been challenging, yet extremely rewarding. During the last several years, I have gained broad knowledge about adult education, especially in regard to nursing education. Besides all the invaluable knowledge I obtained, I think that one of the most importance lessons I will take away is the importance of patience and perseverance. This new perspective of patience and perseverance has translated into my professional and personal contexts as well. I believe that knowledge acquisition is not a final destination. Instead, learning and growing is an ongoing process, which has many challenges, triumphs, and defeats, but most of all, great satisfaction.

Self as a Practitioner

The process of being a scholar has provided knowledge and skills that will surely continue to improve my abilities as a practitioner. To be a good practitioner, I must have a continued sense of inquiry, and many times, I must challenge my established assumptions. These are some of the new perspectives I have gained as a scholar that have improved (and will continue to improve) myself as a practitioner. On my educational journey, I have not only learned the importance of using evidence in my professional practice but also of creating evidence that can add to the knowledge base in the field of adult education.

Reflections on the Importance of the Work

During the project development, I learned many of the strategies presented in the relevant literature that may help reduce nursing student attrition. I also learned how policy recommendations could facilitate this process. Hill (2010) noted the importance of policy development for the improvement of educational systems. The work is important because it has the potential to facilitate student academic success. Community colleges have been presented with the challenge of producing an additional 5 million new graduates by the year 2020 (American Association of Community Colleges, 2013). However, adding to the needed number of graduates may represent a bigger challenge to the local research site (a community college) due to the characteristics of the student body. Therefore, through this project, I sought to recommend strategies that could help decrease nursing student attrition at the research site.

Implications, Applications, and Directions for Future Research

Implications and Applications

Policy recommendations that could decrease nursing student attrition can promote professional and socioeconomic progress for the students and their families. Improving nursing students' outcomes can strengthen the nation's workforce and improve societal well-being through education (AACN, 2013a; National League for Nursing, 2011). For the organization under study, reducing attrition will enhance the institutional reputation and increase faculty and student morale. In the United States, student attrition translates to a multimillion-dollar loss for taxpayers and community colleges annually (American Institute for Research, 2011). Therefore, reducing attrition could represent financial benefits for the college.

Directions for Future Research

As I noted within the literature review, nursing student attrition has been a pervasive problem among nursing programs. In this project study, I provided evidence suggesting that the problem of high nursing student attrition also exists within the research site. This was the first study conducted at the research site investigating factors associated with nursing student attrition. Therefore, replication studies can be conducted at the research site with the goal of validating the results of this study. Replication or follow-up studies that incorporate multisite samples can help increase the ability to generalize findings. Also, if the policy recommendations included in this project study are adopted, a follow-up study could provide information to determine if the policy changes had an impact on the levels of nursing student attrition at the research institution.

The correlational study I conducted at the research site provided evidence of the existence of the problem of nursing student attrition. However, with this study alone, it was not possible to understand why the problem exists. A qualitative study could be used in the future to attempt to understand how or why certain student characteristics are associated with higher levels of attrition at the research site.

Conclusion

With this study, I sought to investigate nursing student characteristics associated with nursing student attrition. I grounded the study in the available literature on the topic. Using the results of this study and based on strategies found within the literature, I developed policy recommendations with the goal of reducing nursing student attrition at the research site. I will present these policy recommendations to stakeholders at the research site for consideration and possible adoption.

The development of this project study has allowed me to expand my knowledge, skills, and confidence as a nurse educator. However, the overarching aim of all my work throughout this journey has been to help promote positive social change. The results of this study have the potential to help decrease nursing student attrition and promote nursing students' academic success. Increasing academic success and professional development can, in turn, promote positive social change for students by enhancing students' socioeconomic status. Reducing nursing student attrition at the research site (an ethnic minority-serving institution) can also promote positive social change by facilitating program completion among student from ethnic minority backgrounds.

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Appendix A: Policy Recommendation

Date: XX/XX/2017

To: Dean of Nursing Education, College Administrators, and Faculty

From: Wendy Watson, MSN, RN, Assistant Professor of Nursing

Executive Summary

Problem

High levels of nursing student attrition have been a pervasive problem within the college's nursing program.

Methods

A policy recommendation paper was developed with suggestions to help reduce nursing student attrition levels within the nursing program. These recommendations are based on results of a correlational study conducted at the college. Recommended strategies to address nursing student attrition are also based on a comprehensive literature review conducted on the subject.

Results and Recommendations

Results of the correlational study conducted at the college indicated statistically significant relationships between nursing student attrition and certain student characteristics. Below is a summary of the study's findings along with recommendations:

1) GPA Scores

- **Result:** Higher GPA scores were associated with decreased attrition.

- **Recommendation:** Increase the minimum required GPA score for program admissions from 2.0 to 2.5.

2) TEAS Scores

- **Result:** Higher TEAS composite scores and TEAS math scores were associated with decreased attrition.
- **Recommendation:** Increase the minimum required TEAS score for admission from 50% to 55%.

3) Ethnicity

- **Result:** Belonging to an ethnic minority group was associated with higher attrition.
- **Recommendation:**
    A. Establish an early identification system for students who may be at risk of attrition (ethnic minorities and students with lower GPA or lower TEAS math and TEAS composite scores).
    B. Establish a student peer mentor program and a faculty mentor program for students identified at risk for attrition.

Conclusions and Implications

Reducing nursing student attrition at the college will benefit the nursing students by promoting academic success. A reduction in nursing student attrition may provide a sense of accomplishment and satisfaction among nursing faculty. Reducing attrition can save financial resources and promote a positive image for the college and the nursing program.

Background of Existing Problem

As in many other nursing programs, high nursing student attrition has been a pervasive problem within the college's nursing program. Despite a selective admission process, high nursing student attrition has persisted among the students in the nursing program. The nursing student attrition rates have remained about 50% for the past several years. High nursing student attrition represents lost time and finances for students and can negatively affect the reputation of the institution and the morale of nursing students and nursing faculty. The policy recommendations contained in this document were developed with the goal of decreasing student attrition within the nursing program. The policy recommendations provided were based on an extensive literature review and on the results of a correlational study conducted at the college.

Summary of Findings

Factors that were found to lack statistically significant correlations with attrition included age, gender, and ESL status. These three factors were therefore omitted from this policy recommendation paper. On the other hand, GPA, entrance exam scores (TEAS), preadmission credits, ethnicity, and LPN licensures were found to have significant associations with student attrition and were addressed within this policy recommendation paper. The policy recommendations include a suggested revision to the admission process and criteria used within the nursing program. Other recommendations include the establishment of an early identification system for students at risk for attrition along with the implementation of supportive student measures.

Outline of Recommendations and Supporting Evidence

Analysis of Existing Policy: Admissions Process and Criteria

Students are admitted to the nursing program after completing a preselected number of prerequisite courses in general education and sciences. The students must receive a grade of C or better in all courses and have a GPA of 2.0 or higher to be considered for admission. As shown in Tables A1 and A2, students are selectively ranked using a point system scale based on prior college credits, GPA scores, and the scores on the TEAS.

Table A1

TEAS Scores for Admission Criteria

Percent correct on TEAS test	Number of points awarded toward student admission ranking
49 or below	0
50–54	1
55–59	2
60–64	3
65–69	4
70–74	5
75–79	6
80–89	7
90–99	8

Note. A minimum score of 50% is required for each section of the TEAS exam (English, math, reading).

Table A2

GPA Scores and Number of Credits for Admission Criteria

GPA	Credits	Points	GPA	Credits	Points
3.5–4.0	27–34	12	2.5–3.0	27–34	10
	19–26	8		19–26	6
	12–18	4		12–18	2
3.1–3.4	27–34	11	2.0–2.4	27–34	9
	19–26	7		19–26	5
	12–18	3		12–18	1

Note. Any student with a prior course withdrawal or a grade of D or F within the past five years will have one point deducted for each occurrence.

Policy Recommendations: GPA, Prior College Credits, and TEAS Scores

It is recommended that the minimum GPA used for admission be increased from 2.0 to 2.5. It is also recommended that the college credits continue to be used in the same manner. In terms of TEAS scores, it is recommended that the minimal passing score in reading and English continue to be 50% but that the minimum score for TEAS composite and TEAS math be increased to 55%.

Evidence: GPA

Data analysis results of a correlational study conducted at the college revealed that GPA scores and nursing student attrition had a statistically significant negative relationship ($p = .000$, $r = -.272$). As GPA scores increased, attrition decreased among nursing students. Similarly, several authors have noted that higher GPA scores were correlated with less attrition (Antonious, Morin, Schiffman, & Torregosa, 2015; Bosch, Doshier, & Gess-Newsome, 2012; Clauson & Timer, 2011). Brenkus, Dugan, and Kowitlawakul (2013) suggested that minimum GPA scores for program admissions should be 3.0. Crouch (2015) noted that students with preadmission scores between 2.5

and 2.99 were somewhat successful, students with preadmission GPA scores between 3.0 and 3.49 were significantly successful, and students with GPAs between 3.5 and 4.0 were extremely successful. In addition, other nursing programs in close proximity to the college use GPA scores 2.5 and above as a minimum requirement for program admissions (American Association of Community Colleges, 2017).

Evidence: Prior College Credits

The correlational study indicated that the number of preadmission college credits had a positive significant relationship with attrition ($r = .164$, $p = .012$). As the preadmission number of credits increased, attrition also increased. These results were obtained after removal of two values that were outside the expected range. For comparison, the analysis was repeated with the two out of range values. This time the results lacked statistical significance ($r = .104$, $p = .113$). Members of the nursing admissions committee allot candidates increasing points for admissions with increasing preadmission credits. An exhaustive literature review was conducted about possible relationships between preadmission credits and student attrition, but the search revealed a lack of literature on the subject. Therefore, it is recommended that the use of prior college credits for admissions purposes remain unchanged until duplication studies can be conducted or literature on the subject becomes available.

Evidence: TEAS Scores

Research evidence has suggested that the TEAS entrance exam is a reliable and valid instrument to establish statistical relationships between students' TEAS scores and attrition (ATI, n.d.). Results of the correlational study conducted at the college revealed

that there was a significant negative relationship between the composite TEAS scores and attrition (r= -.219, p =.005*).* As TEAS composite scores increased, attrition decreased. A significant positive relationship was also found between TEAS math score and attrition (r = -.195, p = .013). As TEAS math scores increased, attrition decreased. However, no statistical associations were found between TEAS reading scores and attrition or TEAS English scores and attrition. Anderson, Cunningham, Manier, and Sarnosky (2014) found significant correlations between TEAS scores and nursing student attrition (as the TEAS scores increased, attrition decreased). Based on the results, Anderson et al. presented a model for admissions where the minimum required TEAs score was set at 59%.

Analysis of Existing Policy: Early Risk Identification

A standardized early risk identification process for students during the admissions process does not currently exist within the nursing program.

Policy Recommendation: Early Identification System

The implementation of an early identification system for students who might be at risk for attrition soon after admission is recommended. During the admission process, any student who meets at least three of the following criteria would be identified as a student who might be at risk for attrition:

- A cumulative GPA between 2.50 and 2.99.
- A composite TEAS score between 55 and 60.
- A TEAS math score between 55 and 60.
- Belonging to an ethnic minority group.

Evidence

The evidence supporting the inclusion of GPA and TEAS scores was presented previously in the discussion in regard to the policy recommendations for the admission process. Both GPA and TEAS scores have been found to have significant correlations with attrition, where higher GPA and TEAS scores were correlated to lower attrition (Anderson et al., 2014; Antonious et al., 2015; Bosch et al., 2012; Brenkus et al., 2013; Clauson & Timer, 2011; Crouch, 2015). The evidence for also using ethnicity as a risk indicator for attrition is based on the results of the correlational study conducted at the college which indicated that a minority ethnicity had a significant negative correlation with attrition (r = -.152, p = .026). Belonging to a minority ethnic group was associated with higher attrition. In addition, other authors have found that belonging to a minority ethnic group was correlated with higher levels of attrition (Cortez, Magdaleno, Najjar, Noone, & Wros, 2016; DeCrane, Edwards, Ferrel, Foli, & Tennant, 2016; DeCrane & Ferrell, 2016; Murray, 2015).

Analysis of Existing Policy: Supportive Measures for At-Risk Students

There is not a standardized program to provide supportive measures for students who might be at high risk of attrition within the nursing program.

Policy Recommendation: Designated Faculty Mentor

It is recommended that a formal faculty mentorship program be implemented at the college to help support students identified at risk of attrition. Faculty mentorship and support have the potential to improve academic performance for students at risk for attrition. The results of the correlational study conducted at the college can be used to

identify students at risk of attrition to place those students in the faculty mentorship program.

Faculty mentorship and support have been cited as important factors to promote academic success among students. Raman (2013) indicated that faculty support was correlated with higher GPA scores among students. Cowan, Weeks, and Wicks (2015) and Crooks (2013) noted that faculty mentorship and formal ties to faculty increased academic success among ethnic minority students, who are often at risk for attrition.

Policy Recommendation: Peer–Peer Mentoring Program

The implementation of a peer–peer mentorship program is also recommended. Like faculty mentorship, peer–peer mentorship also has potential benefits to promote academic success and social integration among students at risk of attrition. The results of the correlational study conducted at the college can be used to identify students at risk for attrition and include those students in the peer mentorship program. These criteria were discussed under the recommendation for the early identification system.

Evidence

Peer–peer mentoring has been shown to be beneficial for students at risk for attrition (Attwood, Everett, Glew, Salamonson, & Weaver, 2013; Bryer, 2012; Campbell, 2016). Attwood et al. (2013) found that an implemented peer–peer mentorship program produced positive outcomes for students at risk for attrition, and that students who participated in the peer mentorship program had improved academic achievement, reported increased connectedness, and had increased social integration in the academic setting. Bryer (2012) found that 79% of nursing students who participated in a peer–peer

mentorship and tutoring program had a significant improvement in their grades. In addition, Campbell (2016) indicated that peer–peer mentorship programs could help first-year students to learn professional expectations and improve students' skills to manage stress.

Analysis of Existing Policy: LPN Admissions

LPN students are admitted to the nursing program once per year. LPN student admissions are based on GPA scores and scores on a standardized entrance exam. The usual number of LPN students admitted to the program each year is between 20 and 25. These students are then exempt from taking the first nursing course based on the assumption that they already have the knowledge and skills covered in the first nursing course.

Policy Recommendation: Continue LPN Admissions Procedures Without Changes

It is recommended that LPN students continue to be admitted as usual. It is also recommended that, if feasible, the number of LPN students admitted each year is increased. Increasing the number of LPN students admitted each year may improve attrition rates at the college because LPN students may have a higher possibility of academic success.

Evidence

A literature review revealed a lack of study on LPN and attrition. There were only a handful of qualitative studies conducted on the subject. The authors of the studies suggested that LPN students appeared to face more challenges than non-LPN students, which could potentially affect academic performance (Gordon, Janzen, Melrose, &

Miller, 2013; Melrose & Wishart, 2013). However, data analysis in the correlational study conducted at the college indicated that having an LPN licensure had a significant relationship with attrition (r = .236, p = <.001). Students who had an LPN licensure had lower attrition rates than non-LPN students. Table A3 is a display of the proportions of LPN and non-LPN students who graduated within six semesters in the nursing program.

Table A3

LPN and Program Completion

		LPN/took the LPN transition course		Total
		1 (yes)	2 (no)	
Graduated in six semesters	Yes	27 (58.69%)	57 (30.15%)	84
	No	19 (41.3%)	132 (69.8%)	151
Total		46 (19.6% of sample)	189 (80.4% of sample)	235

Note. All LPN students at the research facility took the LPN transition course, which was used to identify LPN versus non-LPN students.

Immediate Applicability and Implementation

Admissions Process and Criteria

If the proposed recommendations for changes to the admission process and criteria are adopted, the main responsibility of implementation will rest with the admissions committee members within the nursing program. There is a current application process in place, and this process would not need to be altered. All the assessments, forms, and documents that are currently in use may continue to be used. The only changes that will be necessary are increasing the required minimum scores used for admission purposes. These changes will be as follows:

- Increase the minimum required cumulative preadmissions GPA scores from 2.0 to 2.5.

- Increase the minimum TEAS math scores from 50% to 55%.
- Increase the minimum TEAS composite scores from 50% to 55%.

Note: The current way in which preadmission college credits are used by the admission committee members will remain unchanged.

Early Identification System

During the admissions process, students who are at risk of attrition will be identified using the preselected criteria. If students meet at least three of the identification criteria, these students will then be referred for inclusion in the additional supportive measures programs (faculty–student and peer–peer mentorship). These identification criteria will include the following:

- A cumulative GPA between 2.50 and 2.99.
- A composite TEAS score between 55 and 60.
- A TEAS math score between 55 and 60.
- Belonging to an ethnic minority group

Supportive Measures: Peer–Peer Mentorship and Faculty–Student Mentorship Programs

Students identified at risk of attrition during the admissions process will be recommended for inclusion in both the peer–peer mentorship program and the faculty–student mentorship programs. These two programs will have a designated coordinator responsible for overseeing the functioning of the programs. The program coordinator will recruit students and faculty who will provide mentorship to students (mentees) at risk

of attrition. Mentors for the peer–peer mentorship and the faculty–student mentorship programs will be selected on a voluntary basis.

Student mentee. Student mentees will meet the inclusion criteria described in the early identification system section. In addition, the mentee will agree to do the following:

- Participate in a mentorship informational session.
- Maintain weekly contact with the mentor (in person, telephone, email, or as preferred by the mentor and the mentee).

Peer mentors. The nursing program already has an honors program for students in the last semesters of the program. To remain in the honors program, students are required to engage in college service and community service activities or projects. The peer–peer mentorship program would provide an opportunity for these students to meet the requirements of the honors program. In addition, students who may be at risk of attrition would benefit from a mentoring relationship with students who have successfully navigated the first few semesters of the nursing program. The student mentors will be required to meet certain criteria, including the following:

- Be enrolled in one of the final two semesters of the nursing program.
- Be a member of the college's honors program.
- Have a cumulative GPA of 3.3 or greater.
- Have two recommendations from faculty members in the nursing program.
- Participate in a mentorship informational session.

- Maintain mentee confidentiality.
- Maintain weekly contact with mentee (in person, telephone, e-mail, or as preferred by the mentor and the mentee).

Faculty–student mentors. Faculty mentors will be selected from different course levels from the day and evening nursing programs. The faculty mentors will meet the following criteria:

- Have 3 years or more of full-time teaching experience.
- Participate in a mentorship informational session.
- Maintain a mentorship relationship with the mentee from the time of program admission until program graduation.
- Maintain biweekly contact with mentee (in person, telephone, e-mail, or as preferred by the mentor and the mentee).

Summary

The overall goal of the project discussed was to present the dean of nursing, the nursing faculty, and other college administrators with several options of policy recommendations for consideration. The aim of the recommendations is to help decrease nursing student attrition within the college's nursing program. These recommendations were based on a correlational study conducted at the college and on strategies found within the related professional literature. The effectiveness of the proposed recommendations could be measured by collecting and analyzing information about the rates of nursing student attrition after the adoption of the policy recommendations. Evaluations could be completed in formative and summative fashion, as well as time-

based fashion after a predetermined amount of time has elapsed. Formal data collection and statistical data analysis could provide information about the effectiveness of the policy changes in reducing student attrition at the college.

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Appendix B: Data Abstraction Form

Study: Relationship Between Student Characteristics and Attrition Among Associate Degree Nursing Students

Date Collected: _____/_____/_____

Record: _____of: _____

1. Participant's school ID number: _____
2. Preadmission GPA: _____
3. Preadmission (prior) number of college credits: _____
4. Preadmission TEAS scores: _____