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A Case Study on Licensed Practical Nursing Program Outcomes: Exploring Factors Affecting Successful Program Completion and Licensure

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by

Holley Goodnight

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

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Abstract

Student retention is important to higher education institutions (Shoemake, 2017).

Nursing programs strive to choose admission criteria which identify students who show

the best chance of successfully completing the program and passing the National Council

Licensure Examination (Bremner, Blake, Long, & Yanosky, 2014; Chen, Heiny, & Lin,

2014; Knauss & Wilson, 2013). The crisis of a nursing shortage, compounded by the

void retiring nurses place on healthcare industries, creates the need for nursing programs

to graduate more qualified nurses (Kubec, 2017; Mooring, 2016). The purpose of this

mixed-methods study was to investigate factors which influenced completion of a

practical nursing program. Quantitative data included admission and demographic

criteria. These data were analyzed to identify if differences existed when compared to

program outcomes including completion and licensure. A statistically significant

difference was found in both program completion and first time passage of licensure

exam rates between practical nursing students who held healthcare certification and

practical nursing students who did not hold a healthcare certification, with the former

group completing the program at a higher rate. To address the quantitative phase of the

study, interview questions were constructed using Jeffrey's (2015) nursing universal

retention and success model. Then, responses to the questions were obtained from a

student focus group of six currently enrolled students. Following an analysis of the

qualitative data, two themes emerged: theory and practice and navigating the journey.

Based on findings, further research of nursing program completion and licensure is

recommended to assist recruitment, application, and programming practices of academic

institutions.

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Chapter One: Introduction

According to predictions made by Buerhaus, Auerback, and Staiger (2014), there could be a shortage of at least 500,000 registered nurses by 2020. The nursing shortage comes at a time when the healthcare industry needs a larger nursing applicant pool in the workforce (Buerhaus et al., 2014). Harris, Rosenberg, and O'Rourke (2014) estimated roughly 50% of registered nurses can retire within 20 years. Unfortunately, the projected number of nurses available will not fill the void (Buerhaus et al., 2014; Mooring, 2016). The U.S. Bureau of Labor Statistics (2018b) projected only a 15% increase in the number of registered nurses by 2026 (para. 1). Additionally, the U.S. Bureau of Labor Statistics (2017) forecasted professions in the healthcare industry will make up the largest portion of new jobs by 2026.

The existing nursing shortage and future projections of job growth in the healthcare arena places a burden on accredited nursing programs to graduate work-ready nurses (Mooring, 2016). However, approximately 50% of practical nursing students enrolled at community colleges, or other programs, fail or drop out of their first three courses (Barra, 2013, p. 125). To help combat the nursing deficit, the healthcare industry and leaders from academia have started initiatives to attempt to solve the nursing school student attrition problem (Buerhaus et al., 2014). Post-secondary institutions are working to remove barriers to increase student success on campuses (Ferrell & DeCrane, 2016). Understanding why students leave nursing programs will help identify barriers and create a culture and environment which leads to program completion (Ferrell & DeCrane, 2016).

It is the goal of nursing programs to admit students who can successfully complete and pass the National Council Licensure Examination (Bremner et al., 2014). Interest in the field of nursing is increasing in the United States with more people making application into programs than can be accepted (Horkey, 2015). Clearly, articulated pre-admission selection criteria are needed to screen applicants and admit students who are in the best position to successfully complete the program (Horkey, 2015).

In this chapter, an introduction and background information describing the research study of pre-admission criteria factors that influence student attrition in licensed practical nursing programs are included. Student perspectives to gain insight into factors that assist, as well as obstacles that prevent students from successful program outcomes, are also examined. A theoretical framework, statement of the problem, and the purpose of the study are explained, and research questions which guided the study are outlined. The significance of the study is described, and the chapter concludes with key terms and definitions, limitations and assumptions, and a summary.

Background of the Study

Healthcare management is an ongoing issue for society (Buerhaus et al., 2014). Among professionals working in the healthcare industry, the number of registered nurse employees exceeds any other group in the workforce (Monahan, 2015). There are an estimated 19.3 million nurses throughout the world (Flinkman, Isopahkala-Boure, & Salantera, 2013, p. 1). Aging population has increased demands on the healthcare industry not met by numbers of graduating nurses (Monahan, 2015).

The success of all student populations who enter nursing programs is important (Ferrell & DeCrane, 2016). However, there is a priority to increase minority student

achievement to assist the overall shortage of nurses who represent minority populations in the healthcare arena (Ferrell & DeCrane, 2016). Adding to the nurse shortage problem is the high attrition rate of nursing students, especially in the first year of the program (Knauss & Wilson, 2013; Knowlton & Angel, 2016).

A considerable amount of the literature concerning nursing education is centered on two-year, four-year, and post-baccalaureate nursing programs (Olsen, 2017; Schmidt & MacWilliams, 2011). It is important to explain differences in various levels of nursing education (National Council of State Boards of Nursing, 2018; Scheckel, 2009). Pre-licensure nurses have four pathways from which to choose when obtaining credentials (Scheckel, 2009). Regardless of the educational path a potential nursing student chooses, all graduates must take the National Council Licensing Examination to become licensed and practice as a registered nurse (National Council of State Boards of Nursing, 2018).

The associate degree in nursing typically requires two years of coursework, usually delivered at a community college (Bureau of Labor Statistics, 2018a; Nurse Journal, 2017). Diploma nursing programs are not as popular as associate degree programs and are usually housed in the hospital setting and completed in two to three years (Bureau of Labor Statistics, 2018a). Bachelor of science nursing programs generally take four years to complete and are found at the college and university setting (Bureau of Labor Statistics, 2018a; Nurse Journal, 2017). The bachelor of science degree in nursing requires students to take additional coursework and expands clinical experiences beyond the hospital setting (NursingLicensure, n.d.). All registered nursing pathways prepare students for licensure by taking the National Council Licensure Examination for registered nurses (Bureau of Labor Statistics, 2018a).

Practical nursing programs graduate entry-level licensed nurses, and program length is typically one year (NursingLicensure, n.d). These programs rarely have pre-requisite requirements and vary in pre-admission criteria (Bureau of Labor Statistics, 2018b). Licensed practical nurses perform similar duties as a registered nurse, but the scope of practice is not to the depth of programming for registered nurses, and they must be under the direction of a registered nurse (Nurse Journal, 2017). Practical nurses account for 70% of the licensed care given to patients in nursing homes (Corazzini, Anderson, Mureller, Thorpe, & McConnell, 2013, p. 315). Licensed practical nursing programs are typically located in career and technical schools and community college institutions (Bureau of Labor Statistics, 2018b). The Nurse Practice Act for each state is the governing source for the scope of practice for each level of nursing, and those scopes vary significantly between states (Corazzini et al., 2013).

Licensed practical nursing programs are shorter in length and therefore have a condensed time frame in which to overcome attrition compared to two- and four-year programs (Bureau of Labor Statistics, 2018b). For this reason, it is important to know pre-admission criteria that play the biggest factors in achieving the outcome of successful program completion (Wambuguh, Eckfield, & Hofwegen, 2016). Horkey (2015) suggested research on admission criteria and attrition has been done mainly on the quantitative scale. Therefore, to add to nursing program literature, it is important to understand student perceptions of helpful factors and those considered barriers to achieving the desired program outcomes.

The issue of student attrition can be linked to students not being prepared for academic and clinical components of nursing programs (Horkey, 2015). Dropout rates in

nursing programs affect a large population and place a financial burden on both the student and institution (Kubec, 2017). Academic institutions and nursing programs can implement approaches for higher student achievement by investigating the program's attrition rates and exploring the needs of their student population (Harris et al., 2014). While it is important for institutions to look at their admission criteria as it relates to program outcomes, it is equally important to explore environmental factors that affect the nursing student from accomplishing their goals (Mooring, 2016).

Horkey (2015) raised the question as to why students struggle to meet the demands of the curriculum yet are passing the admission requirements and being accepted into nursing programs. Criteria used to accept applicants into nursing programs can be useful in establishing how students will perform on future program examinations and on the first-time passage of the National Council Licensing Examination (McCarthy, Harris, & Tracz, 2014). Admission criteria are most commonly investigated using quantitative factors (Horkey, 2015). However, efforts have been unsuccessful in reducing attrition, thereby suggesting nursing programs may need a change of focus (Horkey, 2015).

The healthcare industry is faced not only with an overall shortage of nurses but a need for nurse graduates from diverse backgrounds (Harris et al., 2014). The population and culture of the United States continue to become more diverse, raising demand for healthcare workers who identify with growing racial and minority populations (Barra, 2013). Overall, the healthcare industry lacks an ethnically diverse nursing workforce population. Murray, Pole, Ciarlo, and Holmes (2016) found the United States has three million registered nurses, but only 16.8% acknowledged themselves as a racial or ethnic

minority (p. 138). Changes must be made in the student recruitment process to meet the needs of diversifying the healthcare workforce and accommodating the nontraditional student subpopulation (Mooring, 2016). Graduating more minority students will assist the needs of the healthcare industry (Mooring, 2016; Murray et al., 2016; Sedgwick et al., 2014). A diverse nursing workforce increases the ability to deliver optimal patient care (Murray et al., 2016).

Strides have been made to recruit and train minority nurses, but much work is needed in this area to create a workforce representative of society (American Association of Colleges of Nursing, 2015). Retaining students once they are admitted to the program is vital in building an ethnically diverse workforce (Murray et al., 2016). Additionally, student achievement of minority groups is a relevant issue for higher education institutions (Ferrell & DeCrane, 2016). The minority subgroup experiences higher levels of attrition than Caucasian students (Sedgwick et al., 2014). To build a workforce representative of the diverse population, program administrators need to recruit minority students and implement retention strategies to address factors that cause high drop-out rates of this subgroup (Kubec, 2017).

Student retention issues are not solely founded on student academic ability but also on outside stressors that require intervention by faculty and staff (Mooring, 2016). Intervention programs should start with the admission process and continuing through to program completion (Mooring, 2016). The problem is the ability to identify factors which can target students who will be at risk for failing the National Council Licensure Examination (Chen et al., 2014). Academic success can be tied to both objective factors, which refer to entrance and exit assessments and non-objective variables including

student factors and contextual factors (Wambuguh et al., 2016). Nursing programs should utilize admission criteria that identify and admit students who can successfully finish the nursing program and achieve first-time passage on the National Council Licensure Examination for Registered Nurses (Knauss & Wilson, 2013). Investigating the student view will assist nursing programs in designing retention strategies, which better serve the student populations (Chen et al., 2014; Mooring, 2016).

Theoretical Framework

Persistence, retention, and success are important to nursing programs and desired outcomes for their students (Jeffreys, 2015). The shortage of nurses in healthcare is a result of programs admitting students who do not obtain these outcomes (Olsen, 2017). To fully investigate the student attrition problem within nursing programs and develop retention strategies to assist with the dilemma, this current study has taken into account multiple perspectives and stakeholders' points of views (Duckworth, 2016; Jeffreys, 2012, 2015; Tinto 1975, 1987, 2017). Student retention has been studied in post-secondary institutions for many years (Tinto 1975, 1987, 2017). Issues of student persistence and attrition are commonly discussed among nursing faculty (Jeffreys, 2012). For this reason, several applicable theories were covered to examine the retention and attrition issues from a holistic view of the nursing student.

Tinto (1975) began his work in the area of student retention due to a lack of theories describing connections between students, academic institutes, and external factors. Tinto (1975) believed students begin college with pre-established characteristics that may affect if they stay or drop out of the academic setting. Attrition was explained as a composition of environmental and social factors that intersect creating behaviors that

influence persistence (Tinto, 1987). It is critical for students to become fully integrated into the college environment (Jeffreys, 2012; Tinto, 1975, 1987). If students have made a connection with the institution, they are less likely to depart if and when environmental factors begin to affect their integration (Tinto, 1975).

Jeffreys's nursing universal retention and success model applies Tinto's (1987) model on student attrition and retention specifically to nursing students (Mooring, 2016). Jeffreys took Tinto's approach and emphasized that the departure of students in nursing programs is substantially affected by pre-entry criteria (Mooring, 2016). The focus of this study is on decreasing attrition specifically in nursing programs, thus creating a need to use a theory relating to the nursing field. The nursing undergraduate retention model assisted Jeffreys (2015) in describing how internal and external factors in the classroom and in the students' own personal lives create obstacles affecting student retention in nursing school.

The latest model Jeffreys (2012) designed applies across all nursing levels and encompasses many variables, including but not limited to demographic, academic, environmental, psychological, and student affective factors. The nursing universal retention and success model focuses on retention and not attrition with intent to concentrate on why students stay in a nursing program instead of why students drop out (Jeffreys, 2012). The retention model is used to provide a framework for increasing persistence, achievement, and results (Jeffreys, 2012). The works of Tinto (1987) and Jeffreys (2012, 2015) are thought to be the foundation for existing practices and have guided research for retention studies to prevent student attrition (Mooring, 2016). An

example of such research is work by Mooring (2016) who studied current research on nursing student retention and approaches to assist persistence rates.

Student success relies on more than the resources or services an institution can provide (Hamshire et al., 2013; Knowlton & Angel, 2016). Students who are admitted into nursing programs have environmental factors that can create hurdles to overcome to persist to graduation (Kubec, 2017). Students who do not achieve successful program completion may view themselves as a failure and suffer psychologically (Tinto, 1987). One of the characteristics that empowers students to overcome obstacles and finish their goals, while counteracting this feeling of failure, is called grit (Duckworth, 2016; Perkins-Gough, 2013). The characteristic of grit is being dedicated to a goal and continuously working toward the outcome even if it means losing out on other things to achieve it (Duckworth, 2016).

The belief that people can change and understand how to learn if given the right opportunities and support is known as a growth mindset (Dweck, 2016). Dweck believed this growth mindset controls a person's destiny to be the person he/she wants to be and helps his/her achieve the things he/she values (Dweck, 2016). Students who portray characteristics of a growth mindset give significance to effort and recognize ability as a learned skill and believe intelligence level can change (Hochanadel & Finamoe, 2015).

A student's growth mindset and grit characteristics can help give insight into how the student views himself/herself toward meeting the goal of program completion and licensure (Duckworth, 2016; Dweck, 2016). Wambuguh et al. (2016) suggested academic success is influenced by a student's mindset and actions that impact his/her

ability to accomplish goals. A university or academic institution has much to gain in the progress of student retention by investigating perspectives of the student (Tinto, 2017).

The goal of nursing education is for students to stay in the program until completion (Peterson-Graziose, Bryer, & Nikolaidou, 2013). Hamshire, Willgoss, and Wibberley (2013) suggested to reduce attrition, the cycle from recruitment to graduation needs to be considered. Factors affecting retention and the barriers to the completion of a nursing program are more easily identifiable by bringing the work of founders. The work of Tinto (1975, 1987, 2017), together with specific information from Jeffreys (2012, 2015) about nursing and considering personal aspects of each student by studying their mindset and level of grit (Duckworth, 2016), provides valuable perspective into these factors.

Statement of the Problem

Nationwide, including the state of Missouri, healthcare is currently experiencing a nursing shortage (Buerhaus et al., 2014, para. 17). Predictions estimate 260,000 nursing positions will not be filled by the year 2025 (Harris et al., 2014). The shortage can partly be attributed to the expansion of jobs in the healthcare field at a time when there are high numbers of retirees in the field (Aiken, Cheung, & Olds, 2009). The current registered nurse workforce could be facing a 50% retirement rate within 20 years (Juraschek, Zhang, Ranganathan, & Lin, 2012, para. 16).

Meeting needs of healthcare is a challenge faced by the healthcare industry especially at a time when nursing programs are facing high attrition rates (Olsen, 2017). Harris et al. (2014) stated baccalaureate nursing programs report a 50% student attrition rate and found 47% of associate degree students fail to successfully complete the

program (p. 31). Practical nursing programs face more problems with attrition; however, studies have mainly directed attention toward registered nursing programs (Stickney, 2008).

Burden falls on nursing education program administrators to help alleviate the shortage of qualified nursing professionals (Kubec, 2017). The nursing shortage problem has been fast-tracked for several reasons (Buerhaus et al., 2014; Kubec, 2017). First, one of the largest generations, Baby Boomers, is reaching an advanced age when an increase in healthcare is needed (Buerhaus et al., 2014). In addition, a larger number of licensed nurses are needed to meet demands of the industry workforce where patients are culturally diverse (Murray et al., 2016).

Nursing programs have enough applicants who apply for entry into the program, but 36% of students who apply are not accepted due to a shortage of available spots for qualified applicants (Bremner et al., 2014, p. 537). Nursing programs attempt to admit applicants who will fulfill requirements of the program and achieve first-time passage of the National Council Licensure Exam (Bremner et al., 2014). Even with careful screening, attrition of nursing students is an issue facing programs, with 18% of admitted students dropping out and not successfully attaining program completion (Horkey, 2015, p. 29). Non-cognitive variables that affect nursing student attrition include demographic data, family and work history, support, motivation, and study skills (Horkey, 2015; Jeffreys, 2012). Grade point average, course grades, and standardized tests scores are cognitive variables that affect nursing student attrition (Van Eerden, 2014).

Attrition occurs among all student demographic areas but is seen more readily among minorities and underrepresented ethnic groups (Barra, 2013). The American

Association of Colleges of Nursing (2015), in the article, "Enhancing Diversity in the Nursing Workforce," suggested minorities are underrepresented in the nursing industry. Institutions have implemented recruiting efforts to attract minority students, but the attrition rate continues to grow among this population (Barra, 2013). There is a need to recruit, admit, and retain students from underrepresented groups into nursing programs and ultimately into the nursing field (Barra, 2013; Ferrell & DeCrane, 2016).

Academic achievement is generally defined as "behavior resulting in student success or failure" (Wambuguh et al., 2016, p. 89). Ferrell and DeCrane (2016) looked at thematic concepts for the success of nursing students for both associates and baccalaureate degree programs in a Midwestern urban institute. Results showed institutional commitment; communication of expectations; academic, social and financial support; feedback; and involvement were discovered to influence the success of students (Ferrell & DeCrane, 2016).

Successful completion of the nursing program is important to both the student and institution (Peterson-Graziose et al., 2013). Student withdrawal from nursing programs is often caused by a mixture of factors and is not necessarily a reflection of the failure of a nursing program (Mooring, 2016). Post-secondary institutions strive to combat students dropping out by removing barriers to increase student success on campuses (Ferrell & DeCrane, 2016).

Nursing programs use multiple criteria when selecting applicants into their cohorts each year (Bremner et al., 2014). These standards range from grade point average, standardized test scores, interviews, critical thinking assessments, and other criteria set by individual nursing programs (Bremner et al., 2014; Crouch, 2015; House,

Sturgeon, Garrett-Wright, & Blackburn, 2015). Nursing schools often use an assessment designed specifically to predict nursing applicant success called the Test of Essential Academic Skills (Assessment Technologies Institute, n.d.). The Test of Essential Academic Skills examination is given to students seeking application into nursing programs and evaluates their overall academic preparedness in relation to early success in nursing programs (Bremner et al., 2014). Nursing program faculty and staff evaluate applicants using a variety of practices with the intent to accept students who have the greatest chance of succeeding (House et al., 2015). Research investigating pre-admission criteria is needed to address the attrition issue (Horkey, 2015).

Nursing education administrators are forced to look at nursing education needs of not only their communities but on a larger scale, to include the needs of the entire nation and world (Gillen, 2012; Monahan, 2015). The nursing shortage is viewed as a universal problem with shortfalls reported in the United Kingdom, Australia, Canada, and other countries (Monahan, 2015). Likewise, the nursing student attrition issue is also not limited to only the United States, raising a worldwide concern and need for nursing faculty to encourage students to retain through program completion (Gillen, 2012).

Gillen (2012) discussed a survey given to students attending one of 30 United Kingdom universities. Results indicated 21% of students who started a three-year degree in 2008 did not finish in 2011, which was the time frame allowed for the nursing program be completed within (Gillen, 2012, p. 12). Numbers continued to decline despite great efforts to address attrition (Gillen, 2012). Students dropped out because of academic, financial, and family commitment issues, as well as the inability to integrate both academically and socially within the institution (Gillen, 2012). Findings from Gillen's

study describing issues that cause attrition are consistent with factors addressed in Jeffreys's (2012) nursing universal retention success model.

Colleges and universities in the United States are charged with the challenge of assuring program offerings are meeting accreditation and commission standards (Fontaine, 2014). Programs are often assessed on factors such as graduation rate, attrition, employment placement rates, and specifically for nursing programs, first-time passage rates on the National Council Licensure Examination-Registered Nurse exam (Chen et al., 2014). Academia professionals strive to pinpoint what student characteristic and environmental factors identify those who will be at risk for failing the National Council Licensure Examination-Registered Nurse exam (Chen et al., 2014).

Nursing programs at all levels have admission criteria but determining which criteria make a difference in student completion and licensure outcomes is a challenge (Horkey, 2015). In this study, exploring the most effective pre-admission criteria to help institutions predict student completion and licensure is key. In addition, identifying factors that influence the gap between nursing program acceptance and nursing program completion can assist in retaining students through program completion and licensure (Knauss & Wilson, 2013). A major factor in attrition is the inability of students to meet academic requirements of nursing curriculum resulting in students dropping out of the program (Horkey, 2015).

Purpose of the Study

The nursing workforce is negatively affected when nursing programs have delays in program completion and unsuccessful licensure of graduates (Van Eerden, 2014). Knowledge of early predictors that influence progression not only helps the nursing

applicant pool but also helps educational programs with challenges such as program completion and student attrition (Hinderliter, 2016). Figuring out the attrition problem and increasing retention of nursing students helps the student, the university and communities where graduates will find employment (Peterson-Graziose et al., 2013).

Variables known to affect program completion are useful in implementing retention efforts (Van Eerden, 2014). Retention research, specifically in the area of practical nursing programs, is deficient in journals and books, as most publications refer to baccalaureate degree nursing students (Shoemake, 2017). More research is needed to assist nursing program administrators in alleviating the problem of attrition especially at the practical nursing level (Stickney, 2008).

The purpose of this study was to investigate factors that influence completion of a practical nursing program. Retention of nursing students was studied in two phases. The first phase of the study included gathering archival data from seven previous cohorts accepted into a practical nursing program. Specifically, admission and demographic criteria were analyzed to identify if differences exist when compared to successful program outcomes.

Retention of nursing students through successful program completion and licensure is a matter nursing programs face as a challenge (Horkey, 2015). Students may meet admission standards set by the program and yet not complete the program or pass the National Council Licensing Examination on the first attempt (Van Eerden, 2014). Information gathered from the present study may help determine selective admissions criteria that can be used by nursing education administrators when accepting students into nursing programs. Results of the study may also be helpful when identifying

demographic factors that show a difference in successful program completion and first-time passage of the National Council Licensure Examination-Practical Nurse licensing exam.

Student perceptions of environmental and academic factors that assisted or created obstacles to successful program outcomes were evaluated during the second phase of the study. Data were collected through a focus group of currently enrolled students in a practical nursing program. Information gathered from investigating these perceptions may assist program administrators in improving retention, which can lead to graduating more qualified nurses available to enter the workforce.

Research questions and hypotheses. Research questions that guided the study were:

1. What statistically significant difference exists, if any, in practical nursing program completion rates of students who hold a healthcare certification compared to students who do not hold a healthcare certification?

H1₀: There is no statistically significant difference between practical nursing program completion rates of students who hold a healthcare certification compared to students who do not hold a healthcare certification.

H1ₐ: There is a statistically significant difference between practical nursing program completion rates of students who hold a healthcare certification compared to students who do not hold a healthcare certification.

2. What statistically significant difference exists, if any, in practical nursing first-

time passage rates of the National Council Licensure Examination-Practical Nurse assessment of students who hold a healthcare certification compared to students who do not hold a healthcare certification?

H2₀: There is no statistically significant difference in practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment of students who hold a healthcare certification compared to students who do not hold a healthcare certification.

H2ₐ: There is a statistically significant difference in practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment of students who hold a healthcare certification compared to students who do not hold a healthcare certification.

3. What statistically significant difference, if any, does student ethnicity have on practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment?

H3₀: There is no statistically significant difference for first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment between students in ethnic majority group versus students in the ethnic minority group.

H3ₐ: There is a statistically significant difference for first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment between students in the ethnic majority group versus students in the ethnic minority group.

4. What factors, both in school and outside of school, do practical nursing students perceive as supporting them to successfully become a licensed practical nurse?

5. What factors both in school and outside of school do practical nursing students perceive as obstacles to successfully become a licensed practical nurse?

Significance of the Study

Academic institutions in the United States use a variety of quality control evaluations to show education programs meet accreditation and commission standards (Chen et al., 2014). Knowledge of early predictors of progression not only helps the nursing applicant pool but also helps educational programs with challenges such as program completion and retention and student attrition (Ferrell & DeCrane, 2016). Early identification of nursing program resources can help support students through the program (Ferrell & DeCrane, 2016; Kubec, 2017). Early detection of student populations who are at risk of having academic difficulty or who are no longer interested the nursing career is important to program progression (Hinderliter, 2016). There is a crucial need for nursing student attrition and retention research (Kubec, 2017). Research leading to approaches that decrease attrition rates can help improve the nursing shortage problem (Kubec, 2017).

Definition of Key Terms

For the purposes of this study, the following terms were defined:

Attrition. Nursing students who leave throughout the program (Jeffreys, 2012). These include students who start the program but fail to successfully complete within the allotted time frame (Jeffreys, 2012).

Environmental factors. Conditions outside the academic arena that affect academic performance and retention (Jeffreys, 2012). Factors include but are not limited

to support systems, financial status, childcare arrangements, employment schedule, living

provisions, transportation, and family obligations (Jeffreys, 2012).

Grade point average. Numeric value assigned by dividing the number of grade

points achieved by the total number of credits attempted (Jeffreys, 2012).

Industry recognized credential. According to the Missouri Department of

Elementary and Secondary Education (n.d.), an industry-recognized credential is

validation a person holds the knowledge and skill expertise for a particular set of

occupational job-related standards.

Licensed practical nurse. A licensed nurse who has graduated from a state-

approved practical nursing program and passed the National Council Licensure

Examination-Practical Nurse exam (Bureau of Labor Statistics, 2018b).

National Council Licensure Examination-Practical Nurse licensing exam.

The examination given to students who successfully complete a practical nursing

program that leads to licensure (National Council of State Boards of Nursing, 2018).

National Council Licensure Examination-Registered Nurse licensing exam.

The examination given to students who successfully complete a registered nurse program

that leads to licensure (National Council of State Boards of Nursing, 2018).

Program retention. Uninterrupted enrollment in a nursing program by taking

classes in order and meeting graduation requirements without dropping or failing out

(Jeffreys, 2012).

Registered nurse. A licensed nurse who has graduated from a two-year or four-

year nursing program and passed the National Council Licensure Examination-Registered

Nurse exam (Bureau of Labor Statistics, 2018a).

Successful program completion. For purposes of this study, successful completion refers to meeting the practical nursing program requirements for graduation and passing the licensing assessment on the first attempt (Jeffreys, 2012).

Test of Essential Academic Skills. Students applying for admission to a practical nursing program may be required to take the Test of Essential Academic Skills (Assessment Technologies Institute, n.d.). The test is a 170-question, multiple-choice assessment of basic academic understanding in reading, mathematics, science, and English and language usage (Assessment Technologies Institute, n.d.).

Limitations and Assumptions

The following limitations were identified in this study.

Sample demographics. Findings apply only to populations with comparable demographics of the sample population and the institutional environment where practical nursing programs are studied (Bureau of Labor Statistics, 2018b). The sample for this study was limited to Missouri students accepted into a licensed practical nursing program at a designated area vocational school by the Missouri Department of Elementary and Secondary Education (2017). Student population consisted of students who were accepted into the program for program years 2011 to 2018. The program began in 2010, but the student cohorts selected had common admission criteria set for the period of study.

The sample population represented both male and female students. The ethnic background of students admitted into the program during the cohort years studied was primarily Caucasian, but different ethnic backgrounds were represented in small

percentages. Students admitted into the program primarily represent the female gender, but males were represented in small percentages.

Nursing education level. The sample for this study was limited to the licensed practical nursing level of education and does not include associate registered nurse or Bachelor of Science level nursing students (Bureau of Labor Statistics, 2018a). Practical nursing programs are primarily found at technical schools and two-year community colleges (Bureau of Labor Statistics, 2018b). Practical nursing programs vary in length but are usually finished in two or three semesters (Bureau of Labor Statistics, 2018b).

Focus group interview questions. Focus group questions were created specifically for this study and population. As such, there is limited evidence of reliability and validity. To test the validity of the focus group protocol, a pilot-test was conducted, as pilot-testing is essential to confirm the validity and enhance focus group questions, format, and scales (Creswell, 2014). Focus group questions were reviewed by three previous students of the practical nursing program, and changes were made based on recommendations given. Focus group interview questions were evaluated and accepted by the three committee member dissertation committee.

The following assumption was accepted:

1. Responses of participants were offered honestly and without bias. It was assumed all students in the sample population had met program admission criteria prior to being accepted into the program.

Summary

Healthcare is a crucial part of society (Buerhaus et al., 2014). It is vital that optimal care is available to all individuals (Monahan, 2015). Nursing professionals play

a critical role in healthcare, and institutions of higher education are responsible for the training of skilled workers in the nursing industry (Olsen, 2017). The nursing shortage has a distinct impact on institutions of higher education, which host nursing education programs (Mooring, 2016). Demand for a more culturally diverse nursing workforce has driven recruitment and admission efforts of academic institutions (Barra, 2013). With racial and minority populations growing, nursing education must transition effectively to meet the healthcare needs of all individuals including underrepresented populations (Barra, 2013; Ferrell & DeCrane 2016). Understanding barriers facing nursing students and implementing intervention strategies will assist students in successfully progressing from program entrance to program completion (Ferrell & DeCrane 2016).

The issue of student attrition must be tackled head-on, and retention efforts should be implemented to help build a sustainable workforce in the industry today (Hamshire et al., 2013). Positive intervention can result in student success (Jacobs, 2016). Student attrition is a challenge, but effective pre-admission criteria can help predict successful program completion, can assist in student retention, and aid in migrating students from acceptance to program completion to licensure (Wambuguh et al., 2016).

In Chapter One, an introduction was provided highlighting the overall nursing shortage that exists and how reducing attrition of nursing students could help solve this issue. The background of the study, theoretical framework, statement of the problem, the purpose of the study, research questions, and significance of study was presented offering a glance into the importance of retention of students in nursing programs. In addition, key terms used in the study were defined and the assumptions and limitations of the study were discussed.

        In Chapter Two, a thorough literature review related to the shortage of nurses in healthcare, retention of nursing students, and factors related to student attrition are discussed. The chapter includes a review of the theoretical framework as well as literature supporting the research study. Nursing admission criteria are discussed, and insight into research on perceptions of nursing students and how they view barriers and support systems are reviewed.

Chapter Two: Review of Literature

Through a review of the literature on nursing student retention, attrition, and persistence, this study was designed as a holistic approach in exploring attributes of both an institution and students that impact successful nursing program completion. Gaps in literature illuminate a need for qualitative and quantitative information about factors affecting practical nursing program outcomes (Shoemake, 2017). The effects admission criteria have on success in licensed practical nursing programs are examined in the current study. It is important to study admission processes as they relate to retention to identify potential patterns of success for the progression of students through nursing programs (Knauss & Wilson, 2013).

The beginning of Chapter Two includes a theoretical framework that provides the foundation of the study as well as insight into variables that contribute to nursing student retention, attrition, and persistence. Chapter Two also contains an overview of the nursing shortage crisis in the healthcare sector and pertinent research on admission criteria used to select students into nursing programs. Environmental conditions including both academic variables and personal characteristics that may predict successful nursing program completion are presented. The review of literature also includes research exploring factors that lead to student attrition in nursing programs, including minority and at-risk student status. Finally, the literature on factors influencing completion of associate nursing degree programs, as well as bachelor's degree nursing programs, is also included in this review due to a lack of literature specifically for practical nursing programs.

Theoretical Framework

The goal of the current study was to explore factors that lead to both retention and attrition in a practical nursing progam. Nursing faculty are charged to accept students who can handle the level of academic difficulty these progams require (Knauss & Wilson, 2013). Yet, programs continue to experience high rates of attrition and are challenged to find answers to increase student retention (Fontaine, 2014; Hamshire et al., 2013). The issue of student retention has been studied for many years (Jeffreys, 2012). Tinto (1975), in his theory on student persistence, stressed five areas associated with retention: expectations, support, assessment, feedback, and involvement. Tinto (1975) placed emphasis on academic and social integration and considered formal and informal interactions with faculty and staff both in and out of the classroom as important. A student's decision to remain in the academic program is not only affected by the student's abilities but outside factors that require faculty to show empathy and support (Freed & Mclaughlin, 2013; Mooring, 2016).

When establishing a theoretical framework for this study, it was important to take into account not only how an institution affects retention but also how student characteristics and personal qualities help students remain in a program. Jeffreys (2012) described an organizational framework designed to have positive outcomes for both undergraduate and graduate nursing programs. The framework for Jeffreys's (2012) study served as the primary focus of the theoretical framework of the current study, as it accounts for both academic and environmental factors that play a role in the retention of a student (Jeffreys, 2015). The works of Tinto and Jeffreys guided this study which investigated student perceptions to gain insight into how students view themselves

meeting their goal of program completion and licensure (Jeffreys, 2012, 2015; Tinto, 1975, 1987, 2017). In addition, aspects of growth mindset and grit are included to detail how student perseverance also plays a role in retention (Duckworth, 2016; Dweck, 2016).

      Jeffreys's nurse theory. Once students are admitted into an academic institution it is vital for them to become involved academically and socially (Jeffreys, 2012; Tinto, 1975, 1987, 2017). Tinto (1975) believed students need purposeful learning environments and connections. Tinto (2017) continued his research and later wrote that student experiences in college could be viewed differently by the student and university. Jeffreys (2012) first developed her nursing undergraduate retention and success model as a conceptual organizing framework to address gaps in literature related to undergraduate nursing student retention. She later changed the name to nursing universal retention and success model to allow universally for different levels of pre-licensure nursing students (Jeffreys, 2012). This model takes into account the work of Tinto (1975, 1987) and provides an avenue to look specifically at nursing student retention.

      Jeffreys (2012) emphasized the importance of retention but also placed importance on successful student outcomes, which include graduation, licensure, and entering the workforce as a registered nurse. Jeffreys's (2012) model was first designed to assist in retention efforts for the non-traditional student. Jeffreys (2012) defined the non-traditional student as having one or more of the following characteristics: older than 25, attends school part-time, commutes, has dependent children, identifies as a racial or ethnic minority, is male, reports English as a second language, or is required to take a remedial course. To gain a holistic look at nursing student retention, Jeffreys (2012) later expanded the model to include traditional students.

The nursing universal retention and success model was designed with the assumption that students possess characteristics when they enter the cohort that may affect their retention in the nursing program (Jeffreys, 2012). Limited research was found that used Jeffreys's model as a framework (Jeffreys, 2012). Fontaine (2014) utilized Jeffreys's model while studying the effect of a retention intervention program for associate degree nursing students. Fontaine's (2014) study aligned with the nursing universal retention success model by including the use of enrichment programming to improve retention.

Jeffreys (2015) categorized factors leading to student attrition into groups consisting of student profile characteristics, outside surrounding factors, student affective factors, academic factors, professional integration factors and environmental factors (Jeffreys, 2015). Results of Fontaine's (2014) study showed statistically significant increases in retention of students for participants in the retention intervention program and found that faculty realized their efforts towards retention assisted students to integrate professionally. These findings coincide directly with Jeffreys's (2015) model. Students withdraw from a nursing program for a range of reasons that include academic ability, motivation, study habits, support systems and services, and other issues (Jeffreys, 2012; Tinto, 1987). Shoemake (2017) studied factors leading to students completing a practical nursing program within three semesters. Findings from that study concurred with Jeffreys's earlier model entitled, nursing universal retention success model, finding many of the same environmental and academic influences affecting the graduates studied (Shoemake, 2017).

Ruffalo Noel Levitz (2017) provided research linking student satisfaction evaluations with student engagement and retention in higher education. Satisfaction is an indicator of program success but has not been adequately researched in the United States (Chen & Lo, 2015). A student's connection to the educational setting can be influenced by faculty and staff, thereby helping the student feel a sense of belonging (Shelton, 2012).

The decision by a student to persist and successfully complete a program of his/her chosen major involves many factors, which faculty and staff need to identify and understand to promote student success (Mooring, 2016). Peterson-Graziose et al. (2013) suggested persistence in college is influenced by self-esteem, self-efficacy, and stress. Jeffreys (2012) included these factors along with academic variables when developing the nursing universal retention success model, bringing together many aspects of retention into one framework. Tinto (2017) suggested academic institutions need to understand the student perspective on persistence to fully understand how to tackle the retention and completion problem faced by academia (Jeffreys, 2012).

Grit. Students who persist when faced with obstacles and misfortune have the characteristic of grit (Hochanadel & Finamoe, 2015). According to Tinto (2017), a student must desire to stay in school to exercise energy into completing that goal. Personal qualities are traits that are recognized as characteristics of a practicing nurse: personality traits, conscientiousness/motivation, cognitive skills, and professional/personal values (Pitt, Powis, Levett-Jones, & Hunter, 2014). The motivation of nursing students may be an identifying attribute to their decision to persist in the program (Pitt et al., 2014). Grit in the educational setting enables students to succeed in

obtaining their long-term goals by breaking through challenges that get in their way (Hochanadel & Finamoe, 2015). It is important to put more emphasis on challenging students to produce solutions and not concentrate efforts only on achieving good grades (Hochanadel & Finamoe, 2015). Teaching strategies for grit could help students know what it takes to persist and achieve their goals (Hochanadel & Finamoe, 2015; Pitt et al., 2014).

Faculty and staff can create an educational climate that fosters grit to increase retention and help students stay when faced with challenges (Duckworth, 2016; Hochanadel & Finamoe, 2015). Crombie, Brindley, Harris, Marks-Maran and Thompson (2013) found that nursing students who were parents were motivated to complete the program. Understanding what influence the educational institution has over factors that impact student motivation allows it to better serve students and help them have success in their academic environment (Tinto, 2017).

Institutions of learning have historically relied on intelligence tests as an indicator of how students will perform academically (Hochanadel & Finamoe, 2015). Cognitive abilities alone are not the only variables that explain academic success (Hochanadel & Finamoe, 2015). The emphasis universities give to test scores can hinder creativity and grit (Hochanadel & Finamoe, 2015). It is important for students to increase their ability to persevere and develop a growth mindset (Hochanadel & Finamoe, 2015). Academic institutions can help foster this development by teaching students how to defeat barriers that get in their way (Hochanadel & Finamoe, 2015). Colleges need to inform students that it is normal for first-year students to face academic challenges and provide a clear

avenue for the student to seek support so they can be successful in their studies (Tinto, 2017).

Palisoc et al. (2017) studied students in a doctor of pharmacy program to see if there is a relationshiop between Grit-S scores and program success. The Grit-S is a Grit Scale which is a standardardized measure that was developed by Duckworth (2016) to evaluate the level of grit one manages within one's life (Duckworth, 2016). Findings from the study showed no evidence that scores from the Grit-S were related to academic achievment but did show a correlation with students wishing to pursue and attain post graduate training (Palisoc et al., 2017).

Another study was conducted at West Point Military Academy to see if grit would identify cadets who would retain through the summer training program (Perkins-Gough & Duckworth, 2013). West Point has difficult admission standards, but program attrition is high with one in 20 cadets dropping out (Perkins-Gough & Duckworth, 2013). Results of the study indicated grit was the most reliable factor measured and best predictor of retention through the summer program (Perkins-Gough & Duckworth, 2013). Perserverence and resilience are key factors in growth mindset and grit, and utilizing these concepts allows reseachers to recognize why students persist until goal completion, while others drop out before attaining successful outcomes (Hochanadel & Finamoe, 2015). Taylor and Reyes (2012) found students who show traits of resilience achieve more academic success.

Pitt et. al. (2014) conducted a study to explore the impact a student's personal qualities had on his/her success and retention in a pre-registration nursing program. The study used a series of personal qualities and found students with lower aloofness and

higher self-confidence, involvement, control, and resilience achieved better academically (Pitt et. al., 2014). Hamshire et al. (2013) investigated nursing students' experiences to detect factors that affected attrition. An online survey was given to 999 students, finding that 465 students who answered the online survey admitted to considering leaving their program of study (Hamshire et al., 2013, p. 890). Crombie et al. (2013) found that peer groups served as a support mechanism for students and was a factor in student retention by encouraging student resilience (Crombie et al., 2013). Pitt et al. (2014) found confidence scores were an indicator for clinical performance, and resilience was correlated with program completion.

Results from these studies lend support to the importance of personal qualities as selection criteria when admitting nursing students, as well as to the consideration of these qualities when addressing students who are at risk of poor academic performance (Hamshire et al., 2013; Hochanadel & Finamoe, 2015; Pitt et. al., 2014). Setting goals are not enough to ensure persistence; students must possess the inner capacity and determination to keep going in the face of challenge and to remain devoted to the commitment over time (Hamshire et al., 2013; Hochanadel & Finamoe, 2015). It is necessary to study how personal qualities affect program performance and outcomes to determine if the inclusion of these variables should be added to admission criteria (Pitt et. al., 2014)

Improving retention of nursing students is not an easy task, but identifying factors that lead to attrition is an important start to the process (Fontaine, 2014; Hamshire et al., 2013). Mooring (2016) suggested, "Retention is a multifaceted, international problem that requires a collaborative, multi-model solution involving the student and faculty" (p.

207). Utilizing multiple authors when designing the framework for this study allowed for the investigation of both the student and institution as factors that could assist in developing strategies leading to program completion and licensure. Knauss and Wilson (2013) suggested most authors are in agreement that admission criteria for nursing programs should ensure those admitted will have the ability to successfully complete the program and pass the National Council Licensure Exam.

Nursing Shortage

The nursing profession is currently one of the strongest career options with a steady workforce demand and constant need for direct patient care (Lopaze, 2018). The need for nurses exceeds the number in the pipeline available to fill vacancies, especially in highly-skilled areas (Monahan, 2015). In the United States alone, demand is expected to increase as the aging Baby Boomers generation will account for two-to-three million additional patients entering Medicare each year (Ramachandran, 2014).

The need for healthcare assistance will rise with 80% of the aging population reporting one chronic illness, and 68% reporting a minimum of two conditions (Grant, 2016. para. 2). An estimated 35% increase in registered nurses will be needed by 2030 with rural areas already experiencing the impact and struggling to provide access to care (Dixon, 2017, para. 3). Stickney (2008) suggested practical nurses could be a viable solution to addressing the nursing shortage; therefore, it is of upmost importance for practical nursing programs to establish retention efforts to graduate nurses into the workforce pipeline.

There is a growing interest in the nursing profession; however, programs are faced with limited admission spots, and qualified applicants are turned away each year

(Horkey, 2015). There is a lack of space in pre-licensure nursing programs to accommodate the number of students seeking an associate degree in nursing (Peterson-Graziose et al., 2013). The shortage presents challenges that ultimatly impact patient care (Olsen, 2017). Nursing program faculty strive to admit students who will successfully complete the program and pass the National Council Licensure Examination (Bremner et al., 2014). A deficit of graduating nurses available for employment places an added stress on the healthcare sector, and Ramachandran (2014) stated, "It might be time to address current and projected nursing shortages before we are all sick and nurses are all exhausted" (p. 2).

The shortage of nurses puts more pressure on nursing programs to train and graduate students who are ready to contribute to the healthcare industry (Mooring, 2016). By 2022, it is estimated that new nursing vacancies will grow to nearly a half-million jobs open, and another half-million vacancies will be created due to replacing retiring nurses in the field (Ramachandran, 2014). Patients depend on skilled nurses to attend to their healthcare needs, and it is the responsibility of nursing education to develop these abilities and produce competent nurses (Horkey, 2015).

There are several reasons for the nursing shortage crisis, including lack of clinical spaces available and a shortage of qualified nursing instructors (Crombie et al., 2013; Pelayo, 2013; Schmidt & MacWilliams, 2011). Nursing programs struggle to replace retiring nurse educators partly due to the fact that practitioners have to take an extreme pay cut, as high as $30,000 in some cases, to take faculty positions at academic institutions (Ramachandran, 2014, para. 8). The shortage of nursing education faculty

adds to the nursing shortage by restricting the number of spots available to prospective students (Pelayo, 2013).

According to the American Association of Colleges of Nursing, nearly 80,000 students desire to enter the nursing profession and are turned away due to the lack of nursing faculty, clinical spots, clinical preceptors, and budgetary issues (American Association of Colleges of Nursing, 2017). Educational institutions face a serious challenge with a lack of resources, which Yordy (2006) described by stating, "The shortage of nursing faculty in the United States is a critical problem that directly affects the nation's nurse shortage, which is projected to worsen in future years" (p. 1). Efforts to assist the nursing instructor shortage crisis needs to be addressed as well as strategies showing their effectiveness (Yedidia, 2014).

Acceptance into registered nursing programs has become competitive in part due to the limited spaces available to applicants (Kubec, 2017). A student with a 3.8 grade point average at a state college in Florida, after being declined twice in the registered nursing program, became a licensed practical nurse and then transitioned into the state college registered nursing program just to meet her goal of becoming a registered nurse (Mascarenas, 2016, para. 13). Similiarly, students who hold healthcare certifications and have been working in various parts of the healthcare setting for years have tried two or three times to be accepted into programs and are frustrated by the hurdles to overcome to be accepted into a nursing program (Kavilanz, 2018).

When addressing the nursing shortage, increasing the number of nursing programs available is not a workable option due to the lack of clinical sites to meet existing program needs (Kubec, 2017). Clinical rotations are a requirement of the

nursing program curriculum, and students must participate in clinical experiences prior to graduation (Kubec, 2017; Pelayo, 2013). Pelayo (2013) stated the lack of clinical spaces available for nursing education programs hinders adequate numbers of nurses graduating from programs. The National League for Nursing (2014) Biennial Survey of Schools of Nursing reported associate degree nursing programs face the highest shortage of clinical placements reporting 49%, with practical nursing programs falling closely behind at 43% (para. 8). Lack of clinical sites forces nursing programs to limit the number of applicants accepted each year, also prevents students from obtaining hands-on, real-life preparation needed before entering the healthcare workforce (Lippencott Nursing Education, 2017).

Admission Criteria and Nursing Program Success

Undergraduate nursing programs experience big obstacles in student retention; therefore, student progression is a national priority (Knowlton & Angel, 2016). The greatest amount of attrition happens during the first year of the program, frequently in the first semester (Knauss & Wilson, 2013). Resolving the nursing shortage is not an easy fix, and continuing to lose nursing students burdens nursing program administrators (Kubec, 2017). Developing more interest in the nursing field is not an issue, as nursing programs turn away qualified applicants each year, as many as 69,000 in 2014 (American Association of College Nursing, 2015, p. 2).

Nursing programs run on a schedule, and students who drop out create a spot that is many times unfilled due to the nature of the program structure (Knowlton & Angel, 2016). It is necessary to reduce attrition and keep as many students in the program as possible (Kubec, 2017). It is also important to admit students most likely to succeed so that a nursing workforce can be maintained (Knauss & Wilson, 2013; Kubec, 2017).

Programs need to establish admission criteria that show competence in the science and art of nursing to assure those admitted will fit into all aspects of the nursing field (Horkey, 2015)

The need for effective admission criteria. It is necessary for nursing programs to admit students equipped with the academic skills required to master nursing program content and standards (Schmidt & MacWilliams, 2011; Underwood, Williams, Lee, & Brunnert, 2013). Students often fail because they are not prepared to meet academic and clinical components of nursing programs (Horkey, 2015). Adjusting to the level of academic difficulty was cited as an issue for students (Hamshire et al., 2013; Horkey, 2015). Factors influencing student adjustment were student level of academic preparedness going into the nursing program, as well as experience in the program they are pursuing (Hamshire et al., 2013). Schmidt and MacWilliams (2011) suggested there are no easy solutions or formulas to solving issues with admission criteria, and indicated effective criteria may vary among nursing programs.

Program administrators use multiple admission criteria to select students who have the best opportunity for success in the program (Bremner et al., 2014; Horkey, 2015; Olsen, 2017; Schmidt & MacWilliams, 2011). Nursing programs should consider weighting criteria that positively impact program completion and passage of the National Council Licensing Exam when assessing admission policies (Higgins, 2005). Kubec (2017) suggested to fully explore the issue of retention, one must look beyond academic competence because academic factors are not the only influence on attrition rates in nursing programs. Horkey (2015) stated, "Nursing education must evaluate whether current admission standards focused on quantitative numbers, discern the students most

likely to succeed in nursing from the students most likely to perform well on tests" (p. 29).

Olsen (2017) researched admission criteria as related to associate degree of nursing program success. An integrative literature review was conducted and information from studies indicated that for programs to reduce attrition, one of the first steps should be to look at admission criteria that correspond to six categories including academic ability, demographic criteria, psychological toughness, specialty skills, healthcare experience, and socioeconomic support (Olsen, 2017). Horkey (2015) suggested not everyone displays both the art of nursing and academic aptitude, and more evidence based admission criteria are needed to graduate competent nurses. Bremner et al. (2014) established standardized testing should only be one factor to consider when admitting students. Horkey (2015) suggested admission standards focused on quantitative variables have been unsuccessful at reducing nursing program student attrition; therefore, a change of focus is needed. More research is needed to fill gaps and create a model for admission criteria that assist in predicting success (Schmidt & MacWilliams, 2011).

Peterson-Graziose et al. (2013) studied a small sample of 34 first semester associate of nursing community college students to explore if self-esteem and self-efficacy were factors related to attrition. Researchers found self-esteem and self-efficacy were correlated with the early departure of the nursing program (Peterson-Graziose et al., 2013). Additionally, Wray, Aspland, and Barrett (2014) studied five nursing program cohorts at an approved education institution in the United Kingdom to analyze the reasons why students did not remain through program completion. Outside influences

such as financial problems, academic complications, and personal obstacles were identified as issues causing students to drop out (Wray et al., 2014). Factors which influenced students to stay included support systems and the student's personal determination to become a nurse (Wray et al., 2014).

Choosing admission criteria that serve as a predictor of academic success is one strategy to help combat the attrition problem (Mooring, 2016; Schmidt & MacWilliams, 2011). Knowledge of factors that predict success allows academia to recognize and identify students who are at-risk and implement remediation interventions assisting with the passage of the licensing exam (Higgins, 2005). There is a lack of research connecting specific admission criteria with improving retention of nursing students in the United States (Horkey, 2015). Schmidt and MacWilliams (2011) suggested more research spanning multiple programs and geographical locations is needed to show how admission criteria and nursing program success is defined. Additional pre-admission selection criteria are needed to screen applicants and admit those who are in the best position to successfully complete the program (Horkey, 2015). Horkey (2015) explained students need to possess both the "art" and academic preparedness necessary to be the type of caregiver desired in healthcare settings. Figuring out an effective blend of admission criteria may help solve the nursing student drop-out issue (Higgins, 2005; Horkey, 2015; Mooring, 2016).

Recruitment of qualified applicants is a complex issue (Kubec, 2017; Mooring, 2016; Schmidt & MacWilliams, 2011). Nursing schools evaluate program applicants using an institutionally designed admission formula (Horkey, 2015; Mooring, 2016; Schmidt & MacWilliams, 2011). The ongoing attrition problem shows a need for

programs to utilize more effective criteria for screening applicants (Horkey, 2015; Schmidt & MacWilliams, 2011). It is advantageous for nursing program administrators to use a variety of criteria such as entrance exams, grade-point requirements, and minimum prerequisite math and science abilities when selecting students for admission into nursing school (Mooring, 2016). Assessing the effectiveness of admission criteria is a constant process, and those in academia battle to find the formula of variables that predict the most positive program outcomes (Horkey, 2015).

Although healthcare is a complex industry and nursing has a strong science foundation, institutions must not just recruit those who show attributes of high academic ability (Bremner et al., 2014; Horkey, 2015). Nursing education requires individuals who possess a combination of scientific intelligence, critical thinking capacity, and interpersonal skills that connect students with the patients they care for (Horkey, 2015). Those in academia need to consider standardized testing accounting for only a portion of the evaluation for potential nursing students in the admission process (Bremner et al., 2014). Other variables used to increase quality of accepted students include the requirement of previous patient care experience, grade point average, and grades obtained in pre-requisite courses (Bremner et al., 2014; Kubec 2017; Tower, Cooke, Watson, Buys, & Wilson, 2015; Wolkowitz & Kelley, 2010). The ability to accurately predict nursing program success can help retention rates and decrease costs related to attrition (Knauss & Wilson, 2013).

Pre-admission exams. Nursing programs often utilize scores on entrance exams as a distinguishing factor when admitting students in the program, yet student attrition is still an issue (Kubec, 2017; Manieri, De Lima, & Ghosal, 2015). Because school

personnel rely heavily on admission assessments to select students into programs and as a predictor of academic success, early communication of required acceptance scores to potential students is important (Bremner et al., 2014). Due to high attrition rates, nursing program faculty and staff must find strategies to identify students who will pass the licensing exam the first time (McCarthy et al., 2014). Applicants need to be aware of academic success rates and have a realistic view of what it takes to be successful during the nursing program (Bremner et al., 2014).

Studies have been conducted to investigate admission testing as it relates to student retention and success (Bremner et al., 2014; Knauss & Wilson, 2013; Manieri et al., 2015; McCarthy et al., 2014; Schmidt & MacWilliams, 2011). A challenge nursing program academia face is choosing the most reliable entrance examination to use as a predictor of academic success (Schmidt & MacWilliams, 2011). Research has shown admission tests can be used as predictors of success during the admission process (Bremner et al., 2014; Knauss & Wilson, 2013; Manieri et al., 2015; McCarthy et al., 2014; Schmidt & MacWilliams, 2011). While multiple researchers agree on the potential value admissions tests provide for predicting academic success, the literature review revealed many viable options (Assessment Technologies Institute, n.d.; Elsevier, 2018).

The Health Education Systems Incorporated assessment is used by health education programs to assist, track, remediate, and test students through all phases of nursing programs (Elsevier, 2018). The Health Education Systems Incorporated admission assessment scores are a reliable indicator of success for not only first semester nursing classes but also nursing program completion (Knauss & Wilson, 2013; Manieri et al., 2015). Nursing program faculty across the country utilize Elsevier's Health

Education Systems Incorporated for pre-entrance testing (Elsevier, 2018). Knauss and

Wilson (2013) and Manieri et al. (2015) suggested scores on pre-admission assessments,

specifically the Health Education Systems Incorporated assessment, provide factual data

that can be used to support admission decisions.

Knauss and Wilson (2013) conducted a study of 154 students admitted into a

public, two-year associate degree of nursing program and found a positive correlation

between the score on the Health Education Systems Incorporated admission assessment

exam and final course grades in first-semester nursing classes. Manieri et al. (2015)

explored three preadmission tests to discover which exam was the greatest indicator of

successful program completion. Analyzed were two cohorts at one community college

that houses an associate of nursing degree program (Manieri et al., 2015). Manieri et al.

(2015) utilized both the Health Education Systems Incorporated A2 and the National

League of Nursing Pre-Admission Examination on one cohort, and the Test of Essential

Academic Skills for cohort number two. Cohort groups were investigated for four years,

and the Health Education Systems Incorporated A2 was the best indicator for program

completion (Manieri et al., 2015).

The Test of Essential Academic Skills admission exam is a product of the

Assessment Technologies Institute and is widely used by healthcare education programs

as an entrance requirement (Assessment Technologies Institute, n.d.). Bremner et al.

(2014) and McCarthy et al. (2014) took different approaches to studying effectiveness of

the Test of Essential Academic Skills as a nursing program entrance exam. Bremner et

al. (2014) established benchmarks are needed when institutions implement standardized

pre-admission tests to assist in prediction of program success. Bremner et al. (2014)

investigated a sample of 511 first-semester nursing students. Scores on the entrance exam of admitted students were compared with how the same students scored on the licensure predictor exam (Bremner et al., 2014). Of the over five hundred students studied, 474 students completed both the Test of Essential Academic Skills admission exam and the Assessment Technologies Institute Fundamentals of Nursing licensing predictor assessment (Bremner et al., 2014). Scores ranged from 61 to 98 on the Test of Essential Academic Skills, and researchers determined 78 to be the best baseline score to distinguish student success for the nursing fundamentals licensing predictor assessment (Bremner et al., 2014, p. 539).

McCarthy et al. (2014) took a different approach utilizing the Test for Essential Academic Skills by comparing entrance exam scores to five Assessment Technologies Institute licensure predictor assessments given throughout the nursing program used to predict first time passage of the National Council Licensing Exam-Registered Nurse licensing exam (McCarthy et al., 2014). McCarthy et al. (2014) studied participants from four baccalaureate nursing programs in the California State University system. A positive correlation was found between academic and nursing aptitudes (McCarthy et al., 2014). Students who scored higher on pre-admission criteria also performed higher during the program on aptitude predictor assessments (McCarthy et al., 2014). Consequently, the results of the study showed a significant correlation among Assessment Technologies Institution predictor assessment scores and National Council Licensing Exam-Registered Nurse first-time pass rates and between the entrance exam, licensing predictor exams, and first-time licensing pass rates (McCarthy et al., 2014). Bremner et al. (2014) and McCarthy et al. (2014) both found positive correlations

between the Test for Essential Academic Skills exam and licensure predictor assessments showing the assessment is an indicator of success for nursing program students. Implementing effective admission criteria, including entrance exams, for admittance into nursing programs is vital in fostering student success and decreasing dropouts because of academic unpreparedness (Bremner et al., 2014; Knauss & Wilson 2013; Manieri et al., 2015; McCarthy et al., 2014; Schmidt & MacWilliams, 2011).

Healthcare experience and certifications. Nursing school administrators are starting to require prior work experience in healthcare or completion of a nursing assistant certification before acceptance into a professional nursing program without the use of research based conclusions (Schmidt & MacWilliams, 2011; Stombaugh & Judd, 2014). Nursing programs are basing this decision on the rationale of believing students come in to nursing programs confident and with prior knowledge of basic skills and procedures leading to program success (Stombaugh & Judd, 2014). Nursing program faculty and staff are forced to look beyond current established admission criteria to promote student completion, which ultimately assists in improving the nursing shortage (Monahan, 2015; Olsen, 2017; Schmidt & MacWilliams, 2011; Underwood et al., 2013). Olsen (2017) found specialty skills and healthcare experience could be admission factors used to reduce attrition.

Schmidt and MacWilliams (2011) suggested there is a lack of research and studies of outcomes pertaining to nursing program admission criteria. Limited studies were found through the literature review containing research on the use of healthcare experience and certifications as admission criteria (Schmidt & MacWilliams; 2011). Stombaugh and Judd (2014) researched confidence levels of pre-licensure nursing

program students who had held a certified nursing assistant certification before entering a nursing education program. The results revealed mixed findings in comfort levels when performing basic nursing skills, showing students who had been employed longer as a certified nursing assistant reported high confidence levels (Stombaugh & Judd, 2014). Additional research is needed to establish the success of healthcare experience and certifications in relation to admission criteria (Schmidt & MacWilliams, 2011; Stombaugh & Judd, 2014).

Student attrition in nursing programs. Student attrition in nursing programs is a result of many complex interactions that are difficult to fully understand (Hamshire et al., 2013; Knowlton & Angel, 2016). Academic institutions are accountable for measuring nursing student success (Kubec, 2017). Retention, persistence, attrition, and graduation rates are common topics frequently studied by all academic professionals with the goal of program improvement (Fontaine, 2014). Attrition of nursing students is not a new topic to the field of research, yet nursing academia are still facing concerns and the need to find the correct predictor variables for success (Peterson-Graziose et al., 2013).

A student's experiences in college can be viewed differently by the student and by the educational institution (Tinto, 2017). Literature suggests nursing program administrators should look at all aspects of the educational experience when addressing student attrition to increase persistence of students (Hamshire et al., 2013; Jeffreys, 2015; Knowlton & Angel, 2016; Peterson-Graziose et al., 2013). Hamshire et al. (2013) suggested factors the institution can address to assist in retaining students include dissatisfaction relating to campus based education and support as well as frustrations related to clinical rotation placements. Academic institution personnel need to

understand a student's perspective on persistence to fully understand how to tackle the retention and completion problem faced by academia (Tinto, 2017).

The student dropout issue is costly to both the student and the university, causing each to expend energy and time with no results (Peterson-Graziose et al., 2013). Students may begin their college experience secure in their academic ability but face trials that leave them feeling as if they can not achieve their goal of completion (Tinto, 2017). Multiple student concerns over an extended period of time contribute to students considering leaving the program (Hamshire et al., 2013). Nursing programs are aggressively pursuing ways to increase retention and fight the battle of nursing student attrition (Mooring, 2016). Stickney (2008) suggested retaining nursing students is one strategy to addressing the nursing shortage. Graduating more nursing students will ultimately increase the healthcare workforce (Mooring, 2016; Stickney, 2008).

Student attrition is recognized as a world-wide problem (Hamshire et al., 2013). Student attrition comes at a personal cost to all stakeholders involved in the education of the student, including the institution and clinical educators (Hamshire et al., 2013). Crombie et al. (2013) estimated nursing education training costs students $11,479 a year (p. 1282). The cost of losing students in year two or three of a program is higher than when students drop out their first year of training due to more investment by the institution and the student (Crombie et al., 2013).

Historically, researchers have focused on the viewpoint of university personnel when tackling the issue of student retention (Tinto, 1975, 1987). This perspective is common because the institution is at risk when losing students, including a loss of revenue (Tinto, 2017). Attrition causes problems for all entities involved (Peterson-

Graziose et al., 2013). Students dropping out are left with loans and tuition costs, colleges face a loss of revenue, and fewer nurses are graduating, adding to the nursing shortage problem (Kubec, 2017). Early recognition of students who are at-risk and implementation of support mechanisms for these populations can assist in improving retention on campuses (Peterson-Graziose et al., 2013).

The goal of program administrators is to retain students through graduation and passage of the licensing exam (Mooring, 2016). The significance of the level of academic readiness the student possesses when entering nursing programs should not be overlooked; however, the fact that high attrition in nursing programs remains although quantitative admission criteria have been examined indicates qualitative factors may influence the retention of nursing students (Horkey, 2015). Non-academic factors that influence retention of currently enrolled nursing students include employment, self-esteem, and a feeling of belonging to the institution (Kubec, 2017). Students stated the biggest impact on their aspirations to complete the program and resist dropping out was the quality of support they received from program mentors (Crombie et al., 2013). No single solution will fix the attrition problem (Kubec, 2017; Mooring, 2016; Schmidt & MacWilliams, 2011). Students who drop out of a nursing program experience an emotional impact as a consequence (Hamshire et al., 2013). Mooring (2016) stated changes in retention and recruitment practices, academic advising strategies, and implementation of curriculum adjustments could be effective when done right.

The student dropout issue is not entirely a reflection that the program has failed but a compilation of several contributing factors (Mooring, 2016). It is important to look at the student retention and attrition problem from both the viewpoint of the academic

institution personnel as well as the student viewpoint (Mooring, 2016). A students'

perspectives differs in they do not see themselves as being retained but having the ability

to persist until program completion (Tinto, 2017). Nursing faculty are challenged to

discover retention strategies that are effective specifically to the field of nursing

(Mooring, 2016). School personnel need to investigate all factors that lead to student

attrition (Hamshire et al., 2013). Hamshire et al. (2013) suggested having an awareness

of why students make the choice to stay in a program is an important area of research that

has yet to be thoroughly investigated.

Students also encounter environmental barriers that impede completion of nursing

programs (Hamshire et al., 2013; Jeffreys, 2012, 2015; Kubec, 2017). Hamshire et al.

(2013) found students drop out of nursing programs for one or more of the following

themes: frustration with the academic load and support, problems with clinical

placement, and personal barriers and trials. Similarly, Crombie et al. (2013) found

academic and financial barriers to completion accounted for a small number of factors

leading to students dropping out, but the main reason for student departure of nursing

programs was identified as struggles with clinical placements.

Personal issues and barriers were identified most frequently with 80% of

respondents suggesting a combination of multiple factors influenced thoughts of dropping

out (Hamshire et al., 2013, p. 893). Financial problems were reported by 33% of nursing

students studied (Hamshire et al., 2013, p. 893). Financial struggles include mortgages,

child care costs, and travel costs associated with the program, and continuing financial

commitments (Hamshire et al., 2013). Because of the academic rigor and necessary

study time of nursing programs, there is difficulty trying to work, while going to school

(Hamshire et al., 2013). According to Kubec (2017) employment of over 16 hours a week negatively impacts attrition. Hamshire et al. (2013) suggested single circumstances alone could be managed, but the combination of factors lead students to contemplate dropping out.

Healthcare students encounter unique challenges which affect their decision to leave the program (Crombie et al., 2013; Hamshire et al., 2013). A major challenge is the required clinical component which forces students in patient care situations that, in addition to being rewarding, can also be stressful to the student (Hamshire et al., 2013). Crombie et al. (2013), in a joint study in London between two National Health Service acute trust hospitals and a nursing program housed at a university, investigated factors leading to student attrition and completion. Crombie et al. (2013) emphasized the quality of experiences students receive during clinical placements greatly impacts their decision to remain in nursing programs. Hamshire et al. (2013) stated clinical rotations are held concurrently with academic rigors of the classroom and often find students struggling to adjust to pressures of working with sick patients and stressed from negative placement assignments. Students who had worked in the healthcare setting, or who had heath care assistant experience, were not as likely to contemplate leaving the program due to placement issues (Crombie et al., 2013).

University personnel need to go beyond the question of how they can increase retention by asking themselves how students can be encouraged to continue their education until program completion (Tinto, 2017). Universities need to create a welcoming climate for students that encourages support and belonging through both academic and social experiences (Tinto, 2017). Students need to understand the

reasonable expectations of the program to confirm a career in healthcare is right for their

future (Hamshire et al., 2013). Currently enrolled nursing students have made an

investment to both their future and a commitment to healthcare and priority should be

given to promote efforts of retention to alleviate the critical nursing shortage (Stickney,

2008). There is a need to implement programs that encourage persistence specifically

designed to meet student needs to assist with successful student outcomes (Freed &

McLaughlin, 2013; Mooring, 2016). Nursing program administrators need to consider

strategies to reduce attrition that encompass the entire timeline of the program from

recruitment to graduation (Stickney, 2008; Tinto, 2017).

Minority students. The United States population is changing and becoming

increasingly diverse (Williams, Bourgault, Valenti, Howie, & Mathur, 2018). Projections

suggest that if recent trends continue in the United States, no single group will make up

the population majority by the year 2043, and the United States will be identified as a

majority-minority nation (United States Census Bureau, 2012). Growing numbers of

diverse patients needing healthcare are requring an increase in the number of

undrepresented minority students enrolled in bachelor of science in nursing programs

(Gipson-Jones, 2017).

Nursing education professionals must address cultural competencies in addition to

implementing strategies for academic success (Ferrell & DeCrane, 2016). The National

League for Nursing (2014) reported only 28% of students enrolled in basic registered

nursing programs identified themselves as an underrepresented minority compared to

29% in 2009 (para. 2). The low retention rates of minority students in nursing programs

further adds to the challenge of increasing the proportion of minority nurses (Gipson-

Jones, 2017). Two issues in increasing the number of minorities in the healthcare arena place a burden on nursing programs: recruitment of ethnic and disadvantaged groups and retaining those admitted students to graduation (Murray et al., 2016). Challenges underrepresented students face can be different from those of the general student population (Ferrell & DeCrane, 2016).

Minority students have transitional issues nursing faculty must respond to by assisting those students in being successful in the classroom (Sedgwick et al., 2014). Academic and financial barriers to completion accounted for a small number of students, but the main reason for student departure of nursing programs for minority students was identified as struggles with clinical placements (Crombie et al., 2013). Sedgwick et al. (2014) suggested minority students require support to feel appreciated throughout all aspects of the nursing program. Crombie et al. (2013) found students were not prepared for staff attitudes within the clinical setting which added to the stress clinical placements put on students. Students recognized ethnicity issues occurred with placement experiences and felt the stress of fitting in and meeting the perceived image of the nursing staff (Crombie et al., 2013). Crombie et al. (2013) stated students reported a range of qualities that ward staff preferred, including being White, no dependents, and the ability to accept the status quo. Institutions need to analyze policies and teaching strategies to provide clinical experiences that help minority students fit in and feel they belong, which in turn will help them persist in the program (Sedgwick et al., 2014).

Program placement and academic staff need to understand that suitable levels of support and learning resources are needed for positive program outcomes (Hamshire et al., 2013). Nursing programs place multiple demands on students, requiring placement in

a variety of patient-care settings where they learn professionalism and how to cope with the intensity of the clinical environment (Ferrell & DeCrane, 2016). Minority students are negatively impacted by bias and discrimination, which affects their sense of belonging, especially during clinical experiences (Sedgwick et al., 2014).

Nursing faculty are challenged to discover retention strategies that are effective to the field of nursing (Barra, 2013; Harris et al., 2014; Knowlton & Angel, 2016; Mooring, 2016; Murray et al., 2016; Sedgwick et al., 2014). Ethnicity has been significantly researched and has proven to be a reliable factor in predicting retention (Barra, 2013; Bingham & Solverson, 2016; Harris et al., 2014; Knowlton & Angel, 2016; Mooring, 2016; Murray et al., 2016; Sedgwick et al., 2014). Research has shown that exploring attrition rates of minority students, developing diverse recruitment initiatives, and effective retention and intervention programs can positively impact student success (Barra, 2013; Murray et al., 2016; Sedgwick et al., 2014).

Academic interventions, both pre-program and during the program, have proven to have positive effects on reducing attrition rates in nursing programs (Barra, 2013; Harris et al., 2014). Interventions can encompass many different areas including changes to the admission process, faculty development, math preparation classes, and math tutoring (Barra, 2013; Harris et al., 2014). These interventions practices meet students where they are in terms of academic need and can lead to success both for the student and the program (Barra, 2013; Harris et al., 2014). Barra (2013) found an increase in minority student retention ranging from 8% to 34% after implementing a non-credit, tuition-free medical math class for students prior starting the nursing program and after class math tutoring (p. 132). This seemingly small amount of intervention yielded

positive and immediate results (Barra, 2013). Similar increases in retention were found

by Harris et al. (2014), with rates rising from 53% to 62% after changing admission

processes and starting a student success program (p. 33). The nursing program

administrators found their selection was not as stringent and required a lower GPA when

compared to 17 other institutions (Harris et al., 2014). The institution increased the GPA

requirement and made anatomy and physiology a required pre-requisite for admission

(Harris et al., 2014). Students in underrepresented groups may have been unsuccessful at

completing the program if not for implementation of intervention programs and realistic

application requirements (Barra, 2013; Harris et al., 2014).

Retention requires work from both the student and the faculty member (Ferrell &

DeCrane, 2016; Harris et al., 2014; Mooring, 2016; Williams et al., 2018). The attrition

problem is forcing faculty to alter their way of thinking to ensure they are meeting the

needs of the student (Harris et al., 2014). Williams et al. (2018) investigated which

psychological, social, and cultural influences predict licensure rates, nursing program

satisfaction, and intent to obtain advanced nursing degrees. Faculty advisement and

relationships with non-teaching faculty were variables significantly associated with

licensure success (Williams et al., 2018). Likewise, institutional commitment to diversity

has shown importance to minority student success and students from diverse backgrounds

feeling welcome on campus (Ferrell & DeCrane, 2016). Students consider the quality of

learning and culture climate of the school as factors that influence successful program

outcomes (Dewitty, Huerta, & Dowing, 2016).

Nursing programs must go beyond these efforts and address issues that isolate and

negatively impact minority students during clinical experiences to recruit and maintain a

diverse student population (Murray et al., 2016; Sedgwick et al., 2014). Murray et al. (2016) described a project at the Saint Louis University School of Nursing when the university received a grant to grow the number of underrepresented minorities and students from disadvantaged backgrounds who enrolled, matriculated, and completed their bachelor of science in nursing program by using two initiatives to meet these needs (Murray et al., 2016). Similarly, Knowlton and Angel (2016), in an effort to build a nursing workforce representative of the diversity in their region, designed a program to increase the bachelor level registered nursing workforce in the state of North Carolina.

One initiative was to recruit high school students, as well as students dually enrolled in community colleges and universities (Knowlton & Angel, 2016). Recruitment efforts were geared toward students who achieve academic success regardless of if they were in high school or had post-secondary completion (Knowlton & Angel, 2016). The initiative made the nursing profession culturally practical and attainable (Knowlton & Angel, 2016). The initiative served to normalize nursing as a career choice and allowed students a long range view in seeing themselves as successful in a nursing career by building their foundation earlier (Knowlton & Angel, 2016; Murray et al., 2016). Results showed growth in the number of minority students who attended a new initiative of health career clubs, leading to increased interest in pursuing health-related or nursing careers and increased enrollment (Murray et al., 2016).

Nursing program faculty and staff are challenged to recruit, retain, and graduate students from ethnic and disadvantaged groups (Murray et al., 2016). The success of all student populations is important; however, a priority has emerged to increase minority student achievement to help overcome the overall shortage of nurses that represent

minority populations in the healthcare arena (Ferrell & DeCrane, 2016). Graduating more minority students will assist the needs of the healthcare industry (Sedgwick et al., 2014). According to Williams et al. (2018), "A diverse nursing workforce that understands cultural influences to illness and wellness and is able to adapt nursing interventions accordingly increases the likelihood that clients will receive culturally competent care" (p. 148).

Summary

In higher education, the issue of student retention continues to exist, but the student drop-out issue is not entirely a reflection the program has failed, but rather a compilation of several contributing factors (Mooring, 2016). It is important to look at student retention and attrition from the viewpoint of academic institution personnel as well as from the student's perspective (Mooring, 2016). Through a review of the literature on nursing student retention and attrition, this study was designed as a holistic approach to exploring attributes of both the institution and the student that influences successful nursing program completion.

In Chapter Two, insight into nursing education and the attrition issue was provided. A theoretical framework for the study was explored, and information on the universal nursing shortage was given. Nursing program admission criteria were discussed, as well as academic and environmental variables that effect students graduating and successfully passing the licensure exam. Finally with an exploration and investigation of the need to recruit and retain minority students completed the chapter.

In Chapter Three, the methodology utilized in this study is discussed. A thorough explanation of the problem and purpose, research questions, research design, and the

population sample is given. The instrumentation for the study is explained, and data

collection and analyses procedures are discussed. Finally, an exploration of ethical

considerations for conducting the research in this study is presented.

Chapter Three: Methodology

Society is facing a serious worldwide dilemma in the shortage of qualified nursing staff (Monahan, 2015). Missouri is facing continued challenges in sustaining a hospital workforce (Kenyon & Williams, 2017). Researchers estimate a nursing shortage of 15.9%, an all-time high for the state (Kenyon & Williams, 2017, p. 4). The nursing shortage is complicated by several factors including growing numbers of aging adults, the passage of the Affordable Care Act, and the impact of society's population becoming increasingly diverse (Harris et al., 2014). Low numbers of nurses from minority populations are currently working in the healthcare industry, creating an inverse correlation between healthcare and cultural needs met by nurses (Harris et al., 2014). Healthcare is dependent on students graduating from nursing programs to fill vacancies and assist with the nursing shortage issue (Peterson-Graziose et al., 2013). The nursing shortage comes at a time when there is an 18% dropout rate of nursing students who choose, or are forced to leave, nursing programs before graduation (Horkey, 2015, p. 29).

According to Barra (2013), many students who apply and begin practical nursing programs do not stay until completion. The attrition issue is concerning because a shortage of nursing personnel exists nationwide (Buerhaus et al., 2014). More research is needed to help understand the problem of attrition, especially at the practical nursing level (Barra, 2013). The student dropout issue places a financial burden on both the institution and the student and continues to add to the nursing shortage faced by the healthcare industry (Peterson-Graziose et al., 2013). Research investigating practical nursing program pre-admission criteria can address the attrition issue (Horkey, 2015).

The purpose of the current study was to examine pre-admission application criteria and determine if a difference exists between certain admission factors and successful program completion and first-time passage of the National Council Licensure Examination-Practical Nurse licensing exam. Student perceptions were investigated to identify barriers that prevent students from graduating, as well as areas that support program completion and licensure to help nursing program faculty better predict program success.

Chapter Three includes a detailed description of the methodology of the research project. Presented are the problem, purpose of the study, and research questions designed to guide the research. Qualitative and quantitative research methods are described as they pertain to the study, and reasons are stated as to why the mixed-methods approach best suits this research project. In addition to the problem and purpose overview of the study, research design is discussed, as well as a thorough explanation of the population and sample of participants of this study. Additionally, descriptions of the quantitative and qualitative instrumentation are reviewed, and procedures for data collection and analyses are described. Finally, ethical considerations are explained, and a summary of methodology information is offered.

Problem and Purpose Overview

The United States is facing a nursing shortage in the healthcare industry, which could possibly put patient care at risk (Monahan, 2015). According to Kenyon and Williams (2017), Missouri currently has the highest number of nursing vacancies in 16 years. Nursing education programs are being challenged to graduate more nurses each year, thus filling vacancies in the healthcare setting (Wray et al., 2014). Adding to the

nursing shortage issue is the large number of nursing students dropping out of nursing programs, resulting in the need for academic institution personnel to take a deep look into identifying ways to increase nursing program retention (Fontaine, 2014).

The purpose of this study was to learn more about the role admission criteria has on licensed practical nursing persistence to graduation. Additionally, an examination of perceptions of current students on environmental and academic conditions they perceived as supporting them or serving as barriers to their achievement, while in the practical nursing program, was addressed. This research is important in aiding nursing program administrators to select appropriate admission criteria designed to retain and graduate high-quality students. Equally important is the investigation of what areas students feel are supporting factors and elements which create barriers to their program success. The use of both quantitative and qualitative aspects of admitted nursing students allowed for an investigation of admission standards, as well as strategies that can be implemented to assist in the success of all students.

Research questions and hypotheses. The research questions which guided the study were:

1. What statistically significant difference exists, if any, in practical nursing program completion rates of students who hold a healthcare certification compared to students who do not hold a healthcare certification?

   $H1_0$: There is no statistically significant difference between practical nursing program completion rates of students who hold a healthcare certification compared to students who do not hold a healthcare certification.

H1_a: There is a statistically significant difference between practical nursing program completion rates of students who hold a healthcare certification compared to students who do not hold a healthcare certification

2. What statistically significant difference exists, if any, in practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment of students who hold a healthcare certification compared to students who do not hold a healthcare certification?

H2_0: There is no statistically significant difference in practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment of students who hold a healthcare certification compared to students who do not hold a healthcare certification.

H2_a: There is a statistically significant difference in practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment of students who hold a healthcare certification compared to students who do not hold a healthcare certification.

3. What statistically significant difference exists, if any, does student ethnicity have on practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment.

H3_0: There is no statistically significant difference for first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment between students in the ethnic majority group versus students in the ethnic minority group.

$H2_a$: There is a statistically significant difference for first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment between students in the ethnic majority group versus students in the ethnic minority group.

4. What factors, both in school and outside of school, do practical nursing students perceive as supporting them to successfully become a licensed practical nurse?

5. What factors both in school and outside of school do practical nursing students perceive as obstacles to successfully become a licensed practical nurse?

Research Design

Research design is described as the strategy used to incorporate all components of the study in a logical way to assure research questions will be successfully answered (Creswell, 2014). Research questions in this study were both quantitative and qualitative in nature. Research questions drive the decision for which approach is utilized in a study, and in this case, research questions were not sufficiently answered using only one method (Doyle, Brady, & Byrne, 2016). For this reason, the research design that best served the mission of the study was a mixed-methods design.

Mixed-methods research is being used more in the health science arena, allowing the researcher to expand depth and awareness on related issues (Doyle et al., 2016). Creswell (2014) described mixed-methods as a combination of both quantitative and qualitative research in a variety of ways within a specific research design. The mixed-methods research design is beneficial, allowing researchers the opportunity to collect and

analyze increased amounts of multiple forms of data (Fraenkel, Wallen, & Hyun, 2015). Fawcett (2015) suggested mixed-methods research is the design most similar to the practice of nursing.

The use of mixed-methods allows for not only determining if a statistical significance exists but also for documenting stories behind student attrition issues in nursing programs (Creswell, 2014; Doyle et al., 2016). A mixed-methods research design offers an avenue to compare and connect different viewpoints discovered from qualitative and quantitative data to have a better understanding of the phenomenon studied (Creswell, 2014). Mixed-methods research combines, at a minimum, one qualitative and one quantitative research component into a study (Schoonenboom & Johnson, 2017). The method of using statistical analysis and personal stories, perceptions, and beliefs gathered through focus groups makes the research more comprehensive (Creswell, 2014).

Researchers have identified a number of mixed-methods designs that vary in complexity (Creswell, 2014; Fraenkel et al., 2015). In the current research project, a convergent design of mixed-methods was used (Creswell, 2014). Both qualitative and quantitative data were collected and analyzed simultaneously but remained separate and independent of one another (Doyle et al., 2016). In the following sections, quantitative and qualitative portions of this study are discussed in more detail.

Quantitative research. For the quantitative piece of the current study, a causal-comparative method was utilized to determine the difference between two sets of archival data. Causal-comparative research usually measures two or more sets of variables

(Fraenkel et al., 2015). Variables in the current study were pre-admission criteria and successful program outcomes.

An investigation into the influence certain admission criteria have on program outcomes took place. Dependent variables identified were successful completion of the practical nursing program and successful first-time passage of the National Council Licensure Examination-Practical Nurse licensing exam. Independent variables included pre-admission demographics for the practical nursing program students, including documentation of a healthcare certification and student ethnicity.

Quantitative data were obtained to determine the difference between certain admission criteria and nursing student attrition. The use of archival data from past students who had both completed and dropped out of the practical nursing program assisted in establishing which admission criteria predict successful program outcomes. The quantitative piece was analyzed using the IBM SPSS® software platform.

Qualitative research. A qualitative component was included in the study to gather additional information that could not be obtained from a quantitative-only research design. Qualitative research is subjective in nature and is utilized to explain and give purpose to life experiences (Creswell, 2014). The underlying principle of qualitative research is to grasp how individuals understand, interpret, and give meaning to their lives and experiences (Merriam & Tisdell, 2016).

Studies that utilize qualitative research methods encompass a wide range of multiple designs to gain knowledge from a given subject (Flannery, 2016). The words and viewpoints from participants in the research project are emphasized in qualitative

studies (Fraenkel et al., 2015). Patton (2015) stated the interviewer's role is to gather data.

Research methods involved in qualitative studies include interviews and focus groups where data are gathered from questioning that is interpreted and put into patterns and themes for analyzation (Creswell, 2014). Qualitative studies are conducted to recognize the situation or incident from the perspective of those involved and therefore often include participants in the research procedures (Fraenkel et al., 2015). Merriam and Tisdell (2016) stated research focused on gaining insight into the viewpoints of those studied offers the biggest impact in creating a difference for people's lives.

A focus group can be described as a qualitative research method that includes the researcher interviewing knowledgeable participants on a particular subject (Merriam & Tisdell, 2016). A focus group interview provides the researcher with an avenue to gain insight into student beliefs and perspectives in a social context, where participants are among other peers and can compare their views among others offered (Fraenkel et al., 2015). According to Stewart and Shamdasani (2015), "A primary difference between focus group research and other types of research, such as surveys, individual interviews, and laboratory experiments is that data collection occurs in and is facilitated by, a group setting" (p. 17). In the current study, a researcher-designed question set was used to conduct in the focus group setting.

The use of only quantitative research or only qualitative research would not adequately answer the question of why nursing students drop out of the program (Creswell, 2014; Fraenkel et al., 2015; Horkey, 2015). The mixed-methods design incorporates both qualitative and quantitative data, therefore allowing pre-admission

archival data as well as information gathered from the identification of student perceptions to be analyzed to identify those factors that are successful for program completion (Creswell, 2014).

Merriam and Tisdell (2016) stated, "Stories are how we make sense of our experiences, how we communicate with others, and through which we understand the world around us" (p. 34). Narrative research methodology is gaining interest in the medical and educational arena (Clandinin, Cave, & Berendonk, 2017). The focus of the research study is on the lives of participants and members are asked to provide real-life stories that are then documented in narrative form (Creswell, 2014). Clandinin et al. (2017) further noted, "With the turn to narrative inquiry, the shift is to thinking with stories instead of about stories" (p. 89).

Population and Sample

Fraenkel et al. (2015) suggested the population of interest must be defined before a sample can be chosen. Practical nursing students attending, or who had graduated from a regional vocational school comprised the population of interest for the current study. For the quantitative portion of the study, the sample consisted of all practical nursing students who were currently or had ever been enrolled, including those who had graduated and those who dropped out before graduation. Students in the sample were enrolled in a specific career and technical center designated as an Area Vocational School by the Missouri Department of Elementary and Secondary Education (2017). The qualitative portion of the study consisted of a sample of students currently enrolled in the program at the time the study was conducted. The practical nursing program at this school was established in 2010 and runs from January through December each year. The

design of the program consists of three trimesters equaling 1,371 contact hours of approved instruction by the Missouri State Board of Nursing. The program has graduated eight cohorts since opening the doors and is currently in the ninth cohort year.

This non-random sampling method resulted in a dataset of $n = 120$ for the quantitative analysis. The vocational program utilized in the study did not include the Test of Essential Academic Skills in 2010; therefore, to be consistent, the cohort of 2010 were excluded from the study. Variables included in the dataset of students who were enrolled in the nursing program for cohort years 2011-2017 were the Test of Essential Academic Skills scores; first-time passage rates of the National Council Licensure Examination-Practical Nursing assessment; and information about whether students held a healthcare certification pre-admission. Healthcare certifications held by participants in the study included a certified nursing assistant, certified medical assistant, emergency medical technician, and phlebotomy. Demographic information was also collected from the sample including age, gender, and ethnicity. For the purposes of the quantitative portion of this study, ethnicity was broken down into White and Non-White; however, data collected from the sample indicated students self-reported four different races.

In Table 1, the demographic information for the sample selected including gender, ethnicity, program completion, first-attempt licensure passage, and a number of students holding prior healthcare certifications is presented. Data were collected from 120 students; of those, eight students reported male as their gender, and 111 students reported female as their gender. One student did not self-report gender in demographic information. Ethnicity was self-reported, with four students identifying as Black, nine students identifying as Hispanic, two students identifying as Indian, and 105 students

identifying as White. Two students reported as unknown because they had not taken the

licensure exam.

Table 1

Demographic Information of Practical Nursing Program Students and Graduates

	Number	Percentage
Gender		
Male	8	6.7
Female	111	92.5
Unknown	1	0.8
Ethnicity		
Black	4	3.3
Hispanic	9	7.5
Indian	2	1.7
White	105	87.5
Completed Program		
Yes	99	82.5
No	21	17.5
First-Time Licensure Passage		
Yes	93	77.5
No	25	20.8
Unknown	2	1.7
Prior Certification		
Yes	62	51.7
No	58	48.3

Note. n = 120.

Table 2 contains information describing the continuous variables, Test of

Essential Academic Skills scores, and age. The Test of Essential Academic Skills is an

admission requirement collected by all applicants who apply to the practical nursing

program (Assessment Technologies Institute, n.d.). Traditional and non-traditional aged

students are admitted. The maximum score available is 100, with a mean score of 58 for

practical nursing students (Assessment Technologies Institute, n.d., para. 3)

Table 2

Age and Test of Essential Academic Skills (TEAS) Scores of Practical Nursing

Program Students and Graduates

Category	Minimum	Maximum	Mean
Age	17	58	29.23
TEAS Score	54	81	62.30

Note. n = 120.

The breakdown of healthcare certifications held by students included in the

sample is shown in Table 3. For the quantitative analysis portion of the study,

certifications were categorized into those who held a healthcare certification and those

who did not. The total number of certifications were larger than 120 due to students

holding multiple certifications.

Table 3

Healthcare Certifications Held by Practical Nursing Program Students and Graduates

Certification	Number[a]
Electrocardiogram Technician	1
Emergency Medical Technician	1
Pharmacy Technician	1
Certified Medical Assistant	12
Certified Nursing Assistant	53

Note. [a]The total number of certifications is larger than *n* = 120 due to students holding multiple certifications.

To gather perceptions of nurses related to factors that support or create obstacles to program completion, it was appropriate to include a qualitative piece to this study. This component entailed interviewing current students of the 2018 cohort. The 2018 cohort year included 28 students enrolled in the area vocational school's practical nursing program at the time of this study. Using a convenience sample and single stage design, a sample size of six students was chosen. According to Creswell (2014), single stage technique is utilized when the participant is selected directly from a list of available names. A convenience sample is a type of non-random sample used when participants are easily available to be studied (Fraenkel et al., 2015). In this study, the names of students were accessible but were not used.

Focus group participants consisted of one male and five female students of different ages. One minority student was represented in the focus group. The focus group included both students who possessed a healthcare certification and those who did not.

Instrumentation

Archival data were used for the quantitative part of the study. Pre-admission criteria for the purposes of this study include possession of a healthcare certification including certified nursing assistant, certified medical assistant, emergency medical technician, and phlebotomy. The study also included student ethnicity demographic information.

Qualitative data were collected in a focus group setting using a semi-structured, open ended interview protocol (see Appendix A). Six current nursing students comprised the focus group and were asked questions to obtain first-hand accounts and impressions of their perceptions of the barriers that block, and factors that support, successful program completion and licensure of practical nursing students. Original interview questions were created and used during for study. Questions were designed through analysis of the theoretical framework. Specifically, Jeffreys's (2012) nursing universal retention and success model was used to create questions based on the following aspects of the model: student profile characteristics, student affective factors, academic factors, environmental factors, professional integration factors, academic outcomes, psychological outcomes, and outside surrounding factors.

Focus groups in qualitative research often utilize semi-structured, open-ended questions to encourage responses from participants about the issue being studied (Neuman, 2014). Open-ended questions allow information to be shared by participants and recorded so transcription can take place at a later time (Creswell, 2014). Questions utilized in the focus group for this study consisted of open-ended, semi-structured questions leading participants to describe their perspectives without constraints. The

researcher took notes during the focus group, and a third party professional was utilized

to take notes for verification purposes and to ensure accuracy (Creswell, 2014).

Transcripts from the focus group were professionally transcribed after the interview as a

safeguard for backup purposes (Creswell, 2014; Fraenkel et al., 2015). Creswell (2014)

recommended an interview protocol be designed to guide the focus group questioning of

students. The interview protocol included information that the interview was audiotaped

and transcribed, as the use of audiotaping helps to protect against observer bias (Fraenkel

et al., 2015).

Reliability and validity. Reliability and validity impact all forms of research and

can be addressed with cautious attention to the study's design and processes by which

data are collected, analyzed, interpreted, and ultimately presented (Merriam & Tisdell,

2016). The burden falls on the researcher to ensure reliability and validity of findings

discovered from the instrumentation utilized in the study (Creswell, 2014). Validity is of

utmost importance when considering research instrumentation (Fraenkel et al., 2015).

For this reason, focus group interview questions were reviewed and approved by all three

members of the dissertation committee.

A pilot study involves more than testing data collection techniques (Merriam &

Tisdell, 2016). Fraenkel et al. (2015) described a pilot study as a small test run of

procedures, questions, and overall research design the researcher chose for use in a study.

Interview questions were pilot-tested by three previous practical nursing students to

ensure question validity and assess if improvements needed to be made to the questioning

or design of the focus group (Creswell, 2014). Changes to focus group questioning and

design were made according to participant recommendations. Dikko (2016) suggested

instrument pilot-testing is one approach to confirm validity is attained.

Gibbs (2017) suggested the following procedures be used to ensure reliability is

achieved: transcripts of the focus group interviews are checked for errors, codes are

frequently checked for consistency, and cross-checking of codes is completed by a third-

party professional. During this study, safeguard procedures were followed to help ensure

the accuracy of findings. Member checks are described by Merriam and Tisdell (2016)

as a form of internal validity by which feedback is received from participants who were

interviewed. This form of validation helps assure the accuracy and completeness of

findings (Fraenkel et al., 2015). Interview participants were asked to review preliminary

findings to check for accuracy and to help avoid misinterpretation. To reduce internal

validity for this causal-comparative research, student groups were homogenized

(Fraenkel et al., 2015). Students who held a healthcare certification were grouped

together, and those who did not hold a healthcare certification were grouped together for

an exploration of both program completion and licensure. Students were grouped

dichotomously by ethnicity (White vs. non-White) for investigating licensure rates.

Data Collection

Research studies should have an organized process for data collection procedures

(Creswell, 2014). Before starting data collection, proper training using human subjects

during the research process was accomplished. The next step was to obtain approval

from Lindenwood University Institutional Review Board (see Appendix B). Permission

was then sought from the administration at the school where archival data were intended

to be researched (see Appendix C). A gatekeeper is an individual who has rights to

approve or reject desired participants in the study (Roller & Lavrakas, 2015), and

director of the career and technical institution studied was the gatekeeper in this instance,

and permission to access students in the nursing program for the study was given (see

Appendix D). De-identified data from the career center were retrieved from the student

database for cohort years included in the research.

To answer Research Question One, proportions of students holding a healthcare

certification and completing the nursing program were calculated and compared to the

proportion of students without a healthcare certification who completed the program. To

answer Research Question Two, contained proportions of those who held a healthcare

certification and those who did not hold a healthcare certification were compared with

data on the first-time passage of the National Council Licensure Examination-Practical

Nurse assessment. Lastly, to answer Research Question Three, proportions of those

students who self-identified ethnicity as Non-White were compared to those students who

self-identified ethnicity as White and compared with data on first time passage of the

National Council Licensure Examination-Practical Nurse assessment.

For the qualitative portion of data collection, a list of currently enrolled students

in the 2018 cohort was obtained. A convenience sampling technique was used in this

study (Fraenkel et al., 2015). A recruitment email from the director of the career and

technical institution was given to all participants in the 2018 cohort of nursing students

encouraging them to participate in the study (see Appendix E). Information about

possible outcomes and how the study could benefit the nursing program was also

discussed (Creswell & Creswell, 2018). A sample of six students was drawn from this

population of currently enrolled students by choosing the first six students who signed up to participate in the focus group.

Researchers have an obligation to provide participants with a description of the conditions of the study and obtain informed consent prior to beginning the interview (Creswell, 2014). Once students confirmed their participation, permission and consent forms were collected prior to the focus group (see Appendix F). Audible conversations taking place during the focus group interview was recorded.

Data Analysis

Upon approval for the data request, student information was extracted from the student information system and uploaded into a Microsoft Excel spreadsheet. Data included both successful completers of the program, as well as those who dropped from the program for not meeting academic performance requirements or other reasons. Data also included whether participants passed the National Council Licensure Examination-Practical Nursing assessment on the first attempt and information on any healthcare certifications held by the participants. Further, to answer Research Question Three, data on student, self-reported ethnicity were collected. For quantitative portion of the study, inferential statistics were applied. Inferential procedures draw conclusions from data and show the likelihood the sample relates to the hypothesized population characteristic (Fraenkel et al., 2015).

Data were imported from the Microsoft Excel spreadsheet to the IBM SPSS® software platform. To answer Research Questions One, Two, and Three, a *z*-test for proportions was used (Bluman, 2014). The *z*-test for proportions is an appropriate statistic when comparing two independent proportions (Bluman, 2014). The test is

conducted to determine the extent of difference between the two proportions (InfluentialPoints, 2018).

The number of participants who held no certifications and completed the practical nursing program was compared to participants who had at least one certification and completed the practical nursing program using a two-tailed z-test for proportions (Bluman, 2014). Additionally, participants who held no healthcare certifications were compared, by using a two-tailed z-test for proportions, with participants who held one or more healthcare certifications to see if a difference existed in the first-time passage of the National Council Licensure Examination-Practical Nursing assessment. To answer Research Question Three, participants who self-identified their ethnicity as Non-White were compared to participants who self-identified as White to see if a difference existed in the first-time passage of the National Council Licensure Examination-Practical Nursing assessment by using a two-tailed z-test for proportions (Bluman, 2014).

Research Questions Four and Five were qualitative in nature and were addressed via a focus group interview. Researcher-designed interview questions were relevant to research questions proposed in the study regarding supports and obstacles (Fraenkel et al., 2015). Categories were coded based on repetitive words and phrases identified in results from focus group interviews, and themes were identified (Merriam & Tisdell, 2016). Themes were classified into two categories that included both positive and negative factors as barriers or supporters of the participants' successful completion of the practical nursing program and successful first-time passage of the National Council Licensure Examination-Practical Nurse licensing exam.

Ethical Considerations

Merriam and Tisdell (2016) suggested ethics of the researcher influence the validity and reliability of the study. Ethical guidelines were followed throughout the research project. Creswell (2014) advised the researcher must make good ethical decisions throughout the study and be aware of ethical issues, which may arise. For this reason, guidelines were established to ensure ethical standards were met.

Permission was sought from all participants, and full disclosure that involvement was voluntary was ensured. Students participating in the study were asked to sign an informed consent form prior to the focus group session (Fraenkel et al., 2015). The consent form served as documentation of understanding voluntary participation on the part of the student. Safeguards were in place to protect the confidentiality and protection of the research documentation and data (Fraenkel et al., 2015).

Research requires great attention to ethical issues (Creswell, 2014). Participants were informed the focus group session would be recorded, but the information would be kept confidential. Identities were coded to maintain the privacy of participants (Creswell, 2014). Member checks allowed participants to review the transcript for the accuracy of findings (Fraenkel et al., 2015)

Confidentiality of data is vital, and protection protocols were in place during the quantitative portion of the study (Kimmel, 2007). For the qualitative piece, every effort was made to keep participant information secure and confidential. Computer files and study documents were stored on a password-protected computer (Fraenkel et al., 2015). Pseudonyms were used to assist in protecting the identities of participants (Creswell, 2014). Access to interview data were confined to only the transcriber and researcher to

help ensure confidentiality (Fraenkel et al., 2015). The researcher did not include any information that could identify participants in any publication or presentation.

Names of students were excluded in the archival data collection process, and each student was assigned a number to assure student identification was not jeopardized (Fraenkel et al., 2015). Data were locked in a cabinet in the office of the researcher. All of the previously described were implemented to uphold integrity, promote trust, and protect research participants (Creswell, 2014).

Summary

The intent of this mixed-methods study was to examine the quantitative and qualitative factors that assist in improving the retention of nursing students. Pre-admission application criteria were used to see if a difference existed between certain admission factors and successful program completion, as well as the first-time passage of the National Council Licensure Examination-Practical Nurse licensing exam. Student perceptions were investigated to identify barriers that block, as well as areas that support, successful program completion and licensure.

Chapter Three included a thorough description of the research methodology used in this study. The problem and purpose of the study were described, and research questions for the study were stated. Research design and sampling procedures were defined, and justification was presented for the use of mixed-methods research methodology. The instrumentation for the study was explained, and data collection and analyses procedures were discussed. Finally, ethical considerations for conducting research in this study were detailed. In Chapter Four, results from the quantitative study

of past student data, as well as themes that developed from data collected during focus

group sessions with current practical nursing students are presented.

Chapter Four: Analysis of Data

The world-wide dilemma of a nursing shortage is complicating patient care at all levels in the healthcare industry (Harris et al., 2014). Nursing shortages estimated as high as 500,000 by 2020 are predicted nationwide with Missouri contributing to the epidemic (Buerhaus et al., 2014; Cassidy, 2017). High attrition rates in nursing programs further exacerbate the problem of providing optimal care to patients (Olsen, 2017). Practical nursing programs experience major challenges with attrition, yet most research has concentrated on registered nursing programs (Stickney, 2008). This study was conducted to investigate factors affecting practical nursing program outcomes, as well as influences certain admission criteria have on program and licensure outcomes in the licensed practical nursing program. The burden to graduate more qualified nurses and to help resolve the issue of the nursing shortage is placed on nursing education program personnel (Kubec, 2017).

Chapter Four consists of the analyses of results for this mixed-methods study. Demographic information for the sample is discussed for both quantitative and qualitative portions of the study. Inferential statistical outcomes found through the data analyses are presented for each quantitative research question. Findings from the qualitative portion of the study are explored, as well as themes which emerged from data collected to gain insight and understanding from the focus group experience. A summary is presented consisting of a review of key elements concerning answers to research questions of this study and a preview of information in Chapter Five.

Demographics

Data were collected from one non-random sample ($n = 120$) of students who were enrolled in a practical nursing program for the cohort years of 2011-2017. The data set included information from all students admitted to the program during that timeframe; therefore, a non-random sample was deemed appropriate for use in the study to obtain an adequate number of participants (Creswell, 2014). Data analysis was conducted for completers and non-completers of the nursing program. Demographic information collected included the gender and ethnicity for all students included in the cohort years. Data from the sample also contained the first-time passage results of the National Council Licensure Examination-Practical Nursing assessment for the nursing students, as well as measures of pre-admission criteria; specifically, if the students admitted held a healthcare certification.

The qualitative study consisted of a sample of six students currently enrolled in the 2018 practical nursing program year. Five females and one male participated in the focus group session, and it was observed that a mix of traditional and non-traditional students was present. The six participants communicated they were from various backgrounds, with five of the six students stating they held previous healthcare certifications prior to entering the program.

Data Analysis

The quantitative portion of the study was signified in the first three research questions. For Research Questions One and Two, inferential statistics were used to analyze student data in the areas of program completion and first-time passage of the National Council Licensure Examination-Practical Nursing assessment. Student data

were analyzed comparing proportions of students who held healthcare certifications to proportions of students who did not hold healthcare certifications. For Research Question Three, inferential statistics were applied to determine if a difference existed in the first-time passage of the National Council Licensure Examination-Practical Nursing assessment of students who self-identified their ethnicity as Non-White to those who self-identified as White. The qualitative portion of the study was represented by Research Questions Four and Five. Investigated were the following factors: in school and outside of school, those who students perceived as positively supporting them, as well as those factors they perceived as obstacles to successfully becoming a licensed practical nurse

Research question number one. The first research question, *What statistically significant difference exists, if any, in practical nursing program completion rates of students who hold a healthcare certification compared to students who do not hold a healthcare certification? ,* was addressed using inferential statistics, a *z*-test for two proportions (Bluman, 2014). To determine completion rates of students who held healthcare certifications and students who did not, it was necessary to also look at students who were not retained. A *z*-test is used when proportions of two independent groups are not equal to test for equality (Bluman, 2014). An alpha level of .05 or below was used to ensure there would be less than a 5% chance of observing these results if completion rates for students with certifications were the same, in the general population, as they were for non-certification holders (Bluman, 2014; InfluentialPoints, n.d.).

Results of the analysis of the data for Research Question One showed a *z*-test score of 3.478 with a *p*-value of .0005, which is lower than $p < .05$ and considered statistically different. Therefore, the null hypothesis was rejected, and the alternative

hypothesis was supported (Bluman, 2014; InfluentialPoints, n.d.). There was a

statistically significant difference between practical nursing program completion rates of

students who hold a healthcare certification compared to students who do not hold a

healthcare certification. In Table 4, the results of the findings and analysis for the first

research question are presented.

Table 4

Effects of Healthcare Certification on PN Program Completion

	Completed PN Program				
Certification	Yes	No	Proportion	*z* score	*p-value*
Yes	58	4	.9355	3.478	.0005
No	40	18	.6897		

Note. n = 120.

Research question number two. The second research question, *What*

statistically significant difference exists, if any, in practical nursing program first time

passage rates of the National Council Licensure Examination-Practical Nursing

assessment of students who hold a healthcare certification compared to students who do

not hold a healthcare certification? was addressed using inferential statistics, a *z*-test for

two proportions (Bluman, 2014). To determine the National Council Licensure

Examination-Practical Nursing assessment passage rates of students who held healthcare

certifications and students who did not, it was necessary to also look at students who did

not pass the National Council Licensure Examination-Practical Nursing assessment. A *z*-

test was used to identify if the proportion of graduates who passed the National Council

Licensure Examination-Practical Nursing assessment on the first attempt in each group

was statistically significantly different at the .05 alpha level or below (Bluman, 2014;

InfluentialPoints, n.d.)

The result of the analysis for Research Question Two showed a *z*-test score of

2.768 with a *p*-value of .0056, which is lower than $p < .05$ and statistically different.

Therefore, the null hypothesis was rejected, and the alternative hypothesis was supported

(Bluman, 2014; InfluentialPoints, n.d.). There is a statistically significant difference in

practical nursing first-time passage rates of the National Council Licensure Examination-

Practical Nurse assessment of students who hold a healthcare certification compared to

students who do not hold a healthcare certification. In Table 5, the results of the findings

and analysis for the second research question are presented.

Table 5

Effects of Healthcare Certification on First-Time Licensure Passage

	First-Time Licensure Passage				
Certification	Yes	No	Proportion	*z* score	*P value*
Yes	55	7	.8871	2.768	.0056
No	38	18	.6786		

Note. n = 118.

Research question number three. The third research question, *What*

statistically significant difference, if any, does student ethnicity have on practical nursing

first-time passage rates of the National Council Licensure Examination-Practical Nurse

assessment? was addressed using inferential statistics. A *z*-test for two proportions was

also used to identify if a difference exists between the proportion of graduates when

grouped dichotomous by ethnicity (White vs. non-White), who passed the National

Council Licensure Examination-Practical Nursing assessment (Bluman, 2014). The

alpha level of .05 was used to ensure with 95% confidence the differences did not ensue

randomly (Bluman, 2014; InfluentialPoints, n.d.). The null hypothesis was not rejected

since the z-test for two proportions yielded z = -0.1239 and a p-value .9045 which was

greater than .05; therefore, there was no statistically significant difference for first-time

passage rates of the National Council Licensure Examination-Practical Nurse assessment

between students in the ethnic majority group versus students in the ethnic minority

group. Students in each grouping are presented in Table 6.

Table 6

Effects of Ethnicity on First-Time Licensure Passage

	First-Time Licensure Passage				
Ethnicity	Yes	No	Proportion	*z* score	*p-value*
White	81	22	.7864	-0.1239	.9045
Non-White[a]	12	3	.8000		

Note. n = 118. [a]The ethnic categories Black, Hispanic, and Indian have been collapsed

into the category "Non-White."

Research question number four. This research question was part of the

qualitative portion of the study. Research question number four, *What factors, both in*

school and outside of school, do practical nursing students perceive as supporting them

to successfully become a licensed practical nurse? was answered by focus group

questions 1, 2, 3, 4, 5, 7 and 8. Each question is discussed in the following section.

Focus group question number one. The first question, *How academically*

prepared do you feel you were to take the TEAS entrance exam and enter the practical

nursing program prior to being accepted into the program?, elicited a variety of responses. Most students felt they were as prepared as they needed to be with the limited knowledge they had leading up to the entrance exam during the application phase of the program. Students who prepared for the exam felt more confident going into the testing session than those students who did not prepare. Focus Group Participant #1 stated, "I was completely unprepared. I decided at the very last minute that I would do this and I had not tested in any type of way since high school, which was 25 years before. So I did not prepare myself." In contrast, Focus Group Participant #3 stated, "I was pretty prepared; I watched the Mometrix videos online, I did the ATI practice tests A and B online, and had the T6 book."

Focus group question number two. The second question asked of the focus group was: *Were there any professional experiences that helped prepare you for the practical nursing program prior to you being accepted into the program?* Answers to this question were largely influenced by students' employment experiences, specifically if participants utilized a healthcare certification in his/her occupation. The student who did not have a healthcare certification stated she had no prior professional experiences that helped prepare her. Focus Group Participant #6 stated, "Yes, I worked as a certified nursing assistant fresh out of high school and then a facility put me through a medical technician class. These experiences gave me experience in the clinical setting which prepared me for the program." Similarly, Focus Group Participant #4 stated, "I have had my certified nursing assistant license since 2012 and am a level one medical aid, both of which helped me prepare me for the nursing program." Focus Group Participants #4 and

#6 cited employment with a healthcare certification as a professional experience that helped prepare them prior to being accepted into the program.

Focus group question number three. The third question, *Were there any personal experiences that helped prepare you for the practical nursing program?,* was asked of all focus group participants. Answers to this question were varied with different personal experiences influencing participants' decisions to become a nurse as well as help prepare them for the educational process. Multiple students mentioned having family members and friends in the nursing field and the impact they had on their life. Students stated family and friends have gone through critical illnesses which encouraged their decision to enter the nursing field. Focus Group Participant #1 stated, "My grandmother passed from cancer, and one of my grandfathers was on dialysis a long time with renal disease. Watching them when I was younger, I always knew I wanted to be a nurse." Focus Group Participant #6 stated, "Watching my mom work in long-term care, I was set on not going into nursing. I was waitressing, and the manager was an activities director at a nursing home and pushed me into a certified nursing assistant class."

Focus group question number four. The fourth question asked of the focus group, *Prior to the beginning of the program, how informed of the program expectations were you that allowed you to prepare to be successful throughout the program year?* was answered with mostly positive responses. In fact, students felt they were given clear expectations when going through the application process. Five of the six participants thought they were well informed during orientation and prepared themselves before starting classes. Focus Group Participant #1 stated, "I feel like I was well informed that it was going to be very difficult and very rigorous and that we really needed to support each

other and have the support of family and friends to get us through." Focus Group

Participant #4 stated, "I felt very prepared after going to orientation that it was going to

be hard." A different perspective was given by Focus Group Participant #5 who stated:

> I felt half-way prepared, because we had been told over and over it's going to be
>
> hard, it's going to be difficult, but until you're actually in those shoes dealing with
>
> your life and the issues it's going to throw at you, there is no preparation for any
>
> of that. You're flying by the edge of your seat the entire time.

Focus group question number five. The fifth question asked of the focus group,

What academic resources, including faculty and staff institutional support personnel, did

you use which supported your success during the first trimester of the program? had the

most responses of all questions asked. Answers included support from faculty, staff, and

support personnel of the institution, as well as academic resources from the curriculum

covered in the program. Focus Group Participant #1 stated, "Obviously, our instructors.

I spoke to them frequently, and they made themselves available. The other support staff

making themselves available for appointments and sitting down with me and helping me

figure out how to study was beneficial to me." Focus Group Participant #3 stated, "Our

instructors are amazing, the ladies in the front office help us whenever we need help, and

I have some really cool nurses I work with that help a lot too." Focus Group Participant

#2 reported using curriculum-related academic resources to support success stating, "All

the online sources connected to our books as well as our teachers, and the speech on color

coding our notes has really helped me a lot."

Focus group question number seven. The seventh question to the focus group

was: *Besides academic supports, what other resources did you use to help you be*

successful? Responses to this question credited family, support from fellow classmates, and past students as well as co-workers in the healthcare setting. Classmates were indicated as an academic resource by Focus Group Participant #5 who expressed, "Thanks to the other students, they really kind of pointed me in the right direction and by the third day I could breathe." Focus Group Participant #2 stated, "My Director of Nursing is a hundred percent behind me on this, and then also knowing the students from the class, I've spent a lot of nights at her house studying." Focus Group Participant #2 also noted, "My family. I live at home with my parents still. They've picked up anything I've needed help with." The same participant stated, "The class Facebook page is a good reminder, like, hey, do not forget to study for our test on Tuesday and stuff like that. Accountability."

Focus group question number eight. The eighth question posed to the focus group was: *What financial and personal factors do you believe supported your success during the first trimester of the program?* Responses to this question focused on financial and personal support from family and friends, as well as students themselves cutting back on work hours to make time for class and studying. Formalized financial aid was also noted as a resource. Focus Group Participant #1 stated:

> My husband works, so I do not have to. I quit a full-time job; I've never not worked, so it's major for me. He's doing his best to make sure that I do not have to pick up anything and the other people in the home picking up slack. If I have to spend the night studying for the six tests we had in one week or if I have a big final, they take dinners or go get something so I don't have to worry about those things.

Focus Group Participant #3 prepared financially before the program: "I knew I was going to come into the program, so I worked some extra hours before the program, had some money saved. My fiancé has to pay all the bills because I'm not spending my little savings yet." Focus Group Participant #6 stated, "Financial aid has helped me out. I, unfortunately, didn't have the opportunity to quit [my job], but I still work full time to support my son and I."

Research question number five. This research question, *What factors, both in school and outside of school, do practical nursing students perceive as obstacles to successfully become a licensed practical nurse?,* was also part of the qualitative portion of the study and was addressed in focus group questions 6, 9 and 10. Each question is discussed in the following section.

Focus group question number six. The sixth question asked of the focus group was: *What academic challenges did you encounter in your first trimester of the program, if any?* This question received a wide-range of responses from challenges in study skills, test taking, and general academic abilities to having the confidence and motivation to succeed and persist in the classroom. Focus Group Participant #1 stated, "The only thing really was that I really, honestly did not know how to study when I first started." Focus Group Participant #2 stated, "Time management, just knowing when to make time to study and make time for family and remembering that it's [the] quality of your studying, not the amount of hours you put into it." Similarly, Focus Group Participant #5 stated, "Definitely time management for balancing your life with the studying, and it'd just been so long since I was in school, it was a lot to deal with, and then figuring out how to study

so I can retain it." Focus Group Participant #6 stated, "If I'm being completely honest, the motivation to study and anxiety."

Focus group question number nine. The ninth question asked of the focus group was: *What challenges, if any, have you overcome to remain in the program?* Responses to this question varied from personal, financial, academic, and family issues. Each student in the focus group named one or more challenges they have had to overcome to progress in the program. Focus Group Participant #1 stated, "My husband works, and we get Veteran's Assistance help, but it's been hard cutting our income so drastically. It's hard to see the light at the end of the tunnel when you don't know how to pay to survive." Focus Group Participant #2 said, "balancing of life, school and work" was a challenge.

Personal challenges in the form of family illness were stated by Focus Group Participant #3, "Before school started, my daughter was tested for lymphoma, and I wasn't here. I was here at school physically, but not mentally. Two months ago, it all came back good, but the stress of that was pretty bad." Personal issues in the form of childcare were cited by Focus Group Participant #6, "I had to switch my babysitter. My child's under a year old, nonverbal, so I was extremely hesitant to do so until I could figure out that my child was going to be safe and comfortable."

Focus group question number ten. This question was: *Are there any other questions you wish I would have asked?* There was only one response to this question, which pertained to class size and the challenges a large class presents. Focus Group Participant #1 stated, "I don't know that I would have a class size as big as our class size.

It's challenging to have that many people in a small space and that many personalities going on with this type of program."

Themes

The interview process produced a transcript that was coded. Consistencies in responses were noted throughout the focus group pertaining to factors, both in school and outside of school, that practical nursing students perceive as supporting or barriers preventing them to successfully become a licensed practical nurse. Two themes emerged from participants: *Theory and Practice* and *Navigating the Journey*. These themes are further explained to distinguish between factors that support and barriers that prevent students' journeys to becoming a licensed practical nurse. The two themes are discussed separately, incorporating findings from interview transcripts.

Theory and practice. The *Theory and Practice* theme developed from students discussing the importance of equipping themselves to succeed in the practical nursing program. The first part of the theme, theory, evolved from participants expressing how experience in healthcare was a driving force in their decision to pursue a career in practical nursing, as well as in the preparation process for admission into the practical nursing program. Participants credited their own experiences in the healthcare industry, and of influential family members and friends, as assisting them in the decision to become a nurse, as well as in the preparation for being admitted into the nursing program.

A majority of participants credited their personal work experiences and healthcare certifications as inspiration to enter the nursing program. Focus Group Participant #4 stated, "I originally wanted to be a mechanic, and I was accidently put into the certified nursing assistant program in high school, and I really enjoyed it, so now, I'm here."

Focus Group Participant #5 stated, "I fell into it on accident. I was a single father that found myself out of work, and I needed a job, so I got into healthcare and found out that caring for people made me feel good."

Inspiration from family and friends who work in healthcare was cited as another reason students entered the nursing program, and it added to their feelings of preparedness to apply for admission. Focus Group Participant #5 stated, "My fiancé went through the licensed practical nursing program, and we both went through the medical technician program, so kind of seeing her go through it, it kind of prepared me." Focus group Participant #6 had a different outlook when stating, "My mom went through the licensed practical nursing program unsuccessfully." The negative outcome experienced by her parent encouraged her to prepare more before entering the program so that she did not have the same experience.

A third way focus group participants' decisions to become licensed practical nurses were affected was through critical illnesses they faced with friends and family members. Focus Group Participant #3 stated, "I've taken care of my mom for a very long time, and she passed away in 2011, so I wanted to go that [into healthcare] way." Similarly, Focus Group Participant #2 stated, "My grandpa passed away from cancer, and watching the hospice process was what pushed me." Overall, focus group participants commented that either employment history in the healthcare arena, the personal experience of having and a loved one with a critical illness, or watching family and friends experience work or education in the healthcare industry was a main source of encouragement to enter a nursing program and made them feel prepared going into the program.

The second part of the theme, practice, emerged from participants continually bringing up the need for preparation both during the application process, as well as throughout the practical nursing program's difficult coursework. Practice was a topic that pertained to the entire program from the application process to program completion. Information was collected concerning how students prepared themselves to be selected into the program and indicated factors that best prepared them for the program. Most students emphasized the need to fully prepare themselves for all aspects of the program, and many reported wishing they had spent more time preparing.

Preparation for the application process was described in different ways. Students reported attending the Test for Essential Academic Skills entrance test workshops, as well as cited prior college experience, study manuals, and online study tutorials as resources in preparation. Students who had prepared for the Test for Essential Academic Skills entrance test felt more confident about being selected as a student. In terms of entrance testing, Focus Group Participant #2 stated, "I felt prepared. I did the online practice tests, and I had college classes prior to taking it." Focus Group Participant #4 stated, "I purchased an Assessment Technologies Institute book and studied for about a month." Focus Group Participant #5 prepared longer and stated, "I got an Assessment Technologies Institute book and studied that at home. I knew I wanted to do it for the last year, so I planned for it."

Focus Group Participant #3 cited entrance test workshops by the institution and stated, "I did the Test for Essential Academic Skills prep beforehand, and I felt pretty confident after I left there, so it was a big help." The need for more preparation was noted by Focus Group Participant #1 stating, "I would have made my decision sooner and

actually reviewed for it. I really didn't feel confident at all about the test. If I had prepared, I feel like I would have been okay." Most students commented that pre-application preparation is needed to feel confident about being selected into the program.

Program preparation was another aspect of practice that was discussed throughout the focus group session. Several students cited program orientation as a useful resource in giving them a realistic insight into difficult expectations the program places on admitted students. Focus Group Participant #1 stated, "I feel like I was very informed from coming to the orientation here and then having the past students to talk to." In addition, Focus Group Participant #3 stated, "I think the orientation here pretty much prepared us to go into the program." All of the focus group participants acknowledged that program orientation was helpful in preparing them for the rigorous content of the practical nursing program.

The last feature of the practice portion of this theme was a discussion about knowing students who had gone through practical nursing programs or through time spent working in the healthcare industry. Focus Group Participant #1 stated, "I felt prepared. I knew it would be difficult and hard. My sister is a licensed practical nurse and was trying to get her registered nurse degree but is one class away that she can't successfully get through." Additionally, Focus Group Participant #3 explained, "I have a background in the medical field, and I already failed out of one program. It wasn't happening again, so I pretty much prepared myself." In contrast, Focus Group Participant #4 felt unprepared despite having prior healthcare industry experience. Participant #4 stated, "I do have a background in the medical field. No, I was not prepared for how hard it would be." Likewise, Focus Group Participant #5 stated:

I have been working in the medical field for a couple of years. I was a certified nursing assistant and then a certified medical technician passing medications, so I had that. But as far as being prepared for the amount of homework and information that they give you and then having to balance life with doing your homework and stuff, being prepared for that, I think it's pretty hard to be prepared for that. You've got to have some kind of a support group to be able to balance things.

Navigating the journey. The second theme that emerged from data included issues that students encountered while managing his/her daily life and pushing through the program successfully. The theme was also strengthened by participants stating they had both personal and academic needs they needed met to complete the program and achieve licensure. These issues included multiple challenges, but participants also discussed solutions of a support system and finding a balance as being necessary to survive as a nursing student. Focus group participants indicated it was important to keep the end goal in mind and have the support in place to help overcome hurdles they may encounter. Participants presented challenges they faced, and had to overcome, throughout the practical nursing program to complete the program. Most of the focus group participants voiced one or more challenges they encountered through the practical nursing program year, including academic, personal, and financial barriers.

Academic challenges were indicated by a majority of participants who reported their time management and study skills were lacking coming into the program. Focus Group Participant #2 stated, in regard to a challenge, "Mine would be time management, just knowing when to make time to study and make time for family and remembering that

it's the quality of your studying, not the amount of hours you put into it." Many students commented on the fact they had not been in classes for a long time and had to learn how to study again, coupled with the demanding test schedule, presented time management issues. Focus Group Participant #4 stated, "Time management and learning how to study because I've never studied until now."

Students also identified emotional strains of the demanding academic load as a road block. Focus Group Participant #5 stated, "Just the stress of it, knowing that if you don't hit a certain mark, it's like, kind of like a do or die, so your stress level just goes through the roof." Focus Group Participant #4 stated, "I had to overcome doubting myself to even get in the program, which was my biggest challenge." Academic challenges were a barrier discussed by most of the Focus group participants; this relates to the earlier theme of preparedness.

Personal and family issues were the second category of challenges experienced by Focus Group Participants. Personal strains ranged from caring for sick family members to issues with childcare. Focus Group Participant #5 stated:

Besides the academics, and the financial, we have a wide range of kids. My parents are older, and my mother just battled breast cancer, and her health is still poor, and my father just got diagnosed with prostate cancer, and so they're in their 80s, and I've had to spend time helping them too. So trying to spend my time from school, kids, and helping my parents, and the stress, I'm worrying about how long either one of them are going to be here, gets, some days are pretty stressful.

Focus Group Participant #5 stated:

> My fiancé and I work at the same place. She worked her schedule, so when I'm at
>
> clinicals, she's with the kids. We've had to plan our life around for me being
>
> here, because that, right now, is the important thing.

Participants commented they had put support mechanisms in place to help overcome the challenges so they can succeed in the program.

Financial strains were the last portion of challenges presented by focus group participants. Rigors of the practical nursing program prevent most students from working full time, which creates a burden for students to pay their bills. Focus Group Participant #1 stated, "I, honestly don't know how people work even part-time, especially not full-time, while doing this, it's really hard." Likewise, Focus Group Participant #6 stated, "I didn't have the opportunity to quit. I work full-time to support my son. I come up short because I couldn't pick up extra hours. My mom steps in and is working to ensure I'm going to be comfortable." Most participants voiced financial issues have caused stress at some point during the program.

Participants stated a support system is necessary to navigate the daily grind of the nursing program. Students expressed during the focus group interview there was the need for a strong support system. Every focus group participant commented a support system was vital to succeeding in the program. It was important for participants to keep moving forward and not get behind. A support system assisted them in this process. Focus Group Participant #6 stated, "It's basically, mission impossible to get it done by yourself. A strong support system is a necessity." Support systems were needed to assist with academic, emotional, social, and financial issues.

Academic support systems included instructors, institution support personnel, and former and fellow classmates. Focus Group Participant #5 stated, "The instructors and the staff here have been really, really helpful." Likewise, Focus Group Participant #6 stated:

The instructors go above and beyond to make sure that we are understanding and retaining the knowledge of what we're getting. They've given up lunches and time after school to make sure we're all okay. The financial aid office helped me immensely with all my financial aid because if I would have had to try to do that on my own, I honestly wouldn't have had that asset, because I'm not too tech savvy.

Focus Group Participant #2 stated a support as, "Watching a past student go through the program and having her to vent to and just talk to about my problems and serve as my support system." Focus Group Participant #3 stated, "I think that other people in the class are a great help." Resources that accompanied the curriculum and books were also cited as a support offered by the institution. Focus Group Participant #2 stated, "All the online sources connected to our books as well as our teachers and then the counselor's speech on color coding our notes has really helped me a lot."

Family, employers, and co-workers were another avenue of support focus group participants leaned on throughout all phases of the program. Employers were cited by Focus Group Participant #5 as a support system who encouraged application into the nursing program. Participant #5 stated, "My employers suggested that I look into doing nursing or something because they thought they saw something in me that I should further my career." Focus Group Participant #3 stated, "My employers are like amazing,

they support me, they'll quiz me. I got a great family and support team that way, so I have a lot of people backing me."

Family was mentioned by every focus group participant as being a help agent. Focus Group Participant #4 stated, "My family, they really help with everything that I need. And the nurses that I know, they like to explain things I don't know." Participants who had been out of school for a long time commented their children helped with personal tutoring. Focus Group Participant #3 stated, "I have a really smart 18-year-old son that helps me a lot too. He can look at math and be like, it's that, why didn't you see that?"

Financial support was the last area of support focus group students discussed. Finances were also discussed as a challenge, and as such, participants commented that support in this area was needed to successfully complete the program. Many students rely on family members and financial aid to cover their cost of living because working full time is not an option. Focus Group Participant #5 stated, "My fiancé because while she was going through the program, I worked and did as much overtime as I could to keep things going, and she's doing the same thing while I'm in class. And definitely the financial aid." Similarly, Focus Group Participant #4, stated, "My husband works, so that I don't have to." Most of the focus group participants stated they used some form of financial aid to pay for the program and provide for themselves during the program.

The last part of the Navigating the Journey theme that emerged significantly throughout the focus group interview was the need for finding balance in students' lives. Participants struggled with finding balance with their family and studies, as well as finding time to work. Focus Group Participant #6 stated, "It's challenging to keep your

head above water financially. It's extremely challenging to try and balance both to make

sure you're not going to drown in one area or the other, but, you learn to manage the

chaos." Similarly, Focus Group Participant #5 said, "You're really going to have to

balance out with life and trying to come to school and everything like that, or it will flip

your world."

Finding balance in the school week was discussed by Focus Group Participant #2

stating, "I would say prioritizing our week, because there were weeks we had six tests,

and you have to study for the first one first and take it day by day." Likewise, Focus

Group Participant #2 stated that students struggle with "the balancing of life, school and

work." Focus group participants discussed a support system of instructors, peers, and

family are needed to help balance challenges faced throughout the practical nursing

program.

Summary

Results of data, findings, and analyses for research questions explored in this

mixed-methods study were presented in Chapter Four. Student demographic data were

presented for both the quantitative and qualitative portions of the research study.

Analyses of the quantitative research in Research Questions One and Two indicated

holding a healthcare certification had a statistically significant positive effect on both

practical nursing program completion rates and first time passage rates of the National

Council Licensure Examination-Practical Nursing. However, for Research Question

Three, a student's ethnicity, when measured dichotomously as White or Non-White, did

not have a significant effect on first time passage rates of the National Council Licensure

Examination-Practical Nursing. Findings from the focus group interviews conducted to

answer the qualitative research questions, Research Questions Four and Five, yielded two themes of support or barriers to program success. The two reoccurring themes included *Theory and Practice* and *Navigating the Journey*. Detailed responses were given to support themes which emerged from the study.

In Chapter Five, the findings of the data analysis are reviewed and synthesized to draw conclusions from the study. Implications for practice and recommendations for future research are also discussed. Then, a summary of the major findings of the study and review of conclusions and implications is presented.

Chapter Five: Summary and Conclusions

A mixed-methods approach was used for this study to gain a holistic

understanding of different factors that influence completion and licensure of practical

nursing students (Creswell, 2014). The context was a specific career and technical center

designated as an Area Vocational School by the Missouri Department of Elementary and

Secondary Education (2017). Through the use of quantitative analysis, admission and

demographic criteria were examined to identify if differences existed between completion

and licensure success rates of practical nursing students. An investigation of student

perceptions of environmental and academic variables which assisted in successful

program outcomes, or served as barriers to successful program outcomes, represented the

qualitative portion of the study. Face-to-face questions and discussions through focus

groups were designed to investigate student perceptions. The qualitative piece of the

study resulted in data that were analyzed to identify emerging themes.

In Chapter Five, a review of all findings from the statistical analysis of data is

offered. Next, conclusions of the current study are discussed, followed by a review of

implications for practice. Recommendations for future research are explored, and a

summary of the research study is presented.

Findings

A comprehensive listing of the analyses resulting from the mixed-methods study

was presented in Chapter Four. Discussion of findings is presented in the following

section. Results and outcomes of the study are presented in order by research question.

Research question number one. The first research question, *What statistically*

significant difference exists, if any, in practical nursing program completion rates of

students who hold a healthcare certification compared to students who do not hold a healthcare certification? was answered using inferential statistics. The proportion of practical nursing students who completed the program and held a healthcare certification were compared to those practical nursing students who completed the program and did not hold a healthcare certification. The *z*-test for two proportions yielded a *p*-value less than .05; therefore, the null hypothesis was rejected. There was a statistically significant difference in program completion between practical nursing students who held a healthcare certification and practical nursing students who did not hold a healthcare certification, with the former group completing the program at a higher rate.

Research question number two. The second research question, *What statistically significant difference exists, if any, in practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment of students who hold a healthcare certification compared to students who do not hold a healthcare certification?* was answered using inferential statistics. The proportion of practical nursing students who passed the National Council Licensure Examination-Practical Nurse assessment who held a healthcare certification was compared to practical nursing students who passed the National Council Licensure Examination-Practical Nurse assessment who did not hold a healthcare certification. The null hypothesis was rejected because a *z*-test for two proportions yielded a *p*-value less than .05. There was a statistically significant difference between National Council Licensure Examination-Practical Nurse assessment passage rates for students who hold a healthcare certification compared to practical nursing students who do not hold a healthcare certification.

Research question number three. The third research question, *What statistically significant difference, if any, does student ethnicity have on practical nursing first-time passage rates of the National Council Licensure Examination-Practical Nurse assessment?* was analyzed using inferential statistics. Specifically, a *z*-test for two proportions was applied to compare the proportion of graduates who passed the National Council Licensure Examination-Practical Nursing assessment by a dichotomous grouping of ethnicity status (White vs. non-White). The *z*-test for two proportions yielded a *p*-value greater than .05; therefore, the null hypothesis was not rejected. There was no statistically significant difference between a dichotomous grouping of ethnicity status (White vs. non-White) on National Council Licensure Examination-Practical Nursing assessment passage rates.

Research question number four. The fourth research question, *What factors, both in school and outside of school, do practical nursing students perceive as supporting them to successfully become a licensed practical nurse?* was answered using focus groups. Participants were asked 10 questions during the student focus groups. Student discussions resulted in answers to the research question.

Students mentioned a variety of supporting factors when answering focus group interview questions. Most students felt prepared for entrance testing and were confident entering the practical nursing program prior to being accepted. Students cited work experience in the healthcare industry and obtainment of a healthcare certification as positive factors preparing them for the application phase, as well as the rigor experienced during the nursing program course work. Student respondents also expressed how personal experiences with loved ones influenced their decision to submit an application to

the program and helped prepare them for curriculum and clinical components of the program. Some students stated they had family members attend nursing programs and work in the healthcare industry, which gave a preview of expectations nursing students encounter.

Students in the study were very positive concerning the administration of the nursing program and mentioned the school gave clear instructions on the application process and realistic expectations of what students would encounter during the nursing program. Most students included support from faculty, staff and, support personnel as the most beneficial factor in obtaining positive program student outcomes. Some students stated the use of curriculum-related resources, including online book assistance, was a positive factor in successfully completing program course work.

Every participant in the focus group mentioned having a strong support system in the form of family and friends as vital to obtaining successful program outcomes. Some students mentioned the relationship with classmates, students within the cohort, and past students as helpful agents of support, especially when rigors of the program caused stress in students' lives. Financial support from family and friends was voiced as a positive factor, stating that working during the nursing program was difficult, and most students had to decrease their number of work hours. Federal financial aid was also mentioned as a strong source of support allowing students to provide for themselves and family while going through the program.

Research question number five. The question of, *What factors both in school and outside of school do practical nursing students perceive as obstacles to successfully become a licensed practical nurse?,* was also answered by students who participated in

the focus group. The focus group consisted of 10 questions, which participants were asked to answer and provide feedback. Research questions were answered based on student discussions during the focus group session

Several obstacles to practical nursing success emerged from student focus group discussions. Academic challenges were mentioned including study skills, test-taking, and students' confidence level in their own academic abilities. Student motivation and persistence were also challenges mentioned during the interview process. Students explained they had difficulties with time management and had to learn the correct way to study. Finding a balance between family and school was an area that many students expressed as an obstacle they had to overcome.

Several students also expressed that personal, financial, academic, and family issues during the practical nursing program created barriers students had to overcome. Every student interviewed mentioned at least one challenge that would have affected their success had they not found support to overcome the barrier. Personal and family challenges were mentioned the most frequently as obstacles to program success, and students mentioned the support they received from faculty, staff, and family helped them deal with challenges and achieve program progression.

Conclusions

Conclusions are described within the scope of pertinent literature provided in Chapter Two. The three quantitative research questions are explained first. Qualitative conclusions from research analysis are explored using the two emerging themes illustrated in Chapter Four.

Quantitative research questions. The null hypotheses were rejected for quantitative Research Question One and Two, and the alternative hypothesis was supported for Research Question Three. To address Research Question One, a statistically significant difference was shown between practical nursing students who completed the program and held a healthcare certification and practical nursing students who completed the program and did not hold a healthcare certification. Nursing program completion rates based on healthcare certifications were examined because research is lacking in studies of outcomes when healthcare certifications are used as a requirement for admission (Schmidt & MacWilliams, 2011; Stombaugh & Judd, 2014). The proportion of students who completed the program and held a healthcare certification for 2011, 2012, 2013, 2014, 2015, 2016 and 2017 combined cohorts was 93.6%. In contrast, students from the same combined cohorts who did not hold a healthcare certification showed a completion rate of 68.9%. Findings of this study support the literature, which suggests that standardized testing should not be the only factor to include in nursing program admission criteria (Bremner et al. 2014; Kubec, 2017; Olsen, 2017). Academic success can be attributed to both cognitive and non-cognitive abilities; therefore, results of this study support the literature suggesting that weighting admission criteria may be an option nursing program administrators should consider to achieve positive student program outcomes (Higgins, 2005; Hochanadel & Finamoe, 2015).

Through an analysis of results for Research Question Two, it was found there was a statistically significant difference between students who passed the National Council Licensure Examination-Practical Nurse assessment and held a healthcare certification compared to practical nursing students who passed the National Council Licensure

Examination-Practical Nurse assessment and did not hold a healthcare certification. Nursing program licensure passage rates based on healthcare certifications were examined because the literature revealed a need for research weighting admission criteria on the impact of passing of the National Council Licensing Exam to discern students who are more likely to perform well on tests (Higgins, 2005; Horkey, 2015).

The proportion of students who passed the National Council Licensure Examination-Practical Nurse assessment who hold a healthcare certification for 2011, 2012, 2013, 2014, 2015, 2016, and, 2017 combined cohorts was 88.7%. Conversely, students from the same combined cohorts without a healthcare certification showed a passage rate of 67.8%. Findings of this study support the need for nursing program admission policies to be written to look beyond current criteria and consider healthcare certification as a requirement to promote completion and licensure of nursing students and ultimately improve the nursing shortage crisis (Monahan, 2015; Underwood et al., 2013). The use of multiple admission criteria allows for acceptance of students who have a greater chance of graduating and achieving licensure (Bremner et al., 2014; Horkey, 2015; Olsen, 2017; Schmidt & MacWilliams, 2011).

The results of the data collected and analyzed to address Research Question Three showed no statistically significant difference between a dichotomous grouping of ethnicity status (White vs. non-White) of graduates who passed the National Council Licensure Examination-Practical Nursing assessment. Nursing program licensure completion rates based on ethnicity were examined because literature suggested minority students account for low representation in registered nursing programs, and nursing educators must concentrate on cultural competencies when implementing plans for

retention and successful completion and licensure of students (Ferrell & DeCrane, 2016; National League for Nursing, 2014). The proportion of graduates who passed the National Council Licensure Examination-Practical Nursing assessment on the first attempt and who identified as White was 78.6% compared to 80% of graduates who passed the National Council Licensure Examination-Practical Nursing assessment on the first attempt who identified as Non-White. Overall, the lack of statistically significant differences in licensure passage rates when compared by ethnicity does not align with the literature presented in Chapter Two. However, only 15 (14%) students represented in this study identified themselves as Non-White. This aligns with the literature, finding minority students are underrepresented in nursing programs despite increased numbers of diverse patients needing healthcare services (Gipson-Jones, 2017; Murray et al., 2016; National League for Nursing, 2014).

Qualitative research questions. The two qualitative research questions were posed to secure a more thorough examination of student perceptions of both environmental and academic factors that assisted with or created barriers to successful program completion and licensure. Kubec (2017) advised that academic issues are not the only factor influencing nursing program attrition rates. The study of only quantitative variables has not been successful in reducing attrition in nursing programs, and Horkey (2015) suggested that the focus on research needs to change.

Theory and practice. It is important for institutional personnel to understand barriers to persisting to completion, as well as factors that assist program completion to allow support systems to be developed that increase retention of students in nursing programs (Ferrell & DeCrane, 2016). Participants mentioned that experiences of family

members and friends combined with personal experience in healthcare influenced their decision to apply for nursing school. One student stated, "Family members went through a practical nursing program and I decided that I wanted to be a nurse, too," which is a theme presented by several focus group participants as to why they decided to become a nurse. Healthcare experience and obtainment of healthcare certifications were specifically mentioned as a factor that lead to successfully navigating through the practical nursing program. Some students echoed having healthcare experience was helpful, but nothing could completely prepare them for how difficult and time consuming the program is. Grit, motivation, and aspirations to complete a goal attributed to the success of students to persist in the program and attain academic success when challenges and difficulties arise (Duckworth, 2016; Hochanadel & Finamoe, 2015; Pitt et al., 2014).

Identifying admission standards helpful in predicting success will lower attrition rates due to unsuccessful academic performance (Kubec, 2017). Some schools of nursing have begun requiring completion of a nursing assistant certification for acceptance into the program, yet little research on the effects of these requirements on program outcomes has been completed (Schmidt & MacWilliams, 2011; Stombaugh & Judd, 2014). Findings of the study current provide validation that students perceive healthcare experience and certifications as a positive factor in successfully completing a nursing program.

Academic preparedness before entering a nursing program, dissatisfaction with campus based academic resources, and clinical placement experiences during the program are cited as factors influencing nursing student adjustment (Hamshire et al., 2013). The concept of preparedness was supported by focus group participant discussion.

Some students mentioned they wished they had prepared more for the program, stating

that successful outcomes may have been obtained easier with more preparation. One

student stated he planned for the entrance testing. This comment was echoed from other

focus group students who felt prepared for admission testing stating they practiced with

online tests, attended entrance test workshops, and spent a significant amount of time

studying. Focus group participants identified preparing for the program with readiness

for admission testing. Admissions tests could be a proxy for hard work in the program

giving students a mindset of, if one prepares hard enough for the admissions test, one is

well-suited to handle the work in the program (Duckworth, 2016; Perkins-Gough, 2013).

The literature supports the use of admission tests as predictors of program success during

the admission process (Bremner et al., 2014; Knauss & Wilson, 2013; Manieri et al.,

2015; McCarthy et al., 2014; Schmidt & MacWilliams, 2011).

　　Navigating the journey. Grit is described as the ability to persist when faced

with hardship and obstacles (Hochanadel & Finamoe, 2015). Tinto (2017) believed a

student must aspire to stay in school and exert energy into finishing that goal. Student

participants described both personal and academic needs that required assistance to

successfully obtain program completion and licensure. Focus group interviews led to

discussions from students mentioning they had to push through environmental obstacles

and barriers of daily life to persist in the program. Students expressed the need to keep

the end goal in mind and the need for support from family and friends to make it through

the program.

　　Obstacles varied ranging from academic challenges in the form of time

management and study skills to the emotional effect of dealing with the difficulty and

stress of the program. Students must be committed over time and possess an inner strength capability that shows they are determined to persist when faced with obstacles (Hamshire et al., 2013; Hochanadel & Finamoe, 2015). Hamshire et al. (2013) and Crombie et al. (2013) supported Jeffreys's (2015) nursing universal retention and success model, which groups factors affecting student attrition into the following student profile characteristics: outside surrounding factors, student affective factors, academic factors, professional integration factors, and environmental factors. Results of this study suggested that identification of these factors can not only guide institutional personnel in future decision-making regarding admission criteria and programming but also can continue to fill a gap in the qualitative research on nursing student retention and the nursing shortage crisis (Hamshire et al., 2013; Knowlton & Angel, 2016; Monahan, 2015).

Personal problems combined with family complications are also identified as reasons why students drop out of nursing programs (Hamshire et al., 2013). Student participants expresses personal stressors ranging from critically ill family members to problems with childcare. Financial barriers were frequently mentioned by focus group participants stating the program design makes it difficult for students to work, leaving students wondering how they will make ends meet. Through all discussions by students of their personal and academic barriers, the constant message to the key of their success was the support system in place by faculty, staff, fellow students, and their personal goal to complete the program. Wray et al. (2014) supported this conclusion by stating a student's support system and determination to become a nurse are factors that influence

students to remain in the program. Students stated it is necessary to have a support for assistance academically, socially, emotionally, and financially.

Focus group participants described the need for finding balance between school and personal lives as a factor leading to successful program outcomes. The rigor and schedule of the program made it difficult for participants to spend time with their families, keep up with studies, and manage a work schedule. Students referred to feeling like they were "drowning" from financial strains and managing their personal and academic life. Students stated prioritizing is the key to finding balance and communicating program expectations with family is important to successfully completing the nursing program. Environmental barriers create constant obstacles to successful program outcomes for nursing students (Hamshire et al., 2013).

Implications for Practice

There are several implications for practice in this study. In this study, the problem of high attrition rates of nursing students at a time of a nursing shortage crisis were investigated (Barra, 2013; Buerhaus et al., 2014; Kubec, 2017; Mooring, 2016). Three implications for practice are discussed including future admission criteria, minority recruitment, and academic and student services resources.

Future admission criteria. One strategy to decrease nursing student attrition is to select admission criteria that is predictive of academic success (Mooring, 2016; Schmidt & MacWilliams, 2011). Entrance exams are relied on heavily by nursing program admission committees to select students for admission (Kubec, 2017; Manieri et al., 2015). Standardized testing should only be one variable used in the application and acceptance process (Bremner et al., 2014). Jeffreys's (2015) nursing universal retention

and success model places meaning on program outcomes such as graduation, licensure, and workforce placement. Utilizing Jeffreys's (2015) framework, it was found that nursing programs should design a broader-based selection tool for accepting applicants that allow for more predictors of success including prior work experience and healthcare certifications. Multiple factors have emerged that impact retention and attrition of nursing students, which ultimately impacts the nursing shortage. Nursing program faculty and staff must explore the possibility that admission factors beyond test scores lead to developing successful nursing students. Nursing program administrators must think outside the box in implementing nursing program criteria which coincides with Jeffreys (2015) model, finding that environmental and academic influences impact successful nursing student outcomes. Based on the research findings of this study, practical nursing programs should expand admission criteria to include a healthcare certification and/or work experience requirement for admission.

Minority recruitment. The population in the United States is changing and society is becoming progressively more diverse (Williams et al., 2018). Healthcare is experiencing an increase in diverse patients, yet nursing programs do not have increasing numbers of underrpresented minority students enrolling (Gipson-Jones, 2017). Nursing program personnel should design approaches that consider cultural issues when implementing strategies leading to student success (Ferrell & DeCrane, 2016). Due to the need for a more diversified workforce in healthcare, nursing program administrators must institute changes in recruitment, advisement, and retention strategies (Mooring, 2016). Results showed minority students do not perform differently than non-minority students on the outcomes of a nursing program, providing evidence to believe minority

success rates would be high if the students would choose to enroll in nursing programs. The issue is low enrollment of minority students in nursing programs (Murray et al., 2016). Admissions teams should implement recruiting strategies for reaching a more diverse population such as hiring a consultant to give them recruitment practice recommendations, increasing diversity in nursing faculty, and diversifying the admissions board to give a better perspective on diversity recruiting/admissions.

Academic and student service resources. High rates of attrition in nursing programs place a burden on the healthcare industry to meet the needs of patient care (Olsen, 2017). Nursing program faculty and staff must examine all aspects of the college experience from acceptance to graduation and licensure when determining strategies to improve nursing student retention (Knauss & Wilson, 2013). Institutional commitment; communication of expectations; academic, social, and financial support; feedback; and involvement were among variables found by Ferrell and DeCrane (2016) as influencing successful outcomes for nursing students. Factors found to influence program completion are helpful in designing retention strategies (Van Eerden, 2014).

Focus group participants had positive comments concerning the application process due to the communication of both faculty and support staff. Continued use of pre-acceptance informational meetings detailing the application process will improve nursing applicants' understanding of what is expected to be accepted into the program. A majority of focus group participants understood program expectations after attending orientation sessions. Focus group participants emphasized that support given by academic and support staff assisted in overcoming barriers to program completion. It is recommended that programs of all sizes have adequate support-resources in place

throughout the program. Nursing students need to know where to turn when challenges impede their progress. Support services such as a counseling center, an easily accessible and friendly financial aid office, and tutoring personnel will promote positive program outcomes.

Nursing programs can benefit by personnel examining the complete student educational experience when tackling attrition of nursing students (Hamshire et al., 2013; Jeffreys, 2015; Knowlton & Angel, 2016; Peterson-Graziose et al., 2013). Students favored the orientation program and mentioned the program was useful in giving realistic expectations and opening the eyes of admitted students. The continued implementation of a nursing program orientation program that details program expectations and provides an introduction to the rigors of the curriculum can provide realistic insight preparing students for what they will encounter.

Recommendations for Future Research

A mixed-methods design was chosen for this study to explore a holistic view of the factors affecting successful program completion and licensure. However, only one institution's practical nursing population was explored during the study; therefore, the study was not comprehensive (Fraenkel et al., 2015). The literature explains that a rise in healthcare needs, combined with an increased number of registered nurses reaching retirement ages, is causing society to experience a nursing shortage as high as 500,000 by 2020 (Buerhaus et al., 2014; Harris et al., 2014). Healthcare professions are projected to provide the biggest increase in new jobs by 2026 (Bureau of Labor Statistics, 2017). Findings in the current study support the review of literature suggesting further research about nursing program completion and licensure is encouraged to better guide

implementation of recruitment, application, and programming practices (Bremner et al., 2014; McCarthy et al., 2014; Stickney, 2006). The rise in the need for healthcare services and the expansion of jobs in the health industry increases pressure on nursing programs to produce graduates (Mooring, 2016). Further research will provide an avenue for nursing academia to better serve nursing students.

Additional qualitative and quantitative data on practical nursing program outcomes should continue to be accumulated and analyzed. Future research should include a more encompassing study, including students from additional practical nursing programs, and exploring a greater geographical area to gain a more insight into the phenomena examined (Creswell, 2014). Because only current students in the nursing program were included in the qualitative phase, a future study could include students who successfully completed the program, achieved licensure, and are working in healthcare, to gain additional information and a different perspective as to factors that assisted or served as obstacles to program completion. Future research should include exploring different independent and dependent admission variables that may influence completion. Further studies including the "grit" scale would expand the research base on the influence of perseverance in relation to successful program completion and licensure (Duckworth, 2016). Further investigation into ethnicity as it relates to program completion could be studied building on this study that only explored licensure pass rates.

Future research could include broadening scope and dimensions of the population in the study (Fraenkel et al., 2015). Interviews with faculty and staff may be helpful for exploring factors that affect practical nursing retention at an institution. Student participants mentioned interactions with faculty and staff during the focus group

discussions; therefore, value could be added to future studies by bringing in those perspectives. Broadening the scope to include faculty and staff interviews may also add the aspect of triangulation to confirm findings (Merriam & Tisdell, 2016).

Summary

As described in Chapter One, there is currently a nursing shortage issue facing the healthcare industry (Buerhaus et al., 2014; Dixon, 2017; Kubec, 2017; Monahan, 2015). Reducing attrition of nursing students was discussed as an avenue to help resolve the nursing shortage crisis (Buerhaus et al., 2014; Mooring, 2016). Practical nursing program retention was the focus of the mixed-methods study. The purpose of this study was to gain insights and understanding of factors that impact completion and licensure of practical nursing students. The theoretical framework consisting of works by Tinto (1975, 1987, 2017) and Jeffreys (2012, 2015), as well as aspects of growth mindset and grit (Duckworth, 2016; Dweck, 2016), allowed for multiple perspectives assisting in identification of factors affecting successful nursing program outcomes.

A comprehensive review of applicable literature was presented in Chapter Two. Thorough information on the nursing undergraduate retention and success model (Jeffreys, 2012) was presented. Various authors of retention including works of Tinto (1975, 1987, 2017) as well as literature on student perspectives in relation to retention (Duckworth, 2016; Dweck, 2016) were explored giving an inclusive insight into the attrition and retention issue as related to the theoretical framework of this study. A comprehensive review of the world-wide nursing shortage phenomenon was offered, further showing a need to reduce the high attrition rates in nursing programs. An investigation of current trends in admissions criteria and nursing program success was

provided. The limited research on the use of healthcare certification and industry experience was summarized. Student attrition was investigated, and additional information on minority students in relation to nursing program outcomes was explored.

The methodology of the study was explained in Chapter Three. The researcher chose a mixed-methods approach to provide a more holistic view of factors that affect successful program outcomes in practical nursing students (Creswell, 2014; Fraenkel et al., 2015). Three quantitative research questions were developed to examine differences in practical nursing student completion and licensure success rates. A *z*-test for two proportions was applied to conduct data analyses (Bluman, 2014). Two qualitative research questions were posed to collect perceptions of nursing students connecting factors that support or create hurdles to program completion and licensure. Interview questions assisted in focus group discussions with current practical nursing students about their experiences with the institution and faculty before and after acceptance into the practical nursing program.

In Chapter Four, detailed analyses of the data collected to answer the five research questions were presented. For Research Question One and Two, a statistically significant difference was found between practical nursing program completion and first-time passage of licensure exam rates of students who held a healthcare certifications compared to students who did not hold a healthcare certification. Data obtained to answer Research Question Three showed no statistically significant difference for first-time passage of licensure exam rates between students in the ethnic majority group versus students in the ethnic minority group. Two emerging themes, *Theory and Practice* and *Navigating the*

Journey, were the results from the response from student focus groups of current practical nursing students.

Finally, in Chapter Five, conclusions and findings were discussed within the context of the literature discussed in Chapter Two. In response to Research Questions One and Two, holding a healthcare certification did lead to successful nursing program completion and first-time passage of the National Council Licensure Examination-Practical Nurse assessment. In response to Research Question Three, ethnicity did not significantly impact first-time passage of the National Council Licensure Examination-Practical Nursing assessment. Environmental and academic factors which students identified as affecting both successful program outcomes, as well as those that created obstacles to success program outcomes were identified in response to Research Questions Four and Five.

Implications for practice were connected to the literature review and included broadening admission criteria, improving minority student recruitment, advisement and retention, and implementation of a program orientation detailing program expectations. Recommendations for future research included the idea to expand research to include additional students in other programs and geographical locations. Additionally, broadening the scope and dimension of the qualitative study to include interviews with faculty and staff was recommended. Expanding the research base of students, as well as faculty and staff, will give a more comprehensive examination into factors that affect successful outcomes of practical nursing students. Implementing these factors should yield higher retention and completion rates and ultimately assist in the universal nursing shortage currently experienced by the healthcare industry.

Appendix A

Focus Group Interview Protocol

Thank you for attending today's focus group. I am a doctoral student at Lindenwood
University under the guidance of Dr. Rhonda Bishop. The purpose of the study is to learn
more about the effects admission criteria have on licensed practical nursing program
outcomes and examine the perceptions of current students on the environmental and
academic conditions they perceive as supporting or serving as barriers to their
achievement, while in the practical nursing program. [Provide participants a copy of
focus group protocol and collect signatures]

Each participant will be assigned a number for identification purposes.

**The first three questions address the time period of your *admission* into the practical
nursing program and experiences prior to entering your first practical nursing
class.**

1. How academically prepared do you feel you were to enter the practical
   nursing program prior to being accepted into the program? Explain further.

2. Were there any personal experiences that helped prepare you for the practical
   nursing program prior to you being accepted into the program?

3. Were there any professional experiences that helped prepare you for the
   practical nursing program prior to you being accepted into the program?
   Explain further.

Think back to your time *during the first trimester* **after being accepted to the practical nursing program. Reflect on your academics during the program.**

4. What academic resources did you use which supported your success during the first trimester of the program?

5. What academic challenges did you encounter in your first trimester of the program, if any?

6. Besides academic supports, what other resources did you use to help you be successful?

Think back to your time *during the first trimester* **of the Practical Nursing program. Reflect on your environment during the program.**

7. What personal factors do you believe supported your success during the first trimester of the program?

8. What challenges, if any, have you overcome to remain in the program?

9. Are there any other questions you wish I would have asked?

Appendix B

Instituttional Review Board Approval

LINDENWOOD

LINDENWOOD UNIVERSITY ST. CHARLES, MISSOURI

DATE: April 25, 2018

TO: Holley Goodnight
FROM: Lindenwood University Institutional Review Board

STUDY TITLE: [1139918-1] A Case Study on Licensed Practical Nursing Program Outcomes:
                                    Exploring Factors Affecting Successful Program Completion and Licensure
IRB REFERENCE #:
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: April 25, 2018
EXPIRATION DATE: April 24, 2019
REVIEW TYPE: Expedited Review

Thank you for your submission of New Project materials for this research project. Lindenwood University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review (Cat 7) based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to the IRB.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the completion/amendment form for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of April 24, 2019.

Please note that all research records must be retained for a minimum of three years.

If you have any questions, please contact Michael Leary at 636-949-4730 or mleary@lindenwood.edu. Please include your study title and reference number in all correspondence with this office.

If you have any questions, please send them to IRB@lindenwood.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Lindenwood University Institutional Review Board's records.

Appendix C

Permission to Conduct Research

February 24, 2018

███████████████████████
███████████████████████
███████████████████████
███████████████████████
Carthage, MO 64836

RE: Permission to Conduct Research Study

Dear █████████

I am writing to request permission to conduct a research ████████████████████ Technical Center. I am a doctoral student at Lindenwood University under the guidance of Dr. Rhonda Bishop. The purpose of the study is to learn more about the effects admission criteria have on licensed practical nursing program outcomes and examine the perceptions of current students on the environmental and academic conditions they perceive as supporting or serving as barriers to their achievement, while in the practical nursing program.

For the quantitative portion of the study, I would like to request the following data in de-identifiable format for the practical nursing program cohort years of 2011-2017:

- Student Race

- Graduation Status

- NCLEX-PN First attempt – Pass or Fail

- If the student possessed a healthcare certification

For the qualitative aspect of the study, I hope the school administration will allow me to recruit 8-10 individuals, both male and female, from the school's practical nursing program to participate in focus group interviews. Interested students, who volunteer to participate, will be given a consent form to be signed returned at the beginning of the focus group session. If approval is granted, student will participate in a focus group interview on the school site. The interview should take no longer than one hour to complete.

No costs will be incurred by either your center or the individual participants. Your approval to conduct this study will be greatly appreciated. If you have questions, you may contact me at my email address: hlg060@lindenwood.edu. or contact my dissertation chair, Rhonda Bishop, at rbishop@lindenwood.edu

Sincerely,

Holley Goodnight

Doctoral Student

Lindenwood University

Appendix D

Site Permission
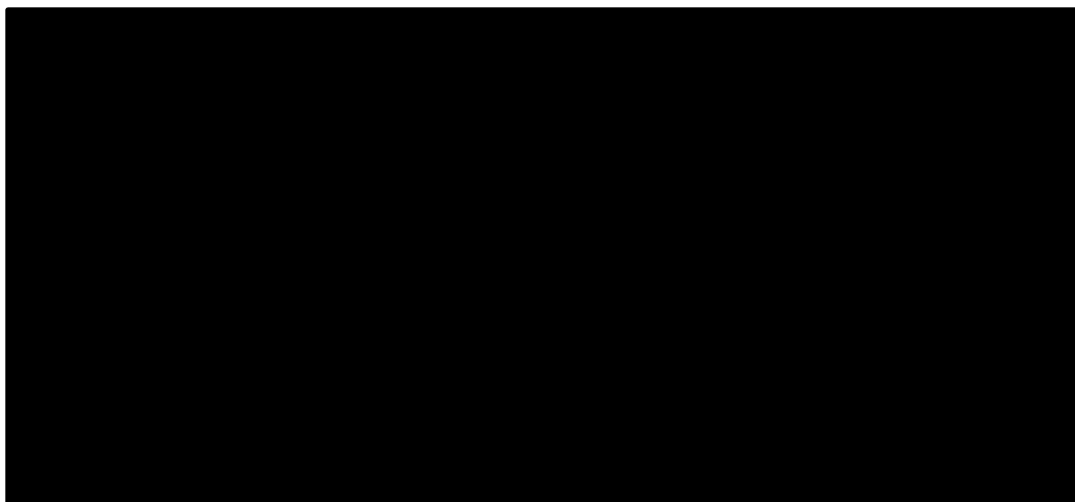
Acknowledgement of Research

February 13, 2018

Dear Institutional Review Board:

The purpose of this letter is to inform you that I give Holley Goodnight permission to conduct the research titled A Case Study on Licensed Practical Nursing Program Outcomes: Exploring Factors Affecting Successful Program Completion and Licensure at Lindenwood University. This also serves as assurance that this school complies with requirements of the Family Educational Rights and Privacy Act (FERPA) and will ensure that these requirements are followed in the conduct of this research.

Sincerely,
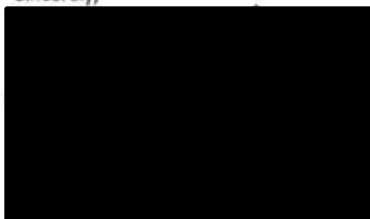
Appendix E

Recruitment Letter
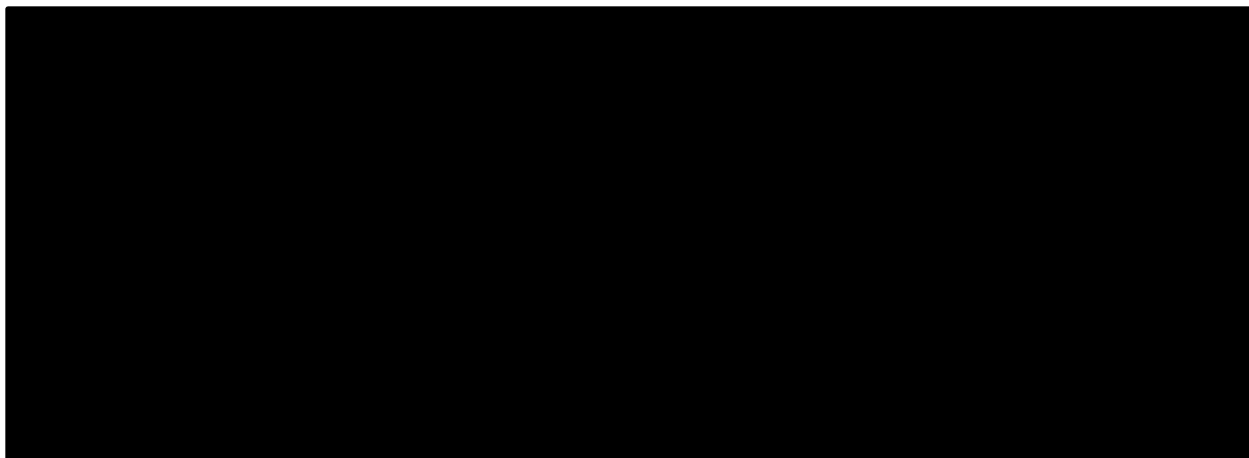
February 13, 2018

To practical nursing program students:

Holley Goodnight, a doctoral student at Lindenwood University has contacted me regarding a research study using students of the practical nursing program of ▮▮▮▮▮ ▮▮▮▮ Center. The information gathered in this research project will assist her in completing her dissertation. She is asking you to participate in a focus group at the ▮▮▮▮▮▮ Center on (Date). It would last approximately an hour in length. The discussion topic of the focus group would be on the influences which affect completion of the practical nursing program. If you would agree to participate in this research study, I ask you to complete the attached form and return it to the ▮▮▮▮▮▮ Center Office. All questions regarding the research study should be directed to Ms. Goodnight at ▮▮▮▮▮▮

Sincerely,
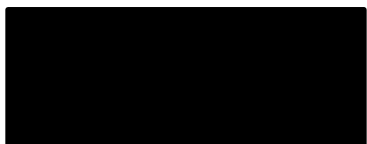
Appendix F

Adult Consent Form

LINDENWOOD

Research Consent Form

A Case Study on Licensed Practical Nursing Program Outcomes: Exploring Factors Affecting Successful Program Completion

You are asked to participate in a research study being conducted by Holley Goodnight under the guidance of Dr. Rhonda Bishop at Lindenwood University. We are doing this study to learn the effects admission criteria have on licensed practical nursing program outcomes and examine the perceptions of current students on the environmental and academic conditions they perceive as supporting them or serving as barriers to their achievement while in the practical nursing program. It will take about one hour to complete this study.

Participating in this interview is voluntary. We will be asking about 5-10 other people to answer these questions.

What are the risks of this study?

We do not anticipate any risks related to your participation other than those encountered in daily life. You do not need to answer any questions that make you uncomfortable or you can stop the interview at any time.

We are collecting data that could identify you, such as information about student conduct on college campuses. Every effort will be made to keep your information secure and confidential. Only members of the research team will be able to see your data. We do not intend to include any information that could identify you in any publication or presentation.

Will anyone know my identity?

We will do everything we can to protect your privacy. We do not intend to include information that could identify you in any publication or presentation. Any information we collect will be stored by the researcher in a secure location. The only people who will be able to see your data are: members of the research team, qualified staff of Lindenwood University, representatives of state or federal agencies.

What are the benefits of this study?
You will receive no direct benefits for completing this survey. We hope what we learn may benefit other people in the future.

If you have any questions about your rights as a participant in this research or concerns about the study, or if you feel under any pressure to enroll or to continue to participate in this study, you may contact the Lindenwood University Institutional Review Board Director, Michael Leary, at (636) 949-4730 or mleary@lindenwood.edu. You can contact the researcher, Holley Goodnight directly at ▇▇▇▇▇▇▇ or hlg060@lindenwood.edu. You may also contact Rhonda Bishop at rbishop@lindenwood.edu**.**

I confirm that I have read this form and decided that I will participate in the project described above. I understand the purpose of the study, what I will be required to do, and the risks involved. I understand that I can discontinue participation at any time. My consent also indicates that I am at least 18 years of age. Please feel free to print a copy of this consent form.

_____   _____

Participant's Signature   **Date**

_____

Participant's Printed Name

_____   _____

Signature of Principal Investigator or Designee   **Date**

_____

Investigator or Designee Printed Name

References

Aiken, L. H., Cheung, R. B., & Olds, D. M. (2009). Education policy initiatives to address the nurse shortage in the United States. *Health Affairs, 28*(4), 646-656. doi:10.1377/hlthaff.28.4.w646

American Association of Colleges of Nursing. (2015). *Enhancing diversity in the nursing workforce.* Retrieved from https://www.aacnnursing.org/News-Information/Fact-Sheets/Enhancing-Diversity

American Association of Colleges of Nursing. (2017). *Nursing faculty shortage*. Retrieved from https://www.aacnnursing.org/News-Information/Fact-Sheets/Nursing-Faculty-Shortage

Assessment Technologies Institute. (n.d.). *TEAS exam information*. Retrieved from https://www.atitesting.com/teas/teas-exam

Barra, M. (2013). The effect of medical mathematics retention strategies in decreasing attrition rate among African American licensed practical nursing students in a community college. *Journal of Cultural Diversity, 20*(3), 125-133. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/24279128

Bingham, M., & Solverson, N. (2016). Using enrollment data to predict retention rate. *Journal of Student Affairs Research and Practice, 53*(1), 51-64. doi:10.1080/19496591.2016.1110035

Bluman, A. G. (2014). *Elementary statistics: A step by step approach* (9th ed.). New York, NY: McGraw-Hill Education.

Bremner, M., Blake, B., Long, J., & Yanosky, D. (2014). Setting a benchmark for the

    Test of Essential Academic Skills (TEAS) V: Striving for first-semester success

    in nursing school. *Journal of Nursing Education*, 537-540.

    doi:10.3928/01484834-20140821-12

Buerhaus, P. I., Auerback, D. I., & Staiger, D. O. (2014). The rapid growth of graduates

    from associate, baccalaureate, and graduate programs in nursing. *Nursing*

    Economics, 32(6), 290-295, 311. Retrieved from https://www.dartmouth.edu/~

    dstaiger/Papers/2014/BuerhausAuerbachStaiger_NursingEcon2014.pdf

Bureau of Labor Statistics. (2017). *Employment projections: 2016-26 summary*.

    Retrieved from https://www.bls.gov/ news.release/ecopro.nr0.htm

Bureau of Labor Statistics. (2018a). *Licensed practical and licensed vocational nurses:*

    Occupational outlook handbook. Retrieved from https://www.bls.gov/ooh/

    healthcare/licensed-practical-and-licensed-vocational-nurses.htm

Bureau of Labor Statistics. (2018b). *Registered nurses: Occupational outlook handbook*.

    Retrieved from https://www.bls.gov/ooh/ healthcare/registered-nurses.htm

Cassidy, E. (2017). *Nursing shortage in Missouri hospitals reaches an all-time*

    high. Retrieved from

    https://www.columbiamissourian.com/news/state_news/nursing-shortage-in-

    missouri-hospitals-reaches-an-all-time-high/article_a2e04910-4c4d-11e7-9a50-

    fb7468816306.html

Chen, H. C., Heiny, E. L., & Lin, C. H. (2014). Development of a prediction model for

    early diagnosis of not passing the National Council of Licensure Examination for

registered associate degree nurses. *Studies in Health Technology and Informatics*, 201, 271-276. doi:10.3233/978-1-61499-415-2-271

Chen, H. C., & Lo, H. S. (2015). Nursing student satisfaction with an associate nursing program. *Nursing Education Perspectives (National League for Nursing), 36*(1), 27-33. doi:10.5480/13-1268

Clandinin, D. J., Cave, M., & Berendonk, C. (2017). Narrative inquiry: A relational research methodology for medical education. *Medical Education, 51*(1), 89-96. doi:10.1111/medu.13136

Corazzini, K. N., Anderson, R. A., Mureller, C., Thorpe, J. M., & McConnell, E. S. (2013). Licensed practical nurse scope of practice and quality of nursing home care. *Medline, 62*(5), 315. doi:10.1097/NNR.0b013e31829eba00

Creswell, J. W. (2014). *Research design* (4th ed.). Thousand Oaks, CA: SAGE.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Thousand Oaks, CA: SAGE.

Crombie, A., Brindley, J., Harris, D., Marks-Maran, D., & Thompson, T. M. (2013). Factors that enhance rates of completion: What makes students stay? *Nurse Education Today, 33*(11), 1282-1287. doi:10.1016/jnedt.2013.03.020

Crouch, S. (2015). Predicting success in nursing programs. *Journal of College Teaching & Learning, 12*(1), 45-54. Retrieved from https://files.eric.ed.gov/fulltext/EJ1050965.pdf

DeWitty, V., Huerta, C., & Downing, C. (2016). New careers in nursing: Optimizing diversity and student success for the future of nursing. *Journal of Professional Nursing, 32*(5), S4-S13. doi:10.1016/j.profnurs.2016.03.011

Dikko, M. (2016). Establishing construct validity and reliability: Pilot testing of a

    qualitative interview for research in Takaful (Islamic insurance). *The Qualitative*

    Report, 21(3), 521-528. Retrieved from https://nsuworks.nova.edu/

    tqr/vol21/iss3/6

Dixon, L. (2017). *The state of the health care worker shortage*. Retrieved from

    https://www.clomedia.com/2017/11/17/state-health-care-worker-shortage/

Doyle, L., Brady, A. M., & Byrne, G. (2016). An overview of mixed methods research-

    revisited. *Journal of Research in Nursing, 21*(8), 623-635.

    doi:10.1177/1744987116674257

Duckworth, A. (2016). *Grit: The power of passion and perseverance.* New York, NY:

    Scribner.

Dweck, C. S. (2016). *Mindset: The psychology of success.* New York, NY: Ballantine

    Books.

Elsevier. (2018). *HESI review & testing*. Retrieved from https://evolve.elsevier.com/

    education/hesi/

Fawcett, J. (2015). Invisible nursing research: Thoughts about mixed methods research

    and nursing practice. *Nursing Science Quarterly, 28*(2), 167-168.

    doi:10.1177/0894318415571604

Ferrell, D., & DeCrane, S. (2016). S.O.S. (students' optimal success): A model for

    institutional action to support minority nursing students. *Journal of Cultural*

    Diversity, 23(2), 39-45. Retreived from

    https://www.ncbi.nlm.nih.gov/pubmed/27439228

Flannery, M. (2016). Common perspectives in qualitative research. *Oncology Nursing Forum, 43*(4), 517-518. doi:10.1188/16.ONF.517-518

Flinkman, M., Isopahkala-Bouret, U., & Salantera, S. (2013). Young registered nurses' intention to leave the profession and professional turnover in early career: A qualitative case study. *ISRN Nursing*, *2013*(1), 1-12. doi:10.1155/2013/916061

Fontaine, K. (2014). Effects of a retention intervention program for associate degree nursing students. *Nursing Education Perspectives, 35*(2), 94-99. doi: 10.5480/12-815.1

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2015). *How to design and evaluate research in education.* New York, NY: McGraw Hill Education.

Freed, P., & Mclaughlin, D. (2013). Promoting cultures of thinking: Transforming nursing education to transform nursing practice. *Creative Nursing, 19*(4), 174-181. doi:10.1891/1078-4535.19.4.174

Gibbs, G. R. (2017). *Qualitative research kit: Analyzing qualitative data* (2nd ed.). London, England: SAGE.

Gipson-Jones, T. L. (2017). Preventing program attrition for underrepresented nursing students. *Journal of Cultural Diversity, 24*(4), 111-117. Retreived from https://www.questia.com/library/journal/1P4-1985539513/preventing-program-attrition-for-underrepresented

Gillen, S. (2012). Is enough being done to reduce undergraduate attrition rates? *Nursing Standard, 27*(8), 12-13. doi:10.7748/ns2012.10.27.8.12.p9716

Grant, R. (2016). *The U.S. is running out of nurses.* Retrieved from https://www.theatlantic.com/health/archive/2016/02/nursing-shortage/459741

Hamshire, C., Willgoss, T., & Wibberley, C. (2013). Should I stay or should I go? A study exploring why healthcare students consider leaving their programme. *Nurse Education Today, 33*(8), 889-895. doi:10.1016/j.nedt.2012.08.013

Harris, R. C., Rosenberg, L., & O'Rourke, M. E. (2014). Addressing the challenges of nursing student attrition. *Journal of Nursing Education, 53*(1), 31-37. doi:10.3928/01484834-20131218-03

Higgins, B. (2005). Strategies for lowering attrition rates and raising NCLEX-RN pass rates. *Journal of Nursing Education, 44*(12), 541-547. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/16402736

Hinderliter, I. (2016). *Predicting purpose: An examination of early predictors of progression and career choice among first-year nursing students.* (Doctoral dissertation). Retrieved from https://irl.umsl.edu/dissertation/52

Hochanadel, A., & Finamoe, D. (2015). Fixed and growth mindset in education and how grit helps students persist in the face of adversity. *Journal of International Education Research, 11*(1), 47-50. doi:10.19030/jier.v11i1.9099

Horkey, E. (2015). It's not all academic: Nursing admissions and attrition in the United States. *Nursing Reports*, *5*(1), 29-31. doi:10.4081/nursrep.2015.4849

House, S. L., Sturgeon, L., Garrett-Wright, D., & Blackburn, D. (2015). BSN admission group interviews: Perceptions of students, faculty, and community nurses. *Nursing Education Perspectives, 36*(1), 58-59. doi:10.5480/11-666.1

InfluentialPoints. (n.d.). *z-test for independent proportions: Use and misuse*. Retrieved from http://influentialpoints.com/Training/z-test_for_independent_proportions_use_and_misuse.htm

Jacobs, S. (2016). Pre-semester workshops and student nurse retention. *College Student Journal, 50*(2), 153-158. Retrieved from https://eric.ed.gov/?id=EJ1104156

Jeffreys, M. R. (2012). *Nursing student retention: Understanding the process and making a difference* (2nd ed.). New York, NY: Springer.

Jeffreys, M. R. (2015). Jeffreys's Nursing Universal Retention and Success model: Overview and action ideas for optimizing outcomes A-Z. *Nurse Education Today, 35*(3), 425-431. doi:10.1016/j.nedt.2014.11.004

Juraschek, S. P., Zhang, X., Ranganathan, V. K., & Lin, V. (2012). United States registered nurse workforce report card and shortage forecast. *American Journal of Medical Quality, 27*(3), 241-249. doi:10.1177/1062860611416634

Kavilanz, P. (2018). Nursing schools are rejecting thousands of applicants in the middle of a nursing shortage. Retrieved from http://money.cnn.com/2018/04/30/news/ economy/nursing-school-rejections/index.html

Kenyon, M., & Williams, J. (2017). *2017 annual workforce report.* Retrieved from https://web.mhanet.com/workforce

Kimmel, A. J. (2007). *Ethical issues in behavioral research.* Malden, MA: Blackwell.

Knauss, P., & Wilson, P. (2013). Predicting early academic success: HESI Admissions Assessment Exam. *Journal of Professional Nursing, 29*(2), S28-S31. doi:10.1016/j.profnurs.2012.07.001

Knowlton, M., & Angel, L. (2016). Lessons learned: Answering the call to increase the BSN workforce. *Journal of Professional Nursing, 33*(3), 184-193. doi:10.1016/j.profnurs.2016.08.015

Kubec, C. (2017). Reducing nursing student attrition: The search for effective strategies. *Community College Enterprise, 23*(1), 60-68. Retrieved from https://eric.ed.gov/?id=EJ1158191

Lippencott Nursing Education. (2017). *Limited clinical sites for nursing students: Simulations are the answer*. Retrieved from http://nursingeducation.lww.com/ blog.entry.html2017/03/26/limited_clinicalsit-lA99.html

Lopaze, K. (2018). *Career advice: 4 ways the nursing profession is changing.* Retrieved from https://www.usatoday.com/story/money/ careers/healthcare-careers/2018/02/27/4-ways-the-nursing-profession-is-changing/110374902/

Manieri, E., De Lima, M., & Ghosal, N. (2015). Testing for success: A logistic regression analysis to determine which pre-admission exam best predicts success in an associate degree in nursing program. *Teaching and Learning in Nursing, 10*(1), 25-29. doi:10.1016/j.teln.2014.08.001

Mascarenas, I. (2016). *Nursing shortage: 1M nurses needed by 2022.* Retrieved from https://www.usatoday.com/story/news/2016/02/02/ nursing-shortage-1-million-nurses-needed-2022/79718710/

McCarthy, M. A., Harris, D., & Tracz, S. M. (2014). Academic and nursing aptitude and the NCLEX-RN in baccalaureate programs. *Journal of Nursing Education, 53*(3), 151-159. doi:10.3928/01484834-20140220-01

Merriam, S., & Tisdell, E. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). San Francisco, CA: Jossey-Bass.

Missouri Department of Elementary and Secondary Education. (n.d.). *Technical skills attainment & industry recognized credential.* Retrieved from

https://dese.mo.gov/college-career-readiness/career-education/technical-skills-

attainment-industry-recognized-credential

Missouri Department of Elementary and Secondary Education. (2017). *2016-

2017 Missouri Career Education Program Directory. Retrieved from

https://dese.mo.gov/sites/default/files/cte-mce-program-directory-2016-2017.pdf

Monahan, J. (2015). A student nurse experience of an intervention that addresses the

perioperative nursing shortage. *Journal of Perioperative Practice, 25*(11), 230-

234. doi:10.1177/175045891502501104

Mooring, Q. E. (2016). Recruitment, advising and retention programs—challenges and

solutions to the international problem of poor nursing student retention: A

narrative literature review. *Nurse Education Today, 40*, 204-208.

doi:10.1016/j.nedt.2016.03.003

Murray, T., Pole, D., Ciarlo, E., & Holmes, S. (2016). A nursing workforce diversity

project: Strategies for recruitment, retention, graduation, and NCLEX-RN

success. *Nursing Education Perspectives (National League for Nursing), 37*(3),

138-143. doi:10.5480/14-1480

National Council of State Boards of Nursing. (2018). *NCLEX & other exams*. Retrieved

from https://www.ncsbn.org/nclex.htm

National League for Nursing. (2014). *Findings from the 2014 NLN biennial survey of

schools of nursing academic year 2013-2014*. Retrieved from

http://www.nln.org/docs/default-source/newsroom/nursing-education-

statistics/2014-survey-of-schools---executive-summary.pdf?sfvrsn=2

Neuman, D. (2014). Qualitative research in educational communications and technology: A brief introduction to principles and procedures. *Journal of Computing in Higher Education, 26*(1), 69-86. doi:10.1007/s12528-014-9078-x

NursingLicensure.org. (n.d.). *Nursing license requirements*. Retrieved from https://www.nursinglicensure.org/

Nurse Journal. (2017). *LPN vs RN + roles & responsibilities*. Retrieved from https://nursejournal.org/practical-nursing/lpn-vs-rn-roles/

Olsen, J. M. (2017). Integrative review of admission factors related to associate degree nursing program success. *Journal of Nursing Education, 56*(2), 85-93. doi:10.3928/01484834-20170123-05

Palisoc, A. J., Matsumoto, R. R., Ho, J., Perry, P. J., Tang, T. T., & Ip, E. J. (2017). Relationship between grit and academic performance and attainment of postgraduate training in pharmacy students. *American Journal of Pharmaceutical Educaton, 81*(4), 67. doi:10.5688/ajpe81467

Patton, M. (2015). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: SAGE.

Pelayo, L. W. (2013). Responding to the nursing shortage: Collaborations in an innovative paradigm for nursing education. *Nursing Education Perspectives, 35*(5), 351-352. doi:10.5480/1536-5026-34.5.351

Perkins-Gough, D. (2013). The significance of grit: A conversation with Angela Lee Duckworth. *Educational Leadership, 71*(1), 14-20. Retreived from https://eric.ed.gov/?id=EJ1032665

Peterson-Graziose, V., Bryer, J., & Nikolaidou, M. (2013). Self-esteem and self-efficacy

as predictors of attrition in associate degree nursing students. *Journal of Nursing Education, 52*(6), 351-354. doi:10.3928/01484834-20130520-01

Pitt, V., Powis, D., Levett-Jones, T., & Hunter, S. (2014). The influence of personal qualities on performance and progression in a pre-registration nursing programme. *Nurse Education Today, 34*(5), 866-871. doi:0.1016/j.nedt.2013.10.011

Ramachandran, V. (2014). *The new nursing shortage.* Retrieved from https://www.usatoday.com/story/money/business/2014/05/07/ozy-nursing-shortage/8807937/

Roller, M. R., & Lavrakas, P. J. (2015). *Applied qualitative research design: A total quality framework approach.* New York, NY: The Guilford Press.

Ruffalo Noel Levitz. (2017). *2017 national student satisfaction and priorities report.* Retrieved from http://learn.ruffalonl.com/rs/395-EOG-977/images/2017_National_Student_Satisfaction_Report_1.0.pdf

Scheckel, M. (2009). Nursing education: Past, present, and future. In G. Roux & J. Halstead (Eds.), *Issues and trends in nursing: Essential knowledge for today and tomorrow*, (pp. 27-61). Sudbury, MA: Jones and Bartlett.

Schmidt, B., & MacWilliams, B. (2011). Admission criteria for undergraduate nursing programs: A systematic review. *Nurse Educator, 36*(4), 171-174. doi:10.1097/NNE.0b013e31821fdb9d

Schoonenboom, J., & Johnson, R. B. (2017). How to construct a mixed methods research design. *Kolner Zeitschrift fur Soziologie und Sozialpsychologie, 69*(2), 107-131. Retrieved from https://europepmc.org/abstract/med/28989188

Sedgwick, M., Oosterbroek, T., & Ponomar, V. (2014). "It all depends": How minority nursing students experience belonging during clinical experiences. *Nursing Education Perspectives, 35*(2), 89-93. doi:10.5480/11-707.1

Shelton, E. (2012). A model of nursing student retention. *International Journal of Nursing Education Scholarship, 9*(1), 1-16. doi:10.1515/1548-923X.2334

Shoemake, J. J. (2017). *Most likely to succeed: The exploration of factors affecting successful completion of a practical nursing program* (Unpublished doctoral dissertation). University of Kentucky, Lexington. doi:10.13023/ETD.2017.136

Stewart, D. W., & Shamdasani, P. N. (2015). *Focus groups: Theory and practice* (3rd ed.)*. Thousand Oaks, CA: SAGE.

Stickney, M. (2008). Factors affecting practical nursing student attrition. *Journal of Nursing Education, 47*(9), 422-425. doi:10.3928/01484834-20080901-07

Stombaugh, A., & Judd, A. (2014). Does nursing assistant certification increase nursing student's confidence level of basic nursing care when entering a nursing program? *Journal of Professional Nursing, 30*(2), 162-167. doi:10.1016/j.profnurs.2013.09.002

Taylor, H. & Reyes, H. (2012). Self-efficacy and resilience in baccalaureate nursing students. *International Journal of Nursing Education Scholarship, 9*(2), 1-13. doi:10.1515/1548-923X.2218

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89-125. doi:10.3102/00346543045001089

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition.* Chicago, IL: University of Chicago Press.

Tinto, V. (2017). Reflections on student persistence. *Student Success, 8*(2), 1-8. doi:10.5204/ssj.v8i2.376

Tower, M., Cooke, M., Watson, B., Buys, N., & Wilson, K. (2015). Exploring the transition experiences of students entering into pre-registration nursing degree programs with previous professional nursing qualifications: An integrative review. *Journal of Clinical Nursing, 24*(9-10), 1174-1188. doi:10.1111/jocn.12756

Underwood, L. M., Williams, L. L., Lee, M. B., & Brunnert, K. A. (2013). Predicting baccalaureate nursing students' first-semester outcomes: HESI Admission Assessment. *Journal of Professional Nursing, 29*(2), S38-S42. doi:10.1016/j.profnurs.2012.07.003

United States Census Bureau. (2012). *U.S. census bureau projections show a slower growing, older, more diverse nation a half century from now*. Retrieved from https://www.census.gov/newsroom/releases/archives/population/cb12-243.html

Van Eerden, K. (2014). *An investigation of multidimensional variables affecting associate degree nursing student program completion* (Doctoral dissertation). Retrieved from ProQuest LLC. (UMI Number: 3630057)

Wambuguh, O., Eckfield, M., & Hofwegen, L. V. (2016). Examining the importance of admissions criteria in predicting nursing program success. *International Journal of Nursing Education Scholarship*, *13*(1), 87-96. doi:10.1515/ijnes-2015-0088

Williams, L., Bourgault, A., Valenti, M., Howie, M., & Mathur, S. (2018). Predictors of

 underrepresented nursing students' school satisfaction, success, and future

 education intent. *Journal of Nursing Education, 57*(3), 142-149.

 doi:10.3928/01484834-20180221-03

Wolkowitz, A. A. & Kelley, J. A. (2010). Academic predictors of success in a nursing

 program. *Journal of Nursing Education, 49*(9), 498-503.

 doi:10.3928/01484834-20100524-09

Wray, J., Aspland, J., & Barrett, D. (2014). Choosing to stay: Looking at retention from

 a different perspective. *Studies in Higher Education, 39*(9), 1700-1714.

 doi:10.1080/03075079.2013.806461

Yedidia, M. (2014). Effectiveness of strategies addressing the nurse faculty shortage.

 Nursing Education Perspectives, 35(5), 279. doi:10.5480/1536-5026-35.5.279

Yordy, K. D. (2006). *The nursing faculty shortage: A crisis for health care.* Retrieved

 from https://www.rwjf.org/ content/dam/farm/reports/reports/2006/rwjf13795

Vita

Holley Lee Goodnight currently serves as the Director of the Carthage Technical Center for the Carthage R-9 School District. She graduated with a Bachelor of Arts in Speech Communication from Missouri Southern State University. Goodnight also holds a Master of Science in Human Resource Development from Pittsburg State University and an Education Specialist in Human Services and Technical/Occupational Education from the University of Central Missouri.

Prior to her current role, Goodnight served in other roles at the Carthage Technical Center in which she designed and implemented a Practical Nursing Program. She served on the Jasper County Workforce Investment Board committee to assist with Jasper County being named as the first Certified Work Ready Community, a designation through ACT and the Missouri Department of Economic Development. Before making the transition to career and technical education, Goodnight worked 11 years for Missouri Southern State University serving in different positions within the Student Services area. Her primary responsibilities were the Freshman Year Experience and the development and implementation of the Student Athlete Assistance Program. Goodnight has presented at state and national conferences served on numerous university committees and served as a representative on Faculty Senate.