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Most Likely to Succeed: The Exploration of Factors Affecting Successful Completion of a Practical Nursing Program

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MOST LIKELY TO SUCCEED: THE EXPLORATION OF FACTORS AFFECTING SUCCESSFUL COMPLETION OF A PRACTICAL NURSING PROGRAM

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Education in the
College of Education at the University of Kentucky

By

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ABSTRACT OF DISSERTATION

MOST LIKELY TO SUCCEED: THE EXPLORATION OF FACTORS AFFECTING SUCCESSFUL COMPLETION OF A PRACTICAL NURSING PROGRAM

In the realm of higher education, retention is a concept vital to the progression and security of all institutions. This remains true for all nursing programs as well because reports have shown an attrition rate as high as 50% in some nursing programs across the globe. Along with the nursing shortage projected in the next 20 years, retention in nursing programs poses a massive problem for not just higher education but healthcare as well. Therefore, it is important for nursing educators to understand the factors affecting student completion of a nursing program.

This two-phase, mixed-methods study sought to answer the overarching research question: What factors contribute to completion of the Southcentral Community and Technical College (SKYCTC) Practical Nursing (PN) program within three semesters? Since the majority of nursing programs utilize a selective admission process for accepting students, the first phase of the study gathered admission criteria on six cohorts of students accepted into the SKYCTC PN program from August 2008 through May 2015. This quantitative data was analyzed to determine if any of the admission criteria were related to completion of the program.

For the second phase, qualitative data was gathered through a focus group attended by 11 graduates of the SKYCTC PN program between August 2008 and May 2015. The purpose of the focus group was to gather environmental or academic influences that graduates attributed to their success in completing the program.

KEYWORDS: Nursing Program Retention, Nursing Program Attrition, Practical Nursing Programs, Nursing Shortage, Selective Admission

Jennifer Jo Shoemake

March 3, 2017

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Date

DEDICATION

I am truly blessed to be surrounded by so many friends and family who have made this feat possible. Many people do not have the good fortune of a loving family who truly enjoy being together. I am one of the lucky ones who has all of her immediate family within close proximity.

First, this endeavor is dedicated to my husband and son, Paul and Dalton Shoemake, who have not known me outside of being enrolled in some type of post-secondary education. They have shown extraordinary patience and understanding with me as I have strived for my lifelong goals. I love both of you so much!

I would also like to dedicate this project to my parents, Joleen and Jimmy Isenberg, for always encouraging me and pushing me toward my goals. Without their assistance this accomplishment would not be possible. My siblings and their families also played a role in this achievement. Julie and Brandon Pitcock and family, James and Danielle Isenberg and family, and Jonathan and Lindsey Isenberg and family – thank you for simply being there for me.

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CHAPTER 1

INTRODUCTION

In the United States of America (USA), nursing education consists primarily of five different types of programs. The lowest level of education is the practical nursing (PN) or vocational nursing (VN) program, which is typically a year to a year and a half in length and delivered in a community or technical college setting.

History of Practical Nursing Education

The origins of the practical or vocational nurse can be traced back to self-taught individuals who worked in the home, assisting with basic care (activities of daily living such as bathing) and light housekeeping duties (such as cooking). Licensing standards for practical nurses came later than those for professional or registered nurses (RNs).

Nineteenth Century Practical Nursing Education

The first formal PN program was opened in 1892 in Brooklyn, New York, under the direction of the Young Women's Christian Association. The program lasted three months and focused on home healthcare for the chronically ill, invalids, children, and elderly. The curriculum consisted of courses on cooking, nutrition, basic sciences, and basic nursing procedures, and graduates were referred to as attendant nurses. In 1907, the Thompson School of Practical Nursing was opened in Brattleboro, Vermont and the Household Nursing Association School of Attendant Nursing opened in 1918 in Boston, Massachusetts (Hill & Howlett, 2009).

Twentieth Century Practical Nursing Education

During the 20th century, multiple milestones impacted nursing education, especially the training and education of PNs. In 1914, Mississippi became the first state

to pass a law licensing PNs. The National League of Nursing Education, founded in 1893 as the American Society of Superintendents of Training Schools for Nurses, was the first nursing organization in the United States; in 1917, "the league developed a nationwide system of standardization of nursing requirements for practical nursing" (Hill & Howlett, 2009, p. 99).

World War I and Postwar Practical Nursing Education

Due to lack of practical nursing programs and trained practical nurses in the USA, an Army and Navy school of nursing was created to train nurses quickly to care for those injured in the war. At that same time, the USA was facing an epidemic of pneumonia and Spanish influenza. The Smiths Hughes Act of 1917 provided money to develop additional practical nursing programs. In 1919 the first vocational practical nursing program opened at the Minneapolis Girls Vocational High School (Hill & Howlett, 2009).

After World War I, many nurses who served in the military did not continue in the profession, which lead to a shortage of nurses in the hospitals. Between 1920 and 1940, six more states passed laws concerning the licensing of practical nurses even though there were still very few schools to prepare them (Hill & Howlett, 2009).

World War II and Postwar Practical Nursing Education

As with previous wars, nurses (especially practical nurses) played a major role in World War II. On the home front, many worked in clinics, health departments, industries, and hospitals, while others served in military facilities and units in Europe, North Africa, and the Pacific. By 1940, there were 150,009 practical nurses and nearly

50 practical nursing programs in the USA (Hill & Howlett, 2009). The Association of Practical Nurse Schools was founded in 1941 to set standards for practical nursing education; in 1942 it changed its name to the National Association of Practical Nurse Education (Christensen & Kockrow, 2011).

After World War II, the nursing shortage continued in the USA. In 1944 the United States Department of Vocational Education outlined specific duties of practical nurses. One of the major tasks for practical nurses was preserving aseptic (sterile technique) environments. In 1949, the Joint Committee on Practical Nurses and Auxiliary Workers in Nursing Services introduced the title *licensed practical nurse* (LPN) and differentiated the tasks of the LPN and the registered nurse (RN). The National Federation of Licensed Practical Nurses was founded in 1949 by Lillian Kuster (Christensen & Kockrow, 2011). During the next ten years, the number of practical nursing programs increased as did the length of the programs (from 9 months, to 12 months, to 18 months). By 1955, all states had passed licensing laws for practical nurses (Ramont, Niedinghaus, & Towle, 2012). Enactment of Public Law 911, also known as the Health Amendments Act of 1956, provided federal funds to increase "the number of adequately trained professional and practical nurses" (p. 923). By 1975, there were 1337 programs in the USA that graduated 46,080 practical nurses that year. With the expansion of nursing programs, admission standards were raised and curricula became more challenging. The National Council Licensure Examination-Practical Nursing (NCLEX-PN), the first computerized adaptive testing for graduates of practical nursing programs, became available in 1994 (Hill & Howlett, 2009).

Practical Nursing Education Today

During the 2003-2004 academic year, there were 1100 practical and vocational nursing programs in the USA. The difference in program names is based on location: Forty-eight states use the term *practical nursing*, while California and Texas use the term *vocational nursing*. Programs preparing these nurses are offered by high schools, trade and technical schools, hospitals, junior and community colleges, colleges and universities, and private education agencies as long as they meet state standards. The length of the programs typically spans 12 to 18 months. After successful completion of either an approved PN or VN program, a student receives a diploma and must pass the NCLEX-PN to become an LPN or Licensed Vocational Nurse (LVN). All 50 states employ LPNs and LVNs, although their scope of practice may be slightly different (Christensen & Kockrow, 2011).

Levels of Nursing Education beyond Practical or Vocational Nursing

Since most literature on nursing education concerns two-year, four-year, and graduate-level nursing programs, it is necessary to explain the differences. The nursing preparation leading to the Associate Degree in Nursing (ADN) is typically a two-year program delivered at a community college or vocational school, whereas completion of the traditional Bachelor of Science Degree in Nursing (BSN) is a four-year program at college or university. After completion of the ADN program or the traditional BSN program, students receive a degree but then must pass the National Council Licensure Examination–Registered Nursing (NCLEX-RN) to practice as a Registered Nurse (RN). Graduate degrees in nursing include the Master of Science Degree in Nursing, the

Doctorate in Nursing Practice which is awarded by universities and prepare nurses for advanced practice as Advanced Practice Registered Nurses (APRNs) and as nurse executives, and the Ph.D. in nursing which focuses on research.

Nursing Shortage

In March 2004 the Global Nursing Review Initiative: Policy Options and Solutions was initiated in response to the global nursing crisis. It was led by the International Council of Nurses and its sister organization, the Florence Nightingale International Foundation, and was supported by the Burdett Trust for Nursing. The project aimed to elucidate the extent of the global nursing shortage (ICN, 2013). In 2006, the World Health Organization announced the decade of the Healthcare Workforce 2006-2015 in response to the shortage of nurses (Gaynor et al., 2007). According to the reports from these entities, the nursing shortage is both a national and an international problem.

Although most research regarding the predicted shortage of nurses has focused on RN and APRN practice, the focus recently shifted to the role of LPNs and LVNs in advancing the nation's health. For example, in 2013 the National Council of State Boards of Nursing (NCSBN) reported 54.2% of newly licensed LPNs and LVNs work in long–term care facilities and 25.2% work in community-based or ambulatory care facilities. Due to the implementation of the federal Affordable Care Act and accelerated aging of the nation's population, more healthcare workers will be required in long-term care facilities and community-based healthcare environments. According to the National League for Nursing Board Governors (2014), "The Bureau of Labor Statistics (2012)

reported employment of LPNs is expected to grow 22 percent by 2020, faster than the average for all occupations" (p. 1).

One reason for the nursing shortage is the low retention rate of students in nursing programs worldwide. Much of the general literature in the nursing press identifies attrition as an international issue affecting Australia, the United Kingdom (UK), and the USA, but there is little in the way of the appreciation of attrition as a holistic problem composed of a multitude of factors contributing to the problem (Fowler & Norrie, 2009). Mulholland, Anionwu, Atkins, Tappern, and Franks (2008), assert, "Some media reports in the UK have claimed that nursing student attrition rates are as high as 50% at some universities" (p. 50).

Cumulative pass rates on the NCLEX are one of many determinants used by state boards of nursing to approve nursing education (i.e., PN, VN, RN) programs. Likewise, many colleges place emphasis on retention rates to receive funding from various state and federal programs (Altbach, Gumport, & Berdahl, 2011). Thus, low attrition rates and high pass rates on the NCLEX are extremely important in maintaining a quality program because high attrition rates and low pass rates can ultimately lead to the closure of a nursing program, not only in the USA but also in other countries. Due to expanded roles of LPNs in the healthcare setting and challenges to meet the demands for healthcare workers, attention should be centered on improving the retention rate of those students who are accepted into practical nursing programs (National League for Nursing Board of Governors, 2014).

Nursing Programs at Kentucky Community and Technical College System

Although under different names in the past, Southcentral Kentucky Community and Technical College (SKYCTC) has offered a PN program since 1957. In 2001, it became a component of the Kentucky Community and Technical College System (KCTCS) created by the Kentucky Postsecondary Education Improvement Act of 1997 (House Bill 1). KCTCS consists of 16 colleges on more than 70 campuses spread across Kentucky. The KCTCS-affiliated institutions offer certificates and diplomas as well as two-year associate degrees in 700 credit program offerings. The baccalaureate transfer program, the most popular area of study, allows a student to earn an associate degree at a KCTCS college and transfer to a four-year Kentucky institution.

The pass rate for the NCLEX-PN among students at SKYCTC is the highest cumulative rate among all practical nursing programs offered on KCTCS campuses. The average pass rate at SKYCTC ranges from 94-100%, whereas Kentucky averages an 88% pass rate and the USA 86.7% (Kentucky Board of Nursing, 2012). Although the cumulative NCLEX pass rate for the PN program at SKYCTC is the highest in Kentucky, the retention rate of students (i.e., those completing the three-semester diploma program) is only 50-60%. Qualified applicants to the PN program must have completed the following: (a) nursing application, (b) qualifying COMPASS or ACT scores or completion of developmental classes, (c) proof of computer literacy, (d) active status on the Nurse Aide Registry, and (d) Test for Essential Academic Skills (TEAS) examination. The TEAS examination is a standardized test created by the Assessment Technologies Institute for use as a pre-entrance nursing test. Although grade point average (GPA) is

not considered a part of the selective admission criteria, it is the policy at SKYCTC that any student with a GPA less than 2.0 (on a 4-point scale) cannot apply to any technical program. Therefore, students who have met the admission criteria but have a GPA lower than 2.0 are not admitted to the program. Once a list of qualified students is compiled, a selective admission process (Appendix A) is used to determine who is accepted into the program based on total points using the following criteria: (a) ACT or COMPASS scores (reading, writing, and pre-algebra), (b) high school completion GPA or GED score, (c) grades in general education or core courses, and (d) the total score on the TEAS examination.

The higher the scores or grades on the selective admissions criteria, the more points the applicant receives; those with the higher points are accepted into the nursing programs. The use of a selective admission process assures objectivity in the selection of students accepted into the program. Despite the use of a selective admission process based on grades and test scores to determine who is accepted into the PN programs offered on KCTCS campuses, the system-wide retention rate remains low and thus fails to address the nursing shortage. To investigate the problem of retention and ensure quality nursing programs, leaders in the PN programs must ask the following question: What are the factors affecting the completion of the practical nursing program?

Statement of the Problem

To determine the extensiveness of the problem related to retention of students in all KCTCS practical nursing programs, a questionnaire (Appendix B) was developed through SurveyMonkey and sent to the program coordinators of all 16 PN programs in

June 2014. Responses from the 16 colleges were received from program coordinators at Elizabethtown Community and Technical College (ECTC), Henderson Community College (HECC), Hopkinsville Community College (HPCC), Maysville Community and Technical College (MCTC), and Southcentral Kentucky Community and Technical College (SKYCTC).

Within KCTCS, there are four variations of the PN program that a college can choose to offer: Pathway 1 (traditional), Pathway 2 (traditional modified), Pathway 3 (modular), or Pathway 4 (integrated). The pathways of PN programs vary in the general education requirements as well as the technical core. The Integrated Nursing Program allows students to choose to complete either the Practical Nursing or the Associate Degree of Nursing Program after the completion of common courses. Of the colleges whose coordinators responded to the survey, both ECTC and SKYCTC offer the Pathway 1 program, while HECC, HPCC, and MCTC offer the Pathway 2 program. The PN program retention rate for the most recent cohorts admitted at the responding colleges ranged from 50%-83% with the average being 70%. Although all five of the responding programs utilize a selective process to determine applicants accepted into the nursing program, the admission criteria vary for each college. SKYCTC utilizes Pathway 1 (traditional) for their PN program, which is a three-semester diploma program. Below are the nursing courses by semester:

- Semester One
  NPN 100 Introduction to Nursing and Healthcare System
  NPN 105 Development of Care Giver Role
  NPN 110 Pharmacological and Therapeutic Modalities
- Semester Two
  NPN 201 Child Bearing Family
  NPN 125 Mental Health

NPN 130 Pharmacology II
NPN 135 Introduction to Health Deviations

- Semester Three NPN 200 Medical-Surgical I
  NPN 205 Medical-Surgical II
  NPN 210 Clinical Practicum
  NPN 215 Nursing Trends and Issues.

In addition to meeting prerequisite admission requirements and successfully completing nursing courses, students must also complete general education or core courses. By the end of the first semester of the nursing program, the students must have completed BIO 137: Anatomy and Physiology I and BIO 139: Anatomy and Physiology II or BIO 135: Basic Anatomy and Physiology. The BIO 135 course is a basic anatomy and physiology course and only fulfills the requirements of the PN program whereas BIO 137 and BIO 139 satisfy requirements of both the PN and the RN programs. Since the goal of most students is to complete the RN program, they typically register for BIO 137 and BIO 139. Students must achieve a grade of C or higher in the biology courses.

By the end of the first semester of the nursing program, students must also successfully complete PSY 110: General Psychology and PSY 223: Developmental Psychology or AHS 100: Human Growth and Development. Similar to the science classes, students have a choice in the courses they complete. AHS 110 only fulfills the requirement of the PN program, whereas PSY 110 and PSY 223 meet the requirements of either the PN or RN program. Again, the majority of students elect to take both PSY 110 and PSY 223 to apply to the RN program at a later date. These courses must also be completed with a least a C grade or higher.

The last general education course requirement of the PN program is successful completion of ENG 101 Writing I, COM 181 Public Speaking, or COM 252 Introduction to Interpersonal Communication. The course selected among these options must be completed by the end of the three-semester program with at least a grade of C or higher.

Once a student is accepted into the PN program, each semester must be taken in sequence. To remain continuously in the program, a student must achieve at least a C grade (75%). Failure to receive a C in any nursing course halts a student's progression in the program.

Purpose of the Study

The overall purpose of this study was to examine factors affecting the completion of a PN program. To examine the complexity of the factors affecting retention in a nursing program, this study was conducted in two phases. The first phase involved gathering retrospective quantitative data from six cohorts of students accepted into the PN program at SKYCTC starting in August 2008 continuing through May 2015. The purpose of this retrospective correlational study was to determine if a relationship existed between selective admission criteria and completing the PN program within three semesters.

The purpose of the second phase of the study was to examine environmental and academic influences former nursing students perceived as significant for their success during the PN program. Data for this phase were gathered through a focus group that included 11 graduates who successfully completed the PN program within three semesters between August 2008 and May 2015 and were currently working as a nurse.

The focus-group topics concentrated on environmental and academic conditions and the extent to which those conditions impacted the success of the students while in the PN program.

This study sought to determine the selective admissions factors that should be considered when making decisions about applicants accepted into the nursing program and the environmental and academic conditions successful students perceived contributed to their achievement while in the PN program. Study findings may improve retention rates of PN programs and ultimately improve the nursing shortage.

Research Questions

The overarching research question was, *What factors contribute to the completion of the SKYCTC PN program within three semesters?* Two guiding questions assisted in answering the research question:

1. For the six cohorts admitted from August 2008 through May 2015 at SKYCTC, what selective admission criteria were related to completion of the PN program within three semesters?

2. For students who completed the PN program within three semesters at SKYCTC between August 2008 and May 2015 and were currently working in the nursing profession, what were their environmental and academic influences they perceived as having attributed to their success in completing the PN program?

Rationale, Relevance, and Significance of the Study

Retention of students is a concept important to all higher education institutions, no matter the type or setting. Funding and support for academic programs are based on

student enrollment, retention, and completion rates. Due to current and predicted nursing shortages, many nursing schools have increased their enrollment to produce the number of nurses needed to fill the voids in healthcare. It is estimated by 2020, there will be a deficit of 285,000 RNs in the USA (Shelton, 2012). Unfortunately, although enrollments in nursing programs have increased, attrition rates from those programs have likewise increased. Pass rates of the NCLEX are one of the measures used to determine the quality of nursing programs. In Kentucky, if the pass rate of a cohort of graduates from a nursing program falls below 85% for the year, the school must develop an action plan and describe what steps will be taken to increase the pass rate. The action plan must be sent to the Kentucky Board of Nursing (KBN) for approval. If a program continues to have a pass rate below 85% for three consecutive years, the KBN can initiate the closure of the nursing program.

Because practical nursing and associate degree nursing programs are traditionally taught in community and technical colleges, attrition rates at these institutions must also be examined. It is crucial to understand the factors leading to student attrition as well as the strategies that can be implemented to increase the retention rates of nursing programs at community colleges. This research is significant to all nursing programs, particularly those at community colleges in Kentucky, and can assist them in improving retention rates and in turn, improve the nursing programs. Ultimately, increasing retention rates will help to solve the problem of the shortage of nurses throughout the USA and abroad.

Nature of the Study

During the first phase of the study, quantitative methods were used to determine if a relationship existed between selective admission criteria and completing the practical nursing program within three semesters. PeopleSoft data were collected on students participating in one of six cohorts accepted into the PN program between August 2008 and May 2015. Once all data were collected, a logistic regression analysis was conducted to determine if relationships existed between completing the PN program within three semesters and a set of predictor variables.

For phase two, a focus group was conducted with 11 graduates of the PN program SKYCTC who were currently working in the nursing profession. All 169 students who completed the PN program within three semesters between August 2008 and May 2015 were mailed a letter of invitation (Appendix C) from Angie Harlan, Assistant to the Dean of Allied Health and Nursing, and the IRB-approved Consent to Participate in a Research Study (Appendix D) describing the purpose of the focus group. The letter included the date and location of the focus group. Data gathered through the focus group were triangulated with data gathered through document analysis. For this mixed methods study, several key terms were used.

Table 1.1

Definition of Key Terms

Term	Definition
Academic factors	Conditions affecting how a student perceives and attains educational goals. Examples include hours spent studying, attendance, course schedule, studying methods, and resources provided by college or instructor(s).

Table 1.1 (continued)

American College Testing (ACT)	A standardized college entrance examination for high school achievement and college admissions in the United States produced by ACT, Inc. It tests four areas: English, mathematics, reading, and science.
Attrition	The loss of nursing students throughout the program. These include nursing students who are accepted into the program and begin the program but do not complete the program within the allocated time for the program.
COMPASS	A computer-adaptive college placement test that assists educators in (a) evaluating incoming students' skill levels in reading, writing skills, and mathematics; (b) placing students in appropriate courses; and (c) connecting students to the resources they need to achieve academic success. COMPASS is produced by ACT, Inc.
Environmental factors	Conditions external to the academic process that may influence students' academic performance and retention. These include financial status, family financial support, family emotional support, family responsibilities, childcare arrangements, family crisis, employment hours, employment responsibilities, encouragement by friends, living arrangements, and transportation.
General Educational Development (GED)	A test designed for people who did not graduate from high school for various reasons but want a certificate equivalent to the traditional high school diploma.
Grade point average (GPA)	The average obtained by dividing the value of grade points earned by the total number of credits attempted.
Health Education Systems Inc. (HESI)	A standardized, multiple-choice exam for students entering into nursing school and is used to determine the ability of potential students to be successful in a nursing program. The test was created and is administered by Elsevier.
Kentucky Community and Technical College System (KCTCS)	KCTCS was created by the Kentucky Postsecondary Education Improvement Act of 1997 (House Bill 1). It consists of 16 colleges and spans more than 70 campuses in Kentucky.

Table 1.1 (continued)

Lifestyle factors	Another term for environmental factors.
National Council Licensure Examination (NCLEX)	"A comprehensive integrated examination, developed and administered by the National Council of State Boards of Nursing, designed to test basic competency for nursing practice. The examination is administered by individual boards of nursing that are members of the National Council of State Boards of Nursing (NCSBN) and can be offered to candidates for licensure as registered nurses or as practical or vocational nurses" (Mosby Inc., 2009).
Licensed Practical Nurse (LPN) or Licensed Vocational Nurse (LVN)	A graduate of a school of practical nursing who has passed the NCLEX-PN and has been legally authorized to practice as a licensed practical or vocational nurse (LPN or LVN), under supervision of a physician or registered nurse.
Nurse Aide Registry	"The nursing home reform provisions of the Omnibus Budget Reconciliation Act (42USC139 6 R) of 1987 established a requirement for a nurse aide training and competency evaluation program for nurse aides who are employed by nursing facilities. Cabinet for Health and Family Services, Department for Medicaid Services is the appointed regulatory authority. A nurse aide is defined as any individual including a nursing student, medication aide and one employed through a nursing pool, providing nursing or nursing-related services to facility residents, who is not a licensed health professional or volunteer. There is a requirement for a registry of all individuals who have satisfactorily completed a nurse aide training and competency evaluation program, or a nurse aide competency evaluation. The registry shall be established and shall be maintained by the Kentucky Board of Nursing. In addition to the names of individuals having satisfactorily completed the nurse aide training and competency evaluation program, the registry shall include information addressing any State findings concerning any individual resident abuse or neglect or

Table 1.1 (continued)	misappropriation of resident's property, and a brief statement (if any) by the aide disputing the findings. The Nurse Aide Registry keeps track of those individuals who have met written and skills test criteria to be certified for employment in long-term care settings, usually nursing homes" (Kentucky Community and Technical College, 2017, p. 5).
PeopleSoft	A computer program which provides student information and administration to colleges and universities.
Registered Nurse (RN)	A graduate of an associate or baccalaureate nursing program who has passed the NCLEX-RN and has been legally authorized to practice and an RN.
Retention	The act of keeping students in a nursing program throughout its entirety; those students who are accepted and begin a program and complete the program within the allotted time for the program.
Selective admission process	A process in which enrollment in a specific course or program is not guaranteed. Typically selective admission programs have a limited number of openings each year and specific admission requirements that must be met before admission to the program (i.e., not everyone who applies will be admitted to the specific course or program). Nursing programs utilize specific criteria to choose who is accepted into the program, typically referred to as the selective admission criteria.
Southcentral Kentucky Community and Technical College (SKYCTC)	"Established in 1939 under the joint sponsorship of the National Youth Administration and Western Kentucky State Teachers College. The original name of the College was the Western Trade School and it operated as a NYA training facility. The school was used to train industrial workers and Armed Service personnel for the duration of World War II. At the end of the war, the federal government released the facility to the State Department of Education and Bureau of Vocational Education and the Western KY State Teachers College to be operated as an area trade school. Through the passage of a bill in 1962 by the Kentucky General Assembly, the school became independent of

Table 1.1 (continued)	Western Kentucky University and was renamed the Western Area Vocational School. In 1968, the school moved to its current main campus location and changed its name again to the Bowling Green Area Vocational School. The name then changed to the Bowling Green Regional Technology Center in 1996. With the passage of the Post-Secondary Education Improvement Act of 1997 (House Bill 1) the Bowling Green Regional Technology School became a part of the Kentucky Community and Technical College System. As a result the name was changed to Southcentral Kentucky Community and Technical College" (Southcentral Kentucky Community and Technical College, 2017).
Standardized test	A test administered and scored in a consistent or standard. A standardized test is administered under standardized or controlled conditions and specifies where, when, how, and for how long those taking the test are allowed to respond to the questions. In standardized tests, the questions, conditions for administering, scoring procedures, and interpretations are consistent. A well designed standardized test provides an assessment of an individual's mastery of a domain of knowledge or skill.
Test of Adult Basic Education (TABE)	An academic assessment product in adult basic education. Educators use TABE testing to assess the skills and knowledge of adult learners. It was created and is administered by McGraw-Hill.
Test of Essential Academic Skills (TEAS)	A standardized, multiple-choice examination used to determine the ability of potential students to adjust to the nursing program. The test is created and administered by ATI (Assessment Technologies Institute, LLC). It consists of 170 questions, and the topics covered are mathematics, English, science, and reading.

Assumptions, Limitations, and Delimitations

As with any study there are assumptions, limitations, and delimitations. Following is a discussion of these aspects as they relate to completion of a PN program.

Assumptions

As mentioned previously, students must meet admission criteria prior to being accepted into the program. Therefore, it is assumed all participants met the admission criteria to the PN nursing program at SKYCTC prior to acceptance. It is also assumed the quantitative data obtained from student files and PeopleSoft were complete and accurate.

Limitations

This study has some limitations for generalizability. First, only those students who participated in a PN program cohort SKYCTC between August 2008 and May 2015 were included in the research. Although a selective admission process was used in the PN program prior to 2008, criteria changed that year with the addition of applicant scores on the TEAS exam. Therefore, August 2008 was determined as the appropriate starting date for study timeframe. The researcher believed these students would be representative of all students accepted into any PN program at SKYCTC regardless of the semester and year of their admission.

Delimitations

Delimitations are those conditions that restrain a study in some manner. For this study, data on students successfully completing the PN program in three semesters were examined rather than passing of the NCLEX-PN on the first attempt. Because SKYCTC has the highest cumulative NCLEX-PN pass rate in Kentucky and NCLEX pass rates are not a component of the overall problem, this facet was not an element of this study.

The PN program offered by SKYCTC is a three-semester diploma program. Occasionally, there are students who are not successful in the program and reenter the program at a later time. Such students were not included in the sample because it took them longer than the standard three semesters to complete the program. If students are not successful in the first semester, they must reapply with the next admission cycle and repeat the first semester. If the students are not successful during the second or third semesters, they have the choice to either reapply with the next admission cycle and repeat the first semester or take comprehensive examinations for each of the three classes in semester one.

The comprehensive tests mimic course final examinations and seek to ensure the student has retained the material taught in semester one. If the student scores at least 80% on each of the three first semester examinations, the student is allowed to reenter the program in the second semester and does not have to repeat the first semester. It is the policy of SKYCTC not to allow students to reenter during the third semester and not repeat either the first or second semesters. The students who repeated nursing classes were not included in the sample as they took longer than the standard three semesters to complete the program.

Organization of the Remainder of the Dissertation

Chapter 1 provided an introduction to the problem of retention in practical nursing programs. The purpose of the study, research questions, significance, and nature of the study were presented to provide a glimpse into the importance of retention in nursing

programs. Additionally, definitions of terms utilized in the study were provided as well as assumptions by the researcher and the limitations and delimitations of the study.

Chapter 2 presents a literature review related to retention rates, factors related to attrition, and interventions to increase retention as they relate to both community colleges as well as nursing programs. The chapter includes a section describing the selective admission process. The theoretical framework for this study is discussed as well as the literature regarding the methodology to be used in this study.

Chapter 3 provides information about the research methods used while conducting the study. The chapter includes an introduction to the methodology, purpose of the study, research questions, research design, population and sampling procedures as well as the instrumentation and data collection for both phases of the study.

Chapter 4 presents the analysis of the data collected. This includes results and findings from both phases of the study. Chapter 5 concludes with a summary of the research study as well as implications and recommendations for practice and future research.

Numerous documents are included in the closing pages of the dissertation. The appendices include the current criteria used for selection admission to the PN program at SKYCTC, the questionnaire sent to all program coordinators of PN programs within KCTCS, the recruitment letter from the assistant to the dean of Allied Health and Nursing, consent form for study participations, focus-group interview protocol, and preadmission variable spreadsheet. Following the appendices are the references to sources cited and vita of the researcher.

CHAPTER 2

LITERATURE REVIEW

Most of the past research regarding retention rates has been conducted regarding associate degree nursing programs, baccalaureate degree nursing programs or colleges in general. Although little research has been performed on practical nursing programs, a variety of factors has been described related to success in a nursing program. "Identifying factors that contribute to success has been complicated because the studies published have pointed to different factors for success or have contradicted the findings of previous research" (Rogers, 2010, p. 96). This situation could be related to the variability in students, nursing programs, and methods with which success factors have been considered. Factors related to retention in both community colleges and all levels of nursing programs were explored in this study as well as those interventions implemented to decrease attrition rates.

Community Colleges

Practical nursing programs and associate degree registered nursing programs are typically taught at community or technical colleges, especially in Kentucky. Therefore, it was necessary to examine retention rates at two-year institutions and those factors attributed to students not graduating from these higher education institutions. It was also important to explore interventions implemented to improve retention rates in these settings as they may apply to nursing programs, especially PN programs.

Retention Rates

Graduation rates at community colleges can be as low as 30% (Lloyd & Eckhardt, 2010). Tragically, most students leave community colleges without obtaining degrees or transferring to four-year institutions despite best intentions of community college faculty and administrators. It has been reported 22% of first-year students do not return for their sophomore year, and only 48% of college students receive a degree within five years (Morrow & Ackermann, 2012).

Factors Related to Attrition

Since the majority of associate degree nursing programs and practical nursing programs are taught at community colleges, factors related to attrition in these institutions must be explored. Most community colleges have an open door policy for admission to the institutions and may be a reason for low retention rates.

A possible factor related to retention is the completion of some type of orientation course. An ex-post facto research study was performed at Southwest Virginia Community College to determine if first-year students' orientations are indicators of student success. The sample consisted of 1,396 full-time students enrolled in their first semester of college during the fall semesters of 2006, 2007, and 2008. The sample was divided into two groups: (a) those enrolled in an orientation course during their first semester and (b) those not enrolled in an orientation course during their first semester. The findings concluded the students who did not enroll in an orientation course during their first semester of college (fall) were less likely to reenroll for the subsequent spring semester. Also those students who enrolled in an orientation course their first semester of

college had a significantly higher GPA than those who did not take the course their first semester (Ellis-O'Quinn, 2012). These findings suggest it is crucial for community colleges to analyze the effectiveness of their orientation courses and possibly to require all entering freshman to participate. Some colleges mandate college freshman enroll in a college orientation course while others offer students the choice to enroll or not.

Other factors possibly related to attrition in community college consist of demographic, academic, and environmental factors. A quantitative study on retention was conducted utilizing a sample of 9,200 students from a Texas urban community college who were enrolled in fall 2001, 2002, 2003, and 2004. Retention was operationally defined as two possible criteria: first-year fall semester to first-year spring semester retention or first-year fall semester to second-year fall semester retention. Data gathered from the samples included (a) gender; (b) age; (c) ethnicity; (d) completion data on developmental reading, writing, and mathematics courses; (e) participation in student support services; (f) receipt of financial aid; (g) enrollment in online courses; (h) number of enrolled credit hours during the first semester; (i) number of hours dropped during the first semester; and (j) level of education of parents. Multiple statistical methods were implemented to analyze the data depending on the type of data. The most significant result indicated successful completion of a developmental reading course was positively correlated to retention. "Other positive correlates of retention included successful completion of a developmental mathematics course, receiving financial aid, taking an Internet course, semester hours enrolled in the first semester, and participation in student

support services" (Fike & Fike, 2008, p. 73). Student age and semester hours dropped during the first semester were designated as negative correlates.

Emotional or personality influences are thought to play a role in retention as well. To determine the importance of motivation and sense of belonging to persistence and retention in a community college setting, a research study was conducted utilizing a qualitative methodology. Study participants included 960 college students during the summer following completion of their first year of college who were asked to complete an online survey regarding their experiences during their first year of college. For a sense of belonging and intention to resist leaving (i.e., retention), students indicated perceived faculty support and peer support were significant to their retention. For motivational attitudes and intention to persist, instrumental value, personal development, and no better opinion were significant (Morrow & Ackermann, 2012). Faculty must realize attrition is not always related to cognitive factors. Understanding the other environmental and academic influences which can lead to attrition will allow faculty to intervene early and implement measures to increase retention.

Interventions to Increase Retention

Since most associate degree programs and practical nursing programs are taught in community college settings, it is crucial to explore interventions used to increase retention in these higher education institutions. South Louisiana Community College (SLCC) opened with 38 students in 1998, and by 2003, 1217 students were enrolled in the college. To increase student success, a review of the literature was performed by the college to discover best practices to increase student retention. Following the review,

programs were initiated and projects were implemented by the SLCC Office of Student Services. The objectives included (a) implementation of a system to improve academic achievement, classroom attendance, and overall retention of at-risk students including students with disabilities and students on academic probation; (b) implementation of a computerized tracking system through the Office of Student Services to identify and track the progress of these special students; (c) enhancement of the College Survival Skills course to include personal assessments and technological resources; (d) training of a cadre or staff to assist students in obtaining effective academic advising and counseling sessions to prevent course failure or withdrawals; (e) implementation of improved services for these special students to assist them in demonstrating their full potential and abilities; and (f) improvement and enhancement of college orientation sessions to better meet the needs of at-risk students and students with disabilities. Once these measures were implemented, surveys were conducted to determine students' satisfaction with their college experience; results revealed overall student satisfaction increased over two semesters. Even though this was a newly created institution at that time, the school was aspiring to create a stable foundation for student achievement (Jarrell, 2004).

Nursing Programs

Due to a lack of research specific to practical nursing programs, it was necessary to explore all levels of nursing programs. Retention rates of nursing programs, both domestic and international, are discussed below as well as the significance of the problem with nursing program retention rates as it relates to the broader nursing shortage. Factors previously identified as significant in affecting completion of nursing programs as well as

interventions nursing programs have implemented to combat the problem with retention rates and the nursing shortage are also discussed below.

Retention Rates

Nursing programs at every level and across the globe have experienced a decrease in their completion rates. One report from Australia described the attrition rate as 25-27% within the first year of a nursing program (Gaynor et al., 2007). In the United Kingdom (UK), it has been reported nursing student attrition rates are as high as 50% at some universities (Mulholland et al., 2008). In a large community college in northern Nevada, the associate degree program had a four-semester retention rate of 50% and a six-semester rate of 64 % (i.e., two-thirds of the students completed the four-semester program in six-semesters). At Northern Kentucky University, the attrition rates for the baccalaureate nursing program in 2005 ranged from 7% to 17.3% for the first two semesters (Robinson & Niemer, 2010). Due to the increasing diverse USA population, increased numbers of minority nurses are needed to provide culturally competent nursing care. In a historically black college and university in the midwestern United States, the average attrition rate for all students in an associate degree nursing program was 53% and 62% for racial-ethnic minority students (Harris, Rosenberg, & O'Rourke, 2014). To understand the problem with nursing program retention rates, it is crucial to understand the implications these retention rates have on society.

Nursing Shortage

Across the globe nursing shortages are either currently being experienced in healthcare or predicted to occur in the near future. "Addressing the shortage of graduates

presents challenges for the higher education sector, which shares a responsibility with the Federal, state and territory governments, and the nursing profession for ensuring sufficient numbers of qualified nurses to meet present and predicted vacancies" (Hickey, Sumsion, & Harrison, 2010, p. 53). The nursing shortage poses to have a dramatic impact on healthcare as the population ages and requires more nursing care. All countries need to be proactive and take measures to understand the future needs in the number of healthcare workers. In Hong Kong, the local hospital authority revealed the shortage of nurses as 600 per year with approximately 900 out of 19,400 who work in hospitals quitting on an annual basis (Chan, 2010). A predicted shortage of 10,000 to 12,000 nurses is expected in Australia within the next 10 years. To meet the deficit, the nursing programs in Australia are required to double the number of graduates produced and collectively produce 10,000 graduates per year (Gaynor et al., 2007).

In the USA it is estimated there will be a shortage of 285,000 RNs by 2020 (Shelton, 2012), and it is believed three main causes have contributed to this shortage. First of all, life expectancy at birth for the total population for 2014 was 78.8 years. This shows an increase from 70.8 in 1970 and 62.9 in 1940 (Centers for Disease Control and Prevention, 2016). A longer life expectancy results in more chronic diseases resulting in more visits to healthcare provider offices and an increase in those requiring placement in a long-term care facility. Both of these entities, offices and long-term care facilities, are staffed primarily by nurses. Another cause of the shortage is the enactment of the federal Affordable Care Act (ACA) in 2010. The ACA offers coverage to more than 30 million uninsured people, primarily by expanding Medicaid and providing federal subsidies to

help lower- and middle-income Americans buy private coverage. With more people having healthcare coverage, an increase in visits to healthcare facilities will be experienced. Again this requires the employment of more nurses. A final cause in explaining the nursing shortage is the aging population of those currently in the nursing profession. Baby boomers make up approximately 28% of the total USA population, and the vast majority of nurses working in healthcare are in fact baby boomers themselves. As the baby boomers retire, not only will their advancing age worsen the nursing shortage, their vacancies in the nursing field will leave voids and the positions cannot be replaced as fast as they are retiring (Atchison, 2016).

Even though RNs are the largest healthcare occupation and have been the main focus of the nursing shortage, it has been reported employment of LPNs is expected to grow 22 percent by 2020, faster than the average for all occupations (National League for Nursing Board of Governors, 2014). NCSBN reported in 2013, 54.2% of newly licensed LPNs work in long–term care facilities and 25.2% work in community-based or ambulatory care facilities. Due to the aging population and the implementation of the federal ACA in 2010, more healthcare workers will be needed in long-term care facilities and community-based healthcare environments.

Factors Related to Attrition

To begin the process of opposing the nursing shortage and improving the retention rates of nursing programs, those factors affecting the completion of a program must be examined. As mentioned previously, it has been reported nursing student attrition rates are as high as 50% at some universities in the United Kingdom. A

longitudinal cohort study using pre-existing data from 2003 and 2005 was completed. The purpose of the study was to determine if a relationship existed between diversity variables (i.e., sex, country of birth, ethnicity, age, educational qualifications, visa status, application route, and absence rates) and the progression and attrition of nursing students. Statistically significant predictors of success were age at program start, country of birth, ethnic group, highest entry qualification, and whether a visa was required by the student. "Of the 377 (22%) students who did not complete the programme, 146 (39%) voluntarily withdrew or were withdrawn for not meeting the required standard" (Mulholland et al., 2008, p. 53). Statistically significant predictors of attrition were country of birth, ethnic group, highest entry qualification, visa required, and absences (Mulholland et al., 2008).

Between 2000 and 2004 in the 83 institutions that had nursing programs in the UK, 4956 students out of 19,995 dropped out of the program. This accounts for a 24.8% attrition rate. The purpose of this study was to inspect the role of personality and self-efficacy in predicting academic performance and attrition among nursing students. The two most common reasons for the attrition were academic and personal reasons. Further research revealed those with higher extraversion scores on a personality screening tool achieved lower grades. Those students with higher occupational self-efficacy scores were more likely to achieve higher grades (McLaughlin, Moutray, & Muldoon, 2007).

A retrospective cohort study was performed by utilizing demographic and completion data. The four cohorts consisted of 1259 nursing students enrolled in a large English university. The results indicated those students who were older, and those who had above the minimum educational qualifications were more likely to complete the

program when compared with younger students and those with minimal educational requirements. To improve retention rates, nursing programs should select those students who are more mature as well as increase the level of qualification required to gain entry (Pryjmachuk, Easton, & Littlewood 2008).

A mixed methods study was conducted to identify strategies for lowering attrition rates and raising NCLEX-RN pass rates. This study was conducted in three phases. For phase one, the results were divided into four sections: (a) prerequisite course grades, (b) components of the preadmission test, (c) demographic variables, and (d) Health Education Systems, Inc. (HESI) exit examination scores and nursing skills. For prerequisite course grades, the significant differences for completion of the nursing program discovered were grades achieved in or scores in Anatomy and Physiology II and Microbiology. In regards to passing NCLEX-RN, the significant difference was Anatomy and Physiology I. In regards to the components of the preadmission test, reading, mathematics, and science were significantly different for completion of the program with science being statistically significant for passing the NCLEX-RN. For demographic variables, there were no significant differences between age, gender, or race as they related to either program completion or passage of the NCLEX-RN. There was a significant difference between HESI examination scores and the nursing skills course as they related to passing the NCLEX-RN.

Phase two consisted of conducting phone interviews with nursing program directors and inquiring about strategies the nursing programs were using to increase student retention and passage of the NCLEX-RN. Four themes emerged: (a)

preadmission requirements, (b) campus counselors, (c) remediation, and (d) faculty. In regards to raising NCLEX-RN pass rates, the themes that emerged were exit examinations, achievement testing throughout the curriculum, remediation, and revision of test item questions to reflect NCLEX-RN questions.

In phase three phone interviews were conducted with 10 nursing faculty. The themes that evolved from the faculty responses regarding lowering attrition rates were program admission, forms of mentoring, and faculty needs (i.e., time to be faculty, mentoring and supervision of new faculty, recognition, and appreciation). The faculty responses involving raising NCLEX-RN pass rates reflected the themes of teaching, test-item writing, and curriculum changes. Themes that emerged from the student responses involving lowering attrition rates included not knowing the answer, depends on the individual student's motivation, the need for a mandatory class on how to take tests, use of NCLEX-RN review books throughout the program, test reviews, study groups, and faculty contact with at-risk students. The student responses regarding raising NCLEX-RN pass rates returned the themes of the use of NCLEX-RN style tests, expanding class content, use of review books, and review of course tests (Higgins, 2005).

Using qualitative methods, another study explored what influences contributed to success in program completion and on the NCLEX-RN in an ADN program. Through data triangulation, three categories of themes emerged: student-related, collaboration-related, and curriculum-related. In regards to the student-related theme, the specific themes identified were (a) motivation; (b) academic abilities, such as critical thinking, test-taking, and study skills; (c) organization; (d) prioritization of roles and

responsibilities; (e) the ability to manage life events and extreme stress; and (f) healthcare experience. Under collaboration-related themes, there were three more specific topics: communication, support systems, and faculty involvement. For the curriculum-related themes, topics of teaching methods, program examinations, practice questions, and NCLEX-RN workshops and courses were identified. As an overview, students and instructors possessed similar beliefs. "Participants were in strong agreement that no one factor guarantees success and that a combination of factors may play a different role among different students" (Rogers, 2010, p. 97).

Using 10 persisting students in a baccalaureate nursing program at a small college of nursing in the Midwest, a qualitative study was performed. An interview was conducted with each student who was asked to: "Think back over the last year, and think about the times when you thought about or even said, 'I'm not doing this. I don't want to be a nurse.' Tell me what helped you stay in nursing" (Williams, 2010, p. 364). The interviews were transcribed, and four major themes emerged from the interviews: keeping up, not giving up, doing it, and connecting (i.e., using resources) (Williams, 2010).

A mixed methods study was conducted to explore the factors related to academic success in at-risk senior nursing students. A convenience sample of 16 senior nursing students enrolled in a one-credit seminar course offered to students who had failed to meet program standards was selected for the study. For the quantitative portion, official transcripts test scores were analyzed. "The total number of C grades in science courses and nursing scores for each student was evaluated using the Spearman rank correlation

statistic, and were found to be significantly correlated" (McGann & Thompson, 2008, p. 6). The greater number of science C grades earned was related to earning more nursing C grades. Qualitative data gathered from journal submissions were also analyzed. Topics included were reflections on prior semester, learning style, test-taking issues, individual plan for improvement, time management, and coping strategies. Major themes which emerged from reflections on the prior semester included having a heavy course load, personal and health problems, work, lack of time, test anxiety, procrastination, and non-supportive faculty. Only one theme arrived from the learning style which consisted of self-awareness. Test-taking issues consisted of changing answers, over-thinking answers, not reading carefully, and test-anxiety. Identification of strengths and weaknesses, goal setting, prioritization of time, increase in self-confidence, and need for self-reflection were major themes which arose from the journal topic of individual plan for improvement. Time management themes involved need for self-care, realistic "to-do" lists, need for class preparation, decreasing work hours, and managing stress. Coping strategies entailed too much work, too little time, worry over grades, support system, and cognitive behavioral coping strategies.

Identifying students who are at-risk of not completing a nursing program must be executed early in the program to increase retention rates. Quantitative data was obtained for 383 students in an ADN program during the first semester. Using a correlation study, it was discovered SAT scores, high school GPA, and the Nursing Entrance Test were significantly correlated with the final grade in the Nursing Fundamentals course, which was taken in the first semester of the nursing program. Having a model which provides

for the early identification of those associate degree students who can be successful in the Nursing Fundamentals course allows for a better understanding of those who may be at risk (Hopkins, 2008).

A research study was performed with a sample of 458 students from nine ADN programs in Pennsylvania and New York to study a model of nursing student retention. The participants were divided into three groups: (a) currently enrolled who had persisted throughout a nursing program without withdrawing (group one), (b) formerly enrolled students who had withdrawn voluntarily at some time during their program (group two), and (c) formerly enrolled students who had been required to withdraw because of academic failure at some time during their program (group three). A questionnaire was administered to all participants and included four sections (i.e., background of the participant, academic efficacy expectations, academic outcome expectations, and perceived faculty support). College GPA was significantly different among all groups. Prior education, high school GPA, expected education, academic outcome expectations, and perceived faculty support were significantly different for groups one and two. Financial resources and perceived faculty support were significantly different between groups one and three. Having a model for nursing student retention will allow faculty to intervene and ensure students graduate (Shelton, 2012).

A study was performed at a community college in Florida from 1998 to 2000 to determine demographic and academic variables attributing to the success or attrition of the students. It included 153 students who entered the practical nursing program. The students were divided into two groups–those who completed the program on time

(retention group) and those who did not complete the program within the academic year (attrition group). The overall retention rate for the participants was 63.4%. Demographic variables included gender, age, and race, and the demographics were evaluated utilizing a cross-tabulation analysis. No significant differences were found between the demographic variables and attrition. Academic variables included scores on the TABE (i.e., mathematics, verbal, and reading), grades in the Introduction to Healthcare course, and grades in the Medical Terminology course. The Introduction to Healthcare course and the Medical Terminology course were both prerequisites for the PN program. Analysis for the academic variables included the use of t-tests for independent groups. Between the retention and attrition groups, significant differences were revealed for all sections of the TABE and both prerequisite courses. Based on the results of this study, the college identified a need for a retention program to address high attrition rates in nursing programs. Included in the program would be sessions focusing on academic learning and study skills. These sessions would be offered prior to beginning the nursing courses and would continue throughout the nursing program (Stickney, 2008).

Numerous factors have been identified as having an impact on retention rates in nursing programs. These factors can consist of demographic variables (i.e., age, country of origin), preadmission variables (i.e., GPA, grades in core classes), academic variables (i.e., study skills, hours spent studying), psychosocial variables (i.e., personality, self-efficacy, self-esteem) and environmental variables (i.e., hours worked, support system). These multiple factors compound the problem of retention as students may have various causes for their inability to complete a nursing program. Faculty in nursing programs

must be aware of the multi-faceted variables impacting a student's success in the program. Faculty must also be knowledgeable regarding the various interventions that may be implemented either in community colleges or in the nursing programs which may assist in identifying high-risk students and increase their chances of completing a nursing program.

Interventions to Increase Retention

Due to the widespread problems with nursing shortages and low nursing program retention rates, multiple interventions have been implemented to attempt to solve the problems. Even though the outcomes may not always be favorable in improving the difficult situation, new and progressive ideas often promote further inquiry into causes and further recommendations.

In China it has been suggested to increase the length of the Bachelor of Science Degree nursing program from four years to five years to improve retention in the hospital setting. The belief is slowing the progression of the program would allow students more time to grasp the difficult concepts taught in nursing programs (Chan, 2010). In order to provide a solution to the nursing shortage in Australia, the higher education sector introduced nursing double degrees. The hope is to attract more students with this offering of dual majors and lead to higher retention rates (Hickey, Sumsion, & Harrison, 2010).

The use of automated texts being sent to nursing students is another strategy used to improve retention. A study out of the United Kingdom reported an increase in the attrition rate for nursing education from 24.8% in 2006 to 27.6% in 2008. To combat the

rising attrition rate, a university located in central England conducted a study to determine if automated texts sent to mobile phones of first-year nursing students could improve the retention rate. Of the 178 first year nursing students, 69% agreed to participate and receive FLO, a Short Messaging Service originally designed to send patients automated texts regarding their medical condition. FLO was altered to provide information, support, and reassurance to nursing students. At the end of 12 weeks, the students were asked to complete a questionnaire. Results from the questionnaire indicated 70% of students reported FLO made them feel involved with and linked to the University, and 42% reported following advice provided by FLO. Even though more work is needed with similar systems, it seems to be an efficient and cost-effective tool. Nursing faculty must be aware of the various possibilities for increasing retention, and utilizing existing technology may be appropriate especially for the traditional students (Boath et al., 2016).

Another intervention for decreasing attrition rates in nursing programs consisted of the development of programs specifically focused on the retention of nursing students. Three nursing schools in the Texas Medical Center instituted a program for high-risk, disadvantaged students to overcome barriers and help them succeed in the nursing program. The program focused on study skills, writing, communication, medical terminology, critical thinking, career coaching, and socialization. One hundred and five students were assisted in the nine-month retention program over the three-year period. The overall average completion rate for the nursing program over the length of the study

was 76.8%, which was an increase over the previous completion rate of 6% (Igbo et al., 2011).

Another example of the development of a retention program specific to nursing students occurred in a large community college in northern Nevada. The associate degree program had a four-semester retention rate of 50% and a six-semester rate of 64 % (i.e., two-thirds of the students completed the four-semester program in six-semesters). In May 2008 the college received a grant from the United States Department of Labor's Employment and Training Administration to assist in improving the retention rate of the program. With the grant, the college created the Northern Nevada Nursing Retention Program and provided services to the nursing students such as (a) comprehensive orientation, (b) academic learning plans, (c) peer tutoring and faculty mentoring, (d) learning communities, and (e) academic, personal, and career counseling. Over the life of the grant, 218 students were served. The overall results of the program were positive: the six-semester retention improved from 61% to 71% which was statistically significant (p = 00.048) (Fontaine, 2014).

The use of peer mentoring and tutoring may also pose as a solution to improving the retention rates of nursing programs. At Northern Kentucky University, the attrition rates for the baccalaureate nursing program in 2005 ranged from 7% to 17.3% for the first two semesters. The college implemented a grant-funded Peer Mentor Tutor Program (PMTP) to help improve the retention rate. Students who participated in PMTP were found to score significantly higher on both summative and final grades than those who did not participate in the program. Even though the t-test indicated no significant

differences between the groups regarding GPA, the mentored group had an average GPA of 2.8 compared to 2.76 for the non-mentored group. Attrition rates did not change significantly when compared to previous years during the first year of the PMTP. However, mentored students accounted for less than 1% of the attrition from nursing courses (Robinson & Niemer, 2010).

Not only is there a need for more nurses, there is also a need for increased ethnic and racial diversity in the field of nursing. In 2011 the American Association of Colleges of Nursing estimated 28% percent of students in a traditional baccalaureate nursing program represented a racial or ethnic minority. Similarly, in 2012 the National League for Nursing reported 27% of associate degree nursing students represented a racial or ethnic minority. Due to the increasing racially and ethnically diverse U.S. population, increased numbers of minority nurses are needed to provide culturally competent nursing care. "Nontraditional students have been one group of individuals identified as having an increased risk for attrition. Nontraditional students have been described as students who are older, ethnically diverse, and who enter into college with varying degrees of academic aptitude" (Harris, Rosenberg, & O'Rourke, 2014, p. 32). In a historically Black college and university in the Midwestern USA, the average attrition rate for all students in an associate degree nursing program was 53% and 62% for racial-ethnic minority students. To decrease the attrition rate, a three-pronged approach was instituted and included a student success program (SSP), nursing program admission changes, and faculty development. The SSP included identifying those students who were at-risk of not completing the nursing program and offering a module-based program which included

group meetings and individual mentoring. The attributes of the at-risk students included having an ACT less than the national average, repeating Anatomy and Physiology courses, and requiring basic math or English courses. Other aspects of the three-pronged approach included changing the admission criteria and providing workshops to faculty on varying learning styles and providing a culturally sensitive classroom. Since this was an associate degree program, complete data would not be determined until the cohort graduated. However, all minority students who participated in the SSP completed the first semester of the program. "Schools striving to improve attrition must reflect upon their admission process, develop their faculty, review their student data, and consult the literature for effective programs to use as a roadmap to improve success" (Harris, Rosenberg, & O'Rourke, 2014, p. 36).

As there were multiple factors related to attrition in community colleges and nursing programs, there were also multiple interventions used to combat the problem of attrition. Faculty must be willing to explore the literature to discover techniques for implementation in nursing programs to increase the retention rates. This, in turn, will decrease the possible future nursing shortage.

Selective Admission Process

Most nursing programs in the USA employ a selective admission process, and each program has specific criteria established to award points based on specific requirements. Those students with the highest point total are accepted into the program; thus, not everyone who applies to nursing programs is accepted. In fact, there are many people who apply multiple times but are never chosen to begin the program. The use of a

selective admission process evolved to distribute the scarce resources of the nursing programs, which are expensive to maintain. The ever-changing use of technology calls for a continuous need of purchasing new equipment. Also regulatory agencies require a maximum faculty-to-student ratio in clinical settings. The greater number of students admitted requires more faculty which inflates the nursing program budget. The number of quality clinical facilities also plays a role in limiting the number of students accepted. Finally, the nursing profession requires a high level of critical thinking skills (Bissett, 1995). Many times patient outcomes are the direct result of the thorough assessment and rapid response made by the nurse. Nurses are held to a high standard, and not everyone who has the desire to become a nurse can achieve the title of a licensed nurse.

Many ethical concerns arise concerning the utilization of a selective admission process in nursing programs. Typically, community colleges have an open-access policy; this means everyone who applies to the college is admitted. Because most associate degree nursing programs are taught at the community college level, an ethical dilemma arises concerning maintenance of high academic standards and assuring equality in nursing programs (Bissett, 1995). Therefore, it is crucial that the selective admission factors used by nursing programs to select students for the programs are appropriate and reliable in choosing those students who will be the most successful in completing the program and qualified for the profession.

One proposed method for selecting students for nursing programs consists of candidate interviews. The research regarding the use of this method has been controversial due to the subjectivity of this system. Program candidates in Israel were

interviewed utilizing a structured and open questionnaire containing 14 sections. Prior to utilizing interviews, the attrition rate averaged 35%. After the interviews had been initiated, the attrition fell to as low as 24%. The reasons for attrition were studied, and it was found over 50% of the attrition rate could be attributed to non-academic factors. By utilizing the interviews, both the students and the instructors could gain a new perspective of these factors such as personal status and personal problems, career goals, professional incompatibility or behavioral anomalies. Another possibility discussed included the use of personality testing to determine if the candidate was suited for a nursing program (Ehrenfeld & Tabak, 2007).

To conduct the literature review, several databases were accessed through the University of Kentucky's online library. The data bases included Academic Search Premier, the Cumulative Index to Nursing and Allied Health Literature, the Education Research Information Center, and ProQuest Dissertation & Theses. Terms used to search the databases included: *retention in nursing programs, predicting success in nursing programs, and retention in community colleges.*

Theoretical Framework

Research regarding retention in practical nursing programs and community colleges is lacking from journals and books. In *How College Affects Students* (2005), Pascarella and Terenzini compiled data regarding higher education utilizing more than three thousand reports. Of these only a few dozen studies included community colleges. Most of the research published in journals and books pertained to baccalaureate degree nursing students who attended four-year institutions. Very few published articles have

examined associate degree nursing students or even students enrolled in practical nursing programs typically located in community colleges. "More research on community colleges has appeared in the past fifteen years than in the previous fifty" (Cohen & Brawer, 2008, p. 382). Those involved in community college education must encourage research in this area. They must be an advocate for encouraging faculty and staff to conduct research in community colleges as well as encourage the publication. If community colleges want to be seen as equal, they must have increased standards. This relates not only to the students who attend community colleges but also to the faculty who are employed at community colleges.

A considerable amount of research has focused on the multitude of factors which may affect the retention of nursing students. Some studies have focused on preadmission factors and their relationship to success in nursing programs such as grades in science courses, preadmission tests, and GPA (Higgins, 2005; McGann & Thompson, 2008; Hopkins, 2008; Peterson, 2009). Academic factors (Rogers, 2010) and environmental influences (Shelton, 2012) have also been linked to retention. Several theories have been postulated in order to explain the many facets of student attrition and retention.

One of the most cited sources in the literature regarding factors related to attrition and the success of students in higher education was the theory developed by Tinto (1975) at Teachers College of Columbia University. Tinto's initial theory was developed due to the lack of theories explaining the interactions between students, academic institutions, and external forces. He believed students enter college with a set of pre-entry attributes that could have an impact on whether they remain or leave the institution. These pre-

entry attributes consist of a student's family background, abilities, and prior education. Once the student enters the realm of higher education, it is crucial for the student to become academically and socially integrated into the academic environment. If external commitments such as outside employment or family obligation impede the academic or social integration, the students may choose to depart from the institution (Tinto, 1975). A major criticism of Tinto's early theory involved the application of the theory only to four-year college students (Metz, 2004).

Bean (1980) sought to expand upon Tinto's student departure theory by applying a theory based on organizational behavior to explanations for student persistence and attrition. Bean theorized similarities between leaving the employment world and leaving higher education and suggested student attrition was affected by: (a) student background variables, (b) interaction by students within the institution, (c) the influence of environmental variables (finances, family support), (d) the presence of attitudinal variables (a subjective evaluation of perceived quality and self-satisfaction with the institution), and (e) student intention, such as transfer or degree (Bean, 1980). Again this theory was criticized due to the lack of research regarding nontraditional students.

Later Bean collaborated with Metzner (1985) and integrated elements of nontraditional students and the influence of environmental factors on student departure and attrition. This model speculates four sets of interacting variables affect a student's decision to drop-out of college. These variables include: (a) poor academic performance, (b) psychological variables (i.e., loss of motivation, dissatisfaction with the program, stress), (c) demographics (i.e., age, place of residence, educational goals, ethnicity,

gender), and (d) environmental variables (i.e., family income, hours of employment, family responsibilities, social support). (Bean & Metzner, 1985).

Due to the criticism of his early model, Tinto (1987) revised his model to include ethnographic information such as background variables and to include role academic and social integration as it pertains to persistence. Criticism of his model continued due to the fact the model only included information regarding traditional-age students. Some theorists believed the results could not be generalized to the non-traditional students in higher education (Metz, 2004; Jeffreys, 2012).

Jeffreys (2012) found a gap in the literature regarding undergraduate nursing student retention. Based on the Bean and Metzner (1985) model, she created the Nontraditional Undergraduate Retention and Success (NURS) model in order to examine nontraditional undergraduate nursing student retention and success. Nontraditional students were utilized due to the fact retention rates of nontraditional students have been lower than those of traditional students. However, in order to obtain a more holistic view of the retention of all undergraduate nursing students, in 2004 she expanded her model to also include traditional students and changed the name of her model to Nursing Undergraduate Retention and Success (NURS).

> The purpose of the NURS model is to present an organizing framework for examining the multidimensional factors that affect undergraduate nursing student retention and success in order to identify at-risk students, develop diagnostic-prescriptive strategies to facilitate success, guide innovations in teaching and educational research, and evaluate strategy effectiveness. Although several models have been proposed to examine college student attrition, this model specifically focuses on the aspect of retention (rather than attrition) and targets a specific student population. (Jeffreys, 2012, p. 11)

The NURS model explores seven areas which could impact a student's retention in an undergraduate nursing program: (a) student profile characteristics, (b) cultural values and beliefs, self-efficacy, and motivation, (c) academic factors, (d) environmental factors, (e) professional integration and socialization, (f) academic and psychological outcomes, and (g) the outside climate.

Student profile characteristics consist of demographic information as well as other features described before a nursing course commences. These characteristics consist of age, ethnicity and race, gender, language, prior educational experience, family's educational background, prior work experience, and enrollment status. Academic factors consist of study hours, study skills, academic advising, absenteeism, major and job certainty, and course availability. Environmental influences consist of aspects outside of the academic process such as financial status, family financial support, family emotional support, family responsibilities, child care arrangements, family crisis, employment hours, employment responsibilities, encouragement by outside friends, living arrangements, and transportation. Professional integration and socialization factors augment the student's engagement within the college atmosphere. These include faculty advisement and helpfulness, memberships in professional organizations, professional events, encouragement by friends in class, enrichment programs, and peer mentor-tutoring. Academic outcomes include the student's grade in a nursing course, cumulative GPA in the nursing program, and overall GPA while psychological outcomes consist of satisfaction and stress. The outside climate consists of world, national, and local events;

politics and economics; the healthcare system; nursing professional issues; and job certainty.

Recognizing factors affecting retention and identifying at-risk students are crucial in improving retention in any setting. Nursing faculty must be acutely aware of the multiple barriers impeding students and preventing them from completing a nursing program. Utilizing Jeffreys NURS model as a guide, faculty can not only identify factors restricting or supporting retention, they can also develop strategies to improve retention and success.

Summary

Most of the previous research regarding retention in nursing programs has been conducted with associate and baccalaureate degree students. There is a gap in the literature regarding student retention in practical nursing programs. The literature review is presented in a deductive manner by exploring retention rates, factors affecting retention, and retention strategies as they relate to community colleges and all levels of nursing programs. A specific aspect of nursing programs, selective admissions, is discussed as this is the most common method used to choose students who are admitted to the programs. Chapter 2 concludes with the discussion of persistence theories such as Tinto (1975, 1987), Bean (1980), Bean and Metzner (1985), and Jeffreys (2012).

Chapter 3 presents the methodology utilized in this study. The sample, data collection, data analysis, limitations, and expected findings are described for the two phases. The chapter concludes with ethical dilemmas that arose during the research process.

CHAPTER 3

METHODOLOGY

Due to the implementation of the federal Affordable Care Act and an aging population, the role of LPNs will expand by 22% by 2020 (National League for Nursing Board of Governors, 2014). One of the methods to tackle the expected deficiency of LPNs is to take a deeper look into improving retention rates in practical nursing programs and graduate more nurses. SKYCTC, a college in the Kentucky Community and Technical College System, has been educating LPNs since 1957. Over the last 10 years, the college has seen a decrease in retention rates ranging from 50% to 60% in each cohort. Even though the program utilizes a selective admission process to choose who is accepted into the PN program, the college continues to struggle with the retention rate. This two-phase study sought to explore factors affecting successful completion of a PN program at SKYCTC.

Research Questions

The overarching research question for this study was, *What factors contribute to the completion of the SKYCTC PN program within three semesters?* Two guiding questions assisted in answering the research question:

1. For the six cohorts admitted from August 2008 through May 2015 at SKYCTC, what selective admission criteria were related to completion of the PN program within three semesters?

2. For students who completed the PN program within three semesters at SKYCTC between August 2008 and May 2015 and were currently working in the

nursing profession, what were their environmental and academic influences they perceived as having attributed to their success in completing the PN program?

Study Design

A research design is the manner in which data is collected and analyzed in a research study. Traditionally two major methods, quantitative and qualitative, have been utilized. This study utilized a mixed methodology, which is now considered the third major research approach (Johnson, Onwuegbuzie, & Turner, 2007). Mixed-methods research is a study design during which the researcher collects, analyzes, and integrates both quantitative and qualitative data in a single study or a multiphase inquiry (Creswell, 2009). A mixed-method design adds robustness to research in a way a single approach cannot: The process of using a statistical analysis, along with personal thoughts and feelings gather through interviews, makes the research more comprehensive. The combination of data-collection strategies provides more data and leads to more in-depth discussion and recommendations. To understand the vastness of mixed-methods research, each aspect must discussed. Quantitative designs examine relationships between variables thought to be related, identify factors influencing an outcome, determine the usefulness of an intervention, or utilize the best predictors of an outcome (Creswell, 2009). Thus, the purpose of utilizing a quantitative design during the first phase of this study was to examine the relationship between preadmission variables thought to be associated with completion of the PN program within three semesters and student retention through graduation. Data collection consisted of amassing preadmission data (Appendix F) from student records and PeopleSoft for students accepted into the

SKYCTC PN program between August 2008 and May 2015. These variables were then used in a stepwise logistic regression analysis to determine the "best" model for predicting success in completing the PN program.

Qualitative designs explore a social or human problem in a natural setting. The data in qualitative research depends on human experience and may be viewed as more compelling and powerful than data gathered through quantitative research (Creswell, 2009). Based on Jeffreys' (2012) NURS model, two areas (i.e., academic achievement, environmental conditions) were utilized as a template for gathering information for the qualitative phase of this study. For Phase Two, currently practicing nurses who completed the PN program within three semesters between August 2008 and May 2015 were invited to participate in a focus group. A letter from the Angie Harlan, Assistant to the Dean of Allied Health and Nursing, which included the University of Kentucky approved consent to participate in a research study, were mailed to all 169 program graduates who met the criteria. The focus group was conducted on October 6, 2016, at SKYCTC-Glasgow Campus at 1:00 p.m. All focus-group participants completed the consent form and submitted it to the researcher prior to the first question asked during the focus group. See Appendix E for the focus-group protocol. The responses were recorded, transcribed, and analyzed to build a more complex, holistic representation of success in SKYCTC's PN program (Creswell, 2007).

Phase One

The purpose of Phase One was to examine selective admission criteria related to PN program completion within three semesters. A quantitative method was employed to

determine if a relationship existed between the predictor variables and program completion. The selective admission criteria served as the independent variables and program completion within three semesters (yes or no) served as the dependent variable.

Sample

After receiving IRB approval from the University of Kentucky, the researcher obtained the lists of students accepted into the SKYCTC PN program between August 2008 and May 2015 from the dean of Allied Health and Nursing. Because the TEAS examination was not a component of the selective admission criteria prior to August 2008, data from those students chosen in August 2008 through May 2015 would be more representative of the criteria currently used to select students for entrance into the PN program. Although a cohort of students was accepted in August 2015, their data was not collected because they did not complete the program until December 2016. Of the 260 students accepted into the PN program during the specified dates, nine students were excluded because they had previously been accepted into the program but were not successful in completing the program with their original cohort. They had been selected for readmission to the program and are deemed as "repeaters," which means they had already completed some of the material covered in the nursing program. Therefore, their data was not included because it is assumed they would naturally perform better in the program due to knowledge obtained in the previous entry in the program.

The sample consisted of data from 251 students who were accepted into the SKYCTC PN program between August 2008 and May 2015. Of the 251 accepted into the program, 82 did not complete the program within three semesters. The cumulative

retention rate for the six cohorts of students was 67%. Among the 169 students who successfully completed the program in three semesters, 17 were male and 152 were female.

Data Collection and Data Analysis

Using student files and PeopleSoft data, the following predictor variables were collected and placed on a spreadsheet created by the researcher: (a) KCTCS GPA prior to entrance into the PN program; (b) COMPASS scores for reading, English, and pre-algebra (those who had ACT scores only were converted into COMPASS scores); (c) Class6 (number of courses completed from BIO 135, BIO 137, BIO 139, AHS 100, PSY 110, and PSY 223); (d) GPAclass6 (GPA from BIO 135, BIO 137, BIO 139, AHS 100, PSY 110, and PSY 223); (e) MaxGradeBio (the highest grade from the three BIO classes); (f) MaxGradePsy (the highest grade from the two PSY courses); (g) Class10 (number of classes completed from those listed in (c) plus Computers, ENG 101, COM 181, and COM 252); (h) GPAclass10 (GPA earned for the 10 courses completed); (i) TEAS total for reading, mathematics, science, and English; and (j) total selective admission points.

All quantitative information collected consisted of student data prior to entrance into the PN program. The data were entered into Minitab 17, and a stepwise logistic regression was performed using the predictor variables to determine if a relationship existed between the independent variables and the dependent variable and to obtain a "best" model for program completion. Minitab 17 is a computer program utilized for statistical analysis, and "logistic regression measures the relationship between the

categorical dependent variable and one or more independent variables by estimating probabilities" (McMillan & Schumacher, 2010).

Due to the nature of the quantitative analyses, it was necessary to use an identifier for student responses to determine if a relationship existed between the specified factors and student completion of the PN program within three semesters. Gathered data was viewed only by the researcher and kept in a locked cabinet in the researcher's office at the SKYCTC Glasgow Campus.

Limitations of the Research Design

Within any research study, there are limitations. Specific limitations applied to this phase of the study pertained to the design and the research participants. Therefore, the impact that environmental factors such as family support, hours worked et cetera would have on the completion of the PN program were not explored. SKYCTC admits a cohort of PN students once every three semesters or after a cohort is completed. Therefore, only the data of those students who began the SKYCTC PN program between August 2008 and May 2015 were included in the results. Because the study utilized data only on SKYCTC students, the generalizability of study findings is very limited.

Expected Findings

Prior research has demonstrated the relationship between specific academic factors and completion of a nursing program. For example, a statistically significant difference between the number of science courses successfully completed (e.g. anatomy and physiology, microbiology) and completion of the nursing program was discovered in a study conducted in an associate degree nursing program in a community college in

Texas. Similarly, the greater number of C grades received in science courses related to earning more C grades in nursing courses (McGann &Thompson, 2008). A statistically significant difference between specific components of a preadmission test (i.e., reading, science, and mathematics) and completion of the nursing program has also been reported (Higgins, 2005). Therefore, the researcher for this study assumed that the science classes completed and grades earned as well as the reading, science, and mathematics scores on the TEAS would be statistically significant to the completion of the PN program. Even though the research involved associate and baccalaureate nursing programs, it was assumed this finding would also apply to PN programs.

Prior academic performance, especially GPA, has been a variable frequently utilized to predict future academic success (Hopkins, 2008; Peterson, 2009). It was assumed both high school GPA and the KCTCS GPA would be predictors of completing the PN program. These studies were also performed utilizing students from associate degree and baccalaureate nursing programs; however, the assumption will be these findings will relate to students in PN programs as well.

Phase Two

In a survey administered to the PN program coordinators in June 2014 (see Appendix B), a question was asked concerning their opinions on the identification of environmental and academic factors affecting student retention in the PN program during the first semester. The responses included comments about students not knowing how to study or read for knowledge acquisition. Environmental influences included lack of family support, lack of educational role models, problems with time management (e.g.

procrastination, commitment, attendance, tardiness), lack of respect for self and others, children and pregnancy, and number of hours worked. This information, along with Jeffreys NURS model, was utilized to develop questions posed during the focus group consisting of 11 nurses working in the nursing profession who graduated from SKYCTC's PN program between August 2008 and May 2015 (See focus group protocol in Appendix E). The qualitative data gathered during Phase Two was coded to identify possible themes regarding environmental and academic conditions that may have had an impact on the success of the students while they were attending the PN program at SKYCTC.

Sample

During Phase Two, a focus group was conducted with 11 SKYCTC PN graduates who were currently working in the field of nursing and graduated between August 2008 and May 2015 who volunteered to participate. Once approval to conduct the study was received, the researcher obtained the lists of students who were accepted to the SKYCTC PN program between August 2008 and May 2015. It was determined out of the 251 students who were accepted, 169 students completed the program within three semesters. Using the home address posted in PeopleSoft, each of the 169 students were mailed an envelope containing the letter from the assistant to the dean (Appendix C) and the IRB-approved Consent to Participate in a Research Study (Appendix D) along with a self-addressed stamped envelope to return the consent form. The mailings occurred two weeks prior to the scheduled date of the focus group. Of the 169 letters mailed, 36 letters were returned undeliverable by the postal office. Fifteen students returned their signed

consent in the self-addressed envelope, and one student returned the signed consent in person.

Focus Group Interview

On the scheduled date of the focus group (October 16, 2016), 11 of the 16 students who had returned their consent form arrived at SKYCTC-Glasgow Campus Building D Room 102 at 1:00 pm. The room had been prepared by the researcher with the tables and chairs placed in a circle and labeled with the participants' names. Once all of the participants were seated, the researcher reviewed the IRB-approved Consent to Participate in a Research Study (Appendix D) and asked if there were any questions regarding the purpose of the focus group. Upon hearing none, the researcher reminded the participants that the identity of all focus-group participants had to remain confidential and that the comments made by all participants would be recorded. When all present indicated their understanding, the recorder was turned on. Using the Focus Group Interview Protocol (Appendix E), the researcher initiated an introduction and asked each of the participants to disclose their first name, year of graduation from SKYCTC, and current employer. Once the introductions were complete, the researcher asked the prepared questions to the participants in sequence and provided ample time for those who wished to respond. The focus group concluded at 2:03 pm.

Data Analysis

The focus-group participant responses were transcribed and then categorized according to themes regarding positive and negative academic and environmental influences affecting their success in completing the SKYCTC PN program. Again this

data was viewed only by the researcher and was maintained in a locked cabinet in the office of the researcher at the SKYCTC Glasgow Campus.

Limitations of the Research Design

Although 169 students graduated within three semesters during the designated time period (August 2008-May 2015), only 11 graduates who were currently practicing in the nursing profession participated in the focus group conducted in October 2016. Unfortunately, it was not possible to conduct multiple focus-group interviews; the comments provided by the 11 graduates provided insights concerning program completion.

Expected Findings

Multidimensional factors affecting undergraduate nursing student retention and success were examined in Jeffreys' (2012) NURS model. Understanding and identifying these factors can assist educators in providing interventions for at-risk students. For the purpose of this study, two groups of influences were explored. Environmental influences were defined as those conditions external to the academic process: (a) financial status, (b) family financial support, (c) family emotional support, (d) family responsibilities, (e) child care arrangements, (f) family crisis, (g) employment hours, (h) employment responsibilities, (i) encouragement by outside friends, (j) living arrangements, and (k) transportation. A second group of conditions, academic influences, pertained to the students' involvement with the academic process at the college and include (a) personal study skills, (b) personal study hours, (c) attendance, (d) class schedule, and (e) general

academic services. Therefore, it was assumed these academic and environmental influences would be discussed by the graduates during Phase Two of the study.

Role of Researcher

In the qualitative research model, the researcher is the primary research instrument (Creswell, 2007). As the researcher, I interacted directly with study participants while conducting the focus-group interview. All participants were former students who I previously taught in the classroom, laboratory, and clinical settings. As their former nursing instructor, I was cognizant my professional experiences and assumptions concerning features affecting retention could potentially influence study findings. To attempt to minimize the influence of my professional experience and assumptions on the responses of the participants, I made a concerted effort to remain objective while conducting all interviews and interpreting data.

Ethical Issues

Due to the nature of the quantitative analyses, it was necessary to have identifiers on student data. To determine if the variables were related to completion of the PN program, the student identification number was required. To maintain confidentiality, the graduates' responses during the focus group and historical data were maintained in a locked cabinet in the office of the researcher at the SKYCTC Glasgow Campus. Only the researcher had access to the data.

Summary

This mixed methodological study used two phases to gather data and explored factors affecting completion of a practical nursing program. In Chapter 4, results from the logistic regression using selective admission variables were used to determine a potential "best" model for program completion. Themes that emerged from data collected during the focus-group interview with past graduates are also presented.

CHAPTER 4

DATA ANALYSIS AND RESULTS

Chapter 4 presents the findings from this two-phase mixed methodological study. The overarching research question was, *What factors contribute to completion of the SKYCTC PN program within three semesters?* Each phase is discussed separately due to differences in how the data was collected and analyzed. The chapter concludes with a summary of the findings as they relate to the literature review.

Phase One

Phase One sought to identify the extent to which specific selective admission criteria could predict successful completion of the PN program at SKYCTC. The guiding question for this phase was, *For the six cohorts admitted from August 2008 through May 2015 at SKYCTC, what selective admission criteria were related to completion of the PN program within three semesters?*

Data Collection and Analysis

Once approval to conduct research was received, the researcher requested the lists of student names who were accepted into the PN program at SKYCTC between August 2008 and May 2015 from the dean of Allied Health and Nursing. Once the lists were compiled, data from student files and PeopleSoft were retrieved on each of the 251 students accepted into the program and not deemed as "repeaters" (i.e., students who took courses more than one time). Once data were collected and entered into a spreadsheet, the following predictor variables were considered for the logistic regression performed using PN program completion (yes or no) as a response: (a) KCTCS GPA;

(b) COMPASS (or ACT) scores for reading, English, and pre-algebra; (c) Class6 (number of courses completed among BIO 135, BIO 137, BIO 139, AHS 100, PSY 110, PSY 223 options), (d) GPAclass6 (GPA earned in Class 6 courses); (e) MaxGradeBio (highest grade earned among three required BIO courses); (f) MaxGradePsy (highest grade earned in two PSY courses), (g) Class10 (number of courses completed from those listed and ENG 101, COM 181, COM 252); (h) GPAclass10 (GPA earned in Class 10 courses); (i) TEAS total, reading, mathematics, science, and English; and (j) total selective admission points.

The variables were entered into Minitab 17, and a stepwise logistic regression was performed to obtain a best model for program completion. Stepwise regression helps identify a set of predictors in order to build the best model. It is used when the dependent variable is a binary outcome variable such as completed the program or did not complete the program. It is also assumed that the variables be independent of each other. The data should not include before-after measurements or matched pairings. Also, the model should have no or little multicollinearity, meaning there should be no or little correlation between the variables (Statistics Solutions, 2017).

> Standard stepwise regression both adds and removes predictors as needed for each step. Minitab stops when all variables not in the model have p-values that are greater than the specified alpha-to-enter value and when all variables in the model have p-values that are less than or equal to the specified alpha-to-remove value. (Minitab 17 Support, 2017)

The results of the logistic regressions analysis were:

Table 4.1

Best Model ANOVA Table

Source	DF	Adj Dev	Adj Mean	Chi-Square	P-Value
Regression	3	19.952	6.651	19.95	0.000
KCTCS GPA	1	11.903	11.903	11.9	0.001
Class10	1	6.528	6.528	6.53	0.011
TEAS Math	1	3.115	3.115	3.11	0.078
Error	225	268.230			
Total	228	288.181			

A significance level of 0.10 was used for entry and exit of model parameters, resulting in the model above. All of the other variables not appearing in the "best" model would have a p-value greater than 0.10. Therefore, this model indicates the variables that best explain completion of the PN program in three semesters are KCTCS GPA and Class10 with TEAS mathematics score being only marginally significant (p=0.078). It is also important to note the pseudo-R2 for this model is only about 7%, which means the variable list, as a whole, is not particularly associated with successful completion. It is, however, more successful than the total points scale being used at SKYCTC, as indicated by the 0.2% pseudo-R2 for a model using only total points.

Table 4.2

Total Points

Source	DF	Adj Dev	Adj Mean	Chi-Square	P-Value
Regression	1	0.550	0.5498	0.55	0.458
Total Points	1	0.550	0.5498	0.55	0.458
Error	249	316.620	1.2716		
Total	250	317.170			

To learn more from the data, it is necessary to look at the odds ratio estimates from the first model. The interpretations of the confidence intervals in Table 3 below are as follows:

- The odds of completing the PN program would be between 1.5 times and 5.4 times as large for each one-point increase in GPA.
- The odds of completing the PN program would be between 1.06 times and 1.55 times as large for each additional course taken from among the ten required courses.
- The odds of completing the PN program would be between 0.998 and 1.04 times as large for each one point increase in TEAS mathematics score. Since this interval contains 1, it cannot be said increasing TEAS scores is really associated with an increased likelihood of completing the PN program.

Table 4.3

Odds Ratio Estimates

	Odds Ratio	95% CI
KCTCS GPA	2.8938	1.5503, 5.4016
Class10	1.2808	1.0577, 1.5510
TEAS-math	1.0201	0.9976, 1.0430

Ultimately KCTCS GPA and Class10 are the most viable predictors of success, but they do not contribute greatly to the prediction. This model seems to indicate the items currently being used to determine admission are not particularly relevant as indicators of success.

Limitations of Logistic Regression

According to Minitab 17 Support (2017), there are specific limitations in using a stepwise regression. The problems are as follows:

- If two predictor variables are highly correlated, only one might end up in the model even though either may be important.
- Because the procedure fits many models, it could be selecting ones that fit the data well because of chance alone.
- Stepwise regression might not always stop with the model with the highest R^2 value possible for a specified number of predictors.
- Automatic procedures cannot consider special knowledge the analyst might have about the data. Therefore, the model selected might not be the best from a practical point of view.

Phase Two

Phase Two sought to identify influences former PN students perceived as having contributed to their success while in the program. The leading question for this phase was, *For students who completed the PN program within three semesters at SKYCTC between August 2008 and May 2015 and were currently working in the nursing profession, what were their environmental and academic influences they perceived as having contributed to their success in completing the PN program?*

Data Collection and Analysis

Among the 251 students accepted into the PN program during the specified time period, 169 students completed the program within three semesters. Each of the 169 students was mailed an envelope containing the letter from the assistant to the dean inviting them to participate in a focus-group interview schedule for 1:00 p.m. on October 16, 2016 (Appendix C) and the IRB-approved Consent to Participate in a Research Study (Appendix D) along with a self-addressed stamped envelope to return the consent form. The invitations were mailed two weeks prior to the scheduled date of the focus group. Of the 169 invitations mailed, 36 were returned undeliverable by the postal office. Fifteen students returned their signed consent in the self-addressed envelope, and one student returned the signed consent in person.

On the scheduled date of the focus group, 11 of the 15 students who agreed to participate arrived on time in room 102 in building D at SKYCTC Glasgow Campus. The tables and chairs were arranged in a circle, and nametags indicated where participants were to sit. Once everyone was seated, the researcher reviewed the IRB-

approved Consent to Participate in a Research Study (Appendix D) and asked if anyone had questions regarding the purpose of the focus group. Upon hearing none, the researcher then discussed the issue of confidentiality with the participants and gained assurances that the identity of the participants would not be disclosed. The researcher reminded the participants that the focus-group would be recorded and began the recording.

Using the Focus Group Interview Protocol (Appendix E), the researcher asked each participant to share first name, year of graduation from SKYCTC, and location of current employment. Once the introductions were complete, the researcher asked the preplanned questions in sequence on the protocol and allowed time for participants to respond. The focus group concluded at 2:03 p.m.

At the time of the focus group interviews, all of the graduates were currently working in the nursing profession. Of the 11, 3 had continued their education to become an RN; 2 had completed their associate degree at SKYCTC and the other completed the degree at a local university. One of the former graduates was currently enrolled in a baccalaureate nursing program at a local university. All of the 11 participants were either working in a long-term care facility or acute care facility (hospital). Based on the themes used in the interview protocol, the responses were categorized into three groups: preparation for the nursing program, academic factors, and environmental factors.

Preparation for the Nursing Program

The first question posed to the focus groups participants was, *To what extent did you believe you were prepared to enter the PN program prior to being accepted into the program?* An LPN with two years of experience stated that she felt she was prepared.

> I had worked as a nurse aide for four years before I got in and I spent a lot of time with the nurses watching them. I also took the success class before I got accepted and I think it helped me a lot.

The second question asked to the subjects was, *Were there any influences that prepared you for the PN program prior to you being accepted into the program?* An LPN with less than a year of experience discussed a general education instructor.

> I had Dr. Connor for A and P. Even though the class was hard, she focused on the nursing program. I remember her saying that we needed to know that for the nursing program. She used examples that related to the nursing program. I think she told us that she meets with the nursing faculty to make sure she is teaching what we need to be nurses.

The majority of the other focus group participants also had this specific instructor for anatomy and physiology and also agreed that she was helpful in identifying material pertinent to the nursing program.

Academic Factors

According to Jeffreys' NURS model, academic influences play a role in the retention of nursing students. The graduates were asked to think back to their time during the three semesters of the PN program and reflect on their academics during the program. The third question posed to the participants was, *Were there any academic influences which you believe helped you during the program?* A graduate with three years' experience who is currently working as an LPN stated, "Mrs. Harlan broke the math part

down. She also stayed after class and gave us more problems to work." A more recent graduate supported the idea of instructor-led reviews.

> At the end of a lecture topic, Mrs. Shive had us write our own test questions and put them in a box. She would then ask the questions to the whole class and let us answer them. This really helped me prepare for the tests and know what I needed to study more.

Other academic influences that had a positive impact on completion reported by one participant included answering multiple questions on her own, having previous experience in the healthcare field, and completing the "success class."

> I answered a lot of questions using a computer program I bought myself. I think I answered about 50 to 100 questions a week. I also think that my experience as a nurse aide helped me. I think everyone who comes into nursing school should have at least six months experience working. Another thing that helped me was the success class. I think taking the class really helped me understand what to expect if I got accepted into the program. For me these were the major things that helped me be successful in completing.

Still related to academics but focusing on negative factors, the participants were asked, *Were there any academic influences which you believe hindered you during the program?* A graduate with five years' experience and currently working as an RN in an acute care hospital reported "only having three tests and a final meant you had to learn a large amount of material for each test." Another graduate with two years of experience as an LPN and working in a long-term care facility commented regarding the completion of general education courses.

> Having to take the anatomy class with the first semester of nursing classes made it very difficult. If I could have had it done before I started the nursing classes, I think I would have done better in the nursing program. It was so hard to study for all other classes at the same time.

Also with regards to general education courses, another student with three years of experience and currently working on her baccalaureate degree stated, "I had Anatomy and Physiology five years before I started the nursing program. That made it difficult because I had forgotten so much of the material."

Environmental Factors

Graduates were also asked about positive and negative environmental influences that may have affected their completion of the PN program, which Jeffreys' (2012) NURS model describes. The focus-group participants were asked to think back to their time during the three semesters they were enrolled in the PN program and reflect on their environment during the program. The fifth question asked, *Were there any environmental influences which you believe helped you during the program?* A graduate with three years of experience and working as an LPN in a long-term care facility discussed her support system.

> Having my husband and other family members help with my kids really helped me through the program. I have a really good support system and family. I could not have made it without them.

Another student with less than a year of experience as an LPN and also working in a long-term care facility discussed her employment during the program.

> Not having to work full-time while I was in the nursing program made a difference for me. I know some students that started the program with me who had to work full-time and even overtime, and they did not finish the program. I think it makes a difference if you work less and have more time for family and to study.

Other positive influences as discussed by former graduates included not having children, instructor encouragement, and the receipt of financial aid and scholarships.

The final question posed to the focus-group participants was, *Were there any environmental influences which you believe hindered you during the program?* An LPN with five years of experience and working in a long-term care facility reported issues as they related to her environment, specifically family and work related issues.

> Working full-time was really hard on me but I had to. I have three children, and I had a difficult time not being able to spend time with them. I tried as much as possible to study after they went to bed, but sometimes I was so tired myself.

A graduate with three years of experience as an LPN reported "missing family events" was also difficult. A graduate who had continued his education and was now working as an RN in an acute care setting stated:

> I had support at home, but my wife did not fully understand how hard it was. She did not know why I had to study so much and spend so much time away from my family.

Another negative environmental issue raised by the former graduates was a lack of income.

> I tried not to work full-time because I knew it was going to be hard. But I did not get enough financial aid unless I took out loans. My first semester I did not take out any loans, but I had to for the second and third semesters just to get by.

Many of the other graduates agreed that finances were difficult while they were attending nursing school.

Summary

This study was conducted as a two-phase, mixed methods process. During Phase One, a quantitative methodology using selective admission variables in a stepwise logistic regression was executed to determine a "best" model for PN program completion. Based on the analysis, KCTCS GPA and completing at least ten college classes were

significant. This partially echoes what had been discovered in previous studies. Prior academic performance, especially GPA, has been a variable utilized frequently to predict future academic success (Hopkins, 2008; Peterson, 2009). During Phase Two, qualitative data elicited from the focus-group participants indicate academic and environmental influences also play a role in completion of a PN program.

Chapter 5 presents conclusions based on both phases of this mixed methods study. It closes with recommendations for further research and educators in nursing programs.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Retention of admitted students is a concept deemed vital to the success of any higher education institution and its programs, particularly those that provide career preparation. To combat the projected nursing shortage, nursing programs throughout the USA must address their student attrition rates. A recent projection is that by 2020 there will be a shortage of 285,000 RNs (Shelton, 2012). Although the main focus of the nursing shortage has been aimed at RNs, the Bureau of Labor Statistics (2012) reported employment of LPNs is expected to grow 22% by 2020, faster than the average for all occupations (National League for Nursing Board of Governors, 2014).

Southcentral Kentucky Community and Technical College, although under different names, has been training and graduating LPNs since 1957. Once students have met preliminary admission requirements for the PN program, a selective admission assessment is completed for each prospective student. The selective admission criteria awards points based on applicant's (a) ACT or COMPASS scores (reading, writing, and pre-algebra), (b) high school completion GPA or GED score, (c) grades in core courses, and (d) the total score on the TEAS examination. Once the points are tallied, those applicants with the highest total points are granted acceptance into the PN program. Typically 50-60 students are accepted into the program every three semesters. Despite the fact that the program utilizes a selective admission process based on grades and test scores to select students, the student retention rate averages between 50-60% for each graduating cohort.

To understand causes for the low retention rate of the PN program at SKYCTC, a two-phase mixed methods study was conducted on students and graduates in the program between August 2008 and May 2015. The exploration was guided by an overarching research question (*What factors contribute to completion of the SKYCTC PN program within three semesters?*) and two guiding questions:

1. What selective admission criteria were related to successfully completion of the PN program within three semesters?

2. What environmental and academic influences do program graduates working as nurses attribute to their success in completing the PN program?

Overview of the Study

During the first phase of the study, quantitative data were analyzed using a stepwise logistic regression to determine if selective admission criteria were related to completion of the PN program within three semesters. Analyses indicated that students' overall GPA (p-value 0.001) and the completion of at least 10 core classes (p-value 0.011) were significant, whereas the mathematics portion of the TEAS exam (p-value 0.078) was marginally significant as a predictor variable for completion of the PN program. In looking at the selective admission criteria used by the PN program (Appendix A), none of these specific criteria are used to select those admitted to the program.

During the second phase of the study, a focus group of recent graduates was conducted to determine what environmental and academic influences they perceived had attributed to their success in completing the PN program. The former students stated that

completing required core classes in general education (i.e., Anatomy and Psychology) prior to being accepted into the program helped because they could concentrate intentionally on their nursing classes. They also mentioned enrolling in the program-sponsored "success" class, attending instructor-led reviews, answering multiple questions similar to the NCLEX, and having previous experience as a nurse aide were also influences that contributed to their success. The program graduates stated having a good support system, not having children, not having to work full-time, receiving instructor encouragement, and being awarded financial aid and scholarships were positive environmental factors. Negative environmental influences included working full-time, limited financial aid, lack of understanding about time demands by family and friends (i.e., support system), and missing family events.

Findings Related to Theoretical Frameworks

Tinto (1975 and 1987), Bean (1980), and Bean and Metzner (1985) all sought to develop models to assist in explaining undergraduate student attrition. However, Jeffreys' (2012) NURS model specifically targeted nursing students and focused more on retention. According to the model, the decision for a student to remain in a nursing program is based on the interaction of multiple factors: student profile characteristics, student affective factors, academic factors, environmental factors, professional integration factors, academic outcomes, psychological outcomes, and outside surrounding factors. The findings of this study match this model. The graduates described a multitude of factors which had an impact on their success in the SKYCTC PN program.

These findings coincide with Jeffreys' (2012) NURS model that describes academic and environmental influences having an impact on nursing student success.

Recommendations

The findings in this study suggest the need for replication and further research to identify indicators for successful completion of a practical nursing program. The following recommendations are made to researchers and educators.

Recommendations for Further Research

Since only students accepted into the PN program at SKYCTC were included in the study, it should be replicated using students in PN programs at the other 15 KCTCS colleges or any other PN program in the country. Replicating this study in multiple settings would provide greater understanding of the phenomena examined. Because only graduates of the program currently serving as nurses were included in the qualitative phase, a future study could incorporate those who were not working as nurses to gain additional information about the program or to those who were not successful in completing the program within three semesters to explore reasons for student attrition. This could be accomplished by administering an in-class questionnaire at the end of each of the three semesters to increase the response rate or by mailing the questionnaire to all students who were enrolled in a specific semester.

Another recommendation for further research pertains to the use of the researcher in conducting the qualitative phase of the study. As it was mentioned, the specific researcher for this study served as the instructor for the graduates who participated in the focus group. For future research, it would be advised to have a neutral party conduct the

focus group. This would allow the possibility of bias to be reduced in this aspect of the study.

Recommendations for Educators

In this study two main problems were addressed. First, low retention rates have been an area of concern for educators in postsecondary education as well as nursing programs. Second, a shortage of nurses in the USA by 2020 has been predicted (Shelton, 2012) that can only be addressed through higher graduation rates from nursing programs. To help increase the retention rates and combat the anticipated nursing shortage, educators must be aware of conditions, both program related and personal, leading to students not completing the nursing program. Educators must be responsive to implementing interventions to assist high-risk students in completing the program.

Because only statistically significant predictors of success were evident (i.e., KCTCS GPA, completion of ten core classes, scores on the mathematics section of TEAS), SKYCTC should consider altering the selective admission criteria currently utilized to include these three factors. Once the analysis of the stepwise logistic regression was complete, the researcher met with the dean of Allied Health and Nursing to discuss the findings. Since a cohort of students had just been selected and another cohort would not be selected until May 15, 2018 to begin fall 2018, the dean and the researcher agreed to meet during the summer of 2017 to begin implementation of new selective admission criteria to be used for the fall 2018 cohort. The plan is to include the three variables identified as statistically significant through this study. Future research

studies could focus on the comparison of the two selective admission criteria to determine which had a bigger impact on retention.

This study also focused on the perceived influences successful students deemed as important in their success. One student mentioned the "success" class (NRS 100 Enhancing Nursing Student Success) that is offered by SKYCTC. NRS 100 is a two-hour elective course for students who are interested in being accepted into the nursing program. Concepts discussed during this course include critical thinking, role of the nursing student, stress and time management, and preparation in answering NCLEX-style questions. Since it is not a required class, typically only five to ten students register for it every semester. An option for future cohorts would be to require high-risk students to enroll in NRS 100 during their first semester of the nursing program. Possible attributes of the at-risk students would include having an ACT score lower than the national average, repeating Anatomy and Physiology courses, and requiring basic (i.e., transitional or developmental) mathematics or English courses (Harris, Rosenberg, & O'Rourke, 2014).

At SKYCTC, if any first-time student requires three or more basic (i.e., transitional or developmental) courses, the student must enroll in GEN 102 Foundations of Learning. Course topics include available campus resources, learning and memory, self-management, critical reading, critical thinking, classroom skills, and career exploration. Faculty have concluded that any first-year college student, no matter her or his academic ability, would benefit from enrolling in this course. Faculty advisors should encourage all students who express interest in a nursing program to enroll in GEN 102.

Another recommendation for educators involves the completion of general education courses. In Phase One it was identified that completing 10 general courses prior to acceptance into the PN program was statistically significant to program completion. Also in Phase Two, previous graduates stated that completing the general education courses prior to entry into the program was an influence in their success. Therefore, advisors for the nursing program should strongly suggest to students to complete the general education requirements of the PN program before they are selected to start the nursing program. Not only would this allow students the ability to decide if the rigorous nursing curriculum is their appropriate program choice, but it also allows them to solely concentrate on the nursing courses once they are accepted into the PN program.

Students not successful in completing the nursing program could also provide beneficial information that could help faculty identify students who are at risk of not completing the program. Early intervention for these students would include developing a plan for these students to complete the nursing program. Such interventions may increase the retention rate of nursing programs and decrease the possibility of a nursing shortage in the future.

As mentioned in Chapter 2, multiple interventions have been implemented across the globe to improve retention rates of nursing programs in order to combat the prediction of a nursing shortage. Faculty development programs should focus on these multiple interventions that should become embedded in the program curriculum. Identifying students needing additional support and implementing interventions that address specific

needs could have a positive impact on reducing the attrition rates in nursing programs and diminishing the projected nursing shortage in the future.

Finally, those involved in nursing education must also realize that tests and scores may not always be the best predictors of success in nursing programs. Nursing is much more than being able to pass tests, even though they are a necessary component of nursing education and licensure. The University of Arizona (2015) identified six traits of successful nurses: tenacious, gregarious, methodological, optimistic, patient, and empathetic. When asked about the level of difficulty experienced in the education and in a nursing career, most nurses describe these as stressful environments. Nonetheless, most nurses would assert there is no greater feeling than caring for those who cannot care for themselves. Since many personality characteristics are required to be a successful student, one possible solution to increasing retention is to choose students based on personality traits. Self-esteem (Peterson-Graziose, Bryer, & Nikolaidou, 2013) and self-efficacy (McLaughlin, Moutray, & Muldoon, 2007) have been linked to persistence in completing nursing programs. It may be possible that utilizing personality examinations may be a consideration in selecting students who will complete the program.

Conclusion

Because multiple factors appear to have an impact on retention and attrition in nursing programs, there are multiple interventions required to increase student retention and decrease the looming nursing shortage. Nursing educators must be willing to challenge the belief that good grades and test scores always lead to good nurses. They must be willing to think outside of the box in developing criteria for program admission

and to also develop interventions to identify at-risk students and assist them in their goals of becoming nurses. The future of healthcare is dependent upon nursing educators and nursing programs graduating more nurses.

APPENDIX A

Southcentral Kentucky Community and Technical College
Practical Nursing Selective Admission Assessment

Name _____ PS # _____

Preference I	High School GPA / GED Scores	Possible Points = 3
Points	GPA / GED Scores	
3 Points	3.50 or > cumulative high school GPA OR GED Score of 64 or > OR 640 or >	
2 Points	3.25 or > cumulative high school GPA OR GED Score of 62 – 63 OR 620 – 630	
1 Points	3.00 or > cumulative high school GPA OR GED Score of 57 – 61 OR 570 – 610	
	High School GPA _____ or GED Score _____	

Preference II			Placement Scores			Possible Points = 12		
READING			WRITING or ENGLISH			PRE-ALGEBRA or MATH		
POINTS	ACT	COMPASS	POINTS	ACT	COMPASS	POINTS	ACT	COMPASS
4	27 or >	98 or >	4	27 or >	97 or >	4	28 or >	85 or >
3	25 – 26	95 – 97	3	25 – 26	93 – 96	3	26 – 27	73 – 84
2	23 – 24	91 – 94	2	22 – 24	86 – 92	2	24 – 25	61 – 72
1	20 – 22	85 – 90	1	19 - 21	77 – 85	1	22 – 23	50 – 60
0	19	83 – 84	0	18	74 - 76	0	19 – 21	36 – 49
Score _____ Points _____			Score _____ Points _____			Score _____ Points _____		

Preference III Credit in Approved Curriculum			Possible Points = 20	
Core Courses	Initial Grade	Repeat Grade	Points	Earned Points
BIO 135 or				A = 5 points
BIO 137				B = 3 points
BIO 139				C = 0 points
AHS 100 or				Repeats = 0 points
PSY 110				
PSY 223				

Preference IV TEAS Scores Possible Points = 20

POINTS	TOTAL PROGRAM SCORE
20	88 or >
18	84 - 87
16	80 - 83
14	76 - 79
12	72 - 75
10	68 - 71
8	64 - 67 *(National Avg. = 64.3)*
6	60 - 63
4	56 - 59
2	52 - 55

TEAS PROGRAM SCORE _____

APPENDIX B

Questionnaire for KCTCS Practical Nursing Program Coordinators

1. For which KCTCS college do you coordinate the practical nursing program?

   _____

2. Which type of practical nursing program do you utilize at your college (please check only one):

   _____ Practical Nurse Pathway 1 – Traditional

   _____ Practical Nurse Pathway 2 – Traditional Modified

   _____ Practical Nurse Pathway 3 – Modular

   _____ Integrated Nursing Program

3. What is your retention rate for completion of the first semester of the PN program for the most recent cohort admitted?

   _____

4. What are the selective admissions criteria used to determine the students accepted into the PN program? Please share your selective admission form used to award points to determine who is selected for the program.

   _____

   _____

   _____

   _____

   _____

   _____

5. In your opinion, what are the student environmental influences and academic factors that affect retention in the PN program during the first semester?

_____

_____

_____

_____

_____

_____

6. Will you admit a cohort of students to begin the PN program in Fall 2014? _____

APPENDIX C

Letter Form Angie Harlan, Assistant to the Dean of Allied Health and Nursing

May 4, 2016

To practical nursing program graduates:

A researcher, Jennifer Shoemake, has contacted me regarding a research study using graduates of the practical nursing program of Southcentral Kentucky Community and Technical College (formerly Bowling Green Technical College). Mrs. Shoemake is currently in a doctoral program at the University of Kentucky, and the information gathered will assist her in completing her dissertation. She is asking you to participate in a focus group at the Glasgow Campus on October 6, 2016. It would last approximately an hour in length. The discussion topic of the focus group would be on 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 mail it in the self-addressed stamped envelope provided. All questions regarding the research study should be directed to Mrs. Shoemake at 270-901-1212.

Sincerely,

Angie Harlan, MSN, RN
Professor, Nursing
Assistant to the Dean of Allied Health and Nursing
Practical Nursing Program Coordinator
Southcentral Kentucky Community and Technical College

APPENDIX D

Consent to Participate in a Research Study

TITLE OF STUDY

Most Likely to Succeed: The Exploration of Factors Affecting Successful Completion of a Practical Nursing Program

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study about factors which affected your successful completion of the practical nursing program at Southcentral Kentucky Community and Technical College (formerly Bowling Green Technical College). You are being invited to take part in this research study because you completed the practical nursing (PN) program between 2008 and 2015. If you volunteer to take part in this study, you will be one of about 30 people to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Jennifer Shoemake who is a doctoral student at the University of Kentucky, Department of Educational Leadership Studies. She is being guided in this research by Dr. Tricia Browne-Ferrigno who is the faculty advisor. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

The overall purpose of this study is to examine the factors that affect the successful completion of a PN program. By doing this study, we hope to learn what factors may assist students in successfully completing the practical nursing program.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The research procedures will be conducted at Southcentral Kentucky Community Technical College Glasgow Campus at 129 State Avenue, Glasgow, KY 42141 on October 6, 2016 at 1:00 p.m. You will need to come to D 102 only one time during the study. The visit will take about 60-90 minutes.

WHAT WILL YOU BE ASKED TO DO?

During your visit, you will participate with other former graduates of the practical nursing program and discuss the influences which may have contributed to your success in the practical nursing program. During the group discussion, the conversation will be recorded.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

There are no known risks as a result of your participation in this study.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

You will not get any personal benefit from taking part in this study. Your participation may allow for a greater understanding of the influences which may affect the success of a practical nursing student.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

If you do not want to be in the study, there are no other choices except not to take part in the study.

WHAT WILL IT COST YOU TO PARTICIPATE?

None

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

We will make every effort to keep confidential all research records that identify you to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Due to the nature of focus groups, confidentiality cannot be guaranteed because other subjects will know what was said by whom. We may be required to show information which identifies you to the people who need to be sure we have done the research correctly; these would be people from such organizations as the University of Kentucky.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

You will not receive any rewards or payment for taking part in the study.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Jennifer Shoemake at 270-590-2391. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky between the business hours of 8am and 5pm EST, Mon-Fri at 859-257-9428 or toll free at 1-866-400-9428. We will give you a signed copy of this consent form to take with you.

If you have not already received a copy of the Privacy Notice, you may request one. You are the subject or are authorized to act on behalf of the subject. You have read this information, and you will receive a copy of this form after it is signed.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

Name of (authorized) person obtaining informed consent Date

APPENDIX E

Focus Group Interview Protocol

Thank you for attending today's focus group. The purpose of this study is to examine environmental and academic influences former nursing students perceive as significant in their success during the PN program.

Please introduce yourself by providing your first name, what year you graduated from the practical nursing (PN) program at Southcentral Kentucky Community and Technical College (formerly Bowling Green Technical College-BGTC), and what facility you currently work.

Recall your admission into the practical nursing program and reflect on your experiences prior to entering your first practical nursing class.

1. To what extent did you believe you were prepared to enter the PN program prior to being accepted into the program?
2. Were there any influences that prepared you for the PN program prior to you being accepted into the program?

Think back to your time during the three semesters of the PN program. Reflect on your academics during the program.

3. Were there any academic influences which you believe helped you during the program?
4. Were there any academic influences which you believe hindered you during the program?

Think back to your time during the three semesters of the PN program. Reflect on your environment during the program.

5. Were there any environmental influences which you believe helped you during the program?
6. Were there any environmental influences which you believe hindered you during the program?

APPENDIX F

Preadmission Variable Spreadsheet

Selective Admissions Criteria (Independent Variables)	Student Identifier	Student Identifier
Cum. KCTCS GPA		
COMPASS-Reading		
COMPASS-Writing		
COMPASS-Pre-Algebra		
Class6: Number of courses completed from BIO 135: Basic Anatomy and Physiology, BIO 137: Human Anatomy and Physiology I, BIO 139: Human Anatomy and Physiology II, AHS 100: Human Growth and Development, PSY 110: General Psychology, PSY 223: Developmental Psychology		
MaxGradeBio: the highest grade from the three BIO classes		
MaxGradePsy: the highest grade from the two PSY classes		
Class10: Number of classes completed from BIO 135: Basic Anatomy and Physiology, BIO 137: Human Anatomy and Physiology I, BIO 139: Human Anatomy and Physiology II, AHS 100: Human Growth and Development, PSY 110: General Psychology, PSY 223: Developmental Psychology, CIS 100/ CIT 105: Introduction to Computers, ENG 101: Writing I, COM 181: Public Speaking, COM 252: Introduction to Interpersonal Communication		
TEAS (Total) Exam		
Reading		
Mathematics		
Science		
English		
Total Selective Admission Points		
Completed the Practical Nursing Program in Three Semesters (Dependent Variable)		

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EDUCATION

DEGREES

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Bachelor of Science in Nursing, May 2001
Western Kentucky University, Bowling Green, KY
Associate of Science in Nursing, December 1997
Western Kentucky University, Bowling Green, KY
Bachelor of Science in Biology, December 1994
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HOURS BEYOND BACHELORS DEGREE

Hours beyond Master's Degree: 18 hours in psychology
Hours beyond Master's Degree: 18 hours in biology

WORK EXPERIENCE

July 7, 2003–Present Professor, Southcentral Kentucky Community and Technical College-Glasgow Campus

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PROFESSIONAL CERTIFICATIONS, REGISTRIES, LICENSURES

Kentucky Board of Nursing – Registered Nurse
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