PREDICTING ACADEMIC SUCCESS OF MSN STUDENTS

by

CYNTHIA KOOMEY

DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy at
The University of Texas at Arlington
December 2018

Arlington, Texas

Supervising Committee:

Donelle Barnes, Supervising Professor
Daisha Cipher
Lauri John
Mary Schira

ABSTRACT

PREDICTING ACADEMIC SUCCESS OF MSN STUDENTS

Cynthia Koomey, Ph.D.

The University of Texas at Arlington, 2018

Supervising Professor: Donelle Barnes

Background: There is a great demand for nurses with advanced educational preparation in today's healthcare environment (American Association of Colleges of Nursing [AACN], 2017a). Enrollment and retention of MSN students is critical in order to meet the increased demand.

Purpose: The purpose of this descriptive, correlational research design using secondary analysis was to examine six variables that may predict academic success in MSN students. The six variables were years since last formal educational degree, graduate nursing program site (online versus campus-based), academic pathway to graduate school (BSN versus RN-to-BSN), outside commitments (number of hours per week working in a paid job and number of children under 18 years of age living at home), and spouse/family members' level of support for students' educational endeavors.

Method: Surveys were emailed to former MSN students at a large, public university with 125 completed surveys included in the data analysis. Multiple logistic regression was used to predict graduation.

Findings: Of the 125 students, 75 (60%) had completed their MSN degree, and 50 (40%) had not completed and were marked as discontinued (inactive) students. The number of years since the students' last degree was significantly associated with higher likelihood of graduation. There was no association between program site, academic pathway, number of hours worked per week, number of children, and spouse/family members' level of support and graduation of MSN students.

Discussion: Future studies should include qualitative research to explore specific categories of stressors experienced by students during their MSN education, so that support programs in those areas can be developed to help facilitate academic success. Quantitative studies should include larger sample sizes and possibly examine students' level of goal commitment as this could be an explanation for students with greater number of years since previous degree having increased academic success.

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CHAPTER 1

INTRODUCTION

The purpose of this retrospective study was to examine the relationships between six student and program characteristics and academic success, defined as program completion, for nurses previously enrolled in a Master of Science in Nursing (MSN) program. Doctoral students were not studied because retention issues may be different for that population. There is great demand for nurses with advanced educational preparation. In order to keep up with the growing demand for nurses with advanced degrees, enrollment, retention, and program completion of students in MSN programs must be maximized.

This chapter will include the background and significance of the research problem. The theoretical framework on which the study is based will be described. The purpose of the research study will be presented, and the research questions and assumptions will be listed.

Background and Significance

There is a great demand for graduate-prepared nurses in today's healthcare environment (American Association of Colleges of Nursing [AACN], 2017a). The increasing age of the U.S. population is one of the main reasons for this increased demand. Between 2012 and 2050, it is projected that the population aged 65 and over will almost double in size, from 43.1 million to 83.7 million (U.S. Census Bureau, 2014). This will put a tremendous strain on the U.S. healthcare system. Another reason for the increased demand for graduate-prepared nurses is the enactment of the Affordable Care Act in 2010, which resulted in 20 million more people accessing the U.S.

healthcare system (Robert Wood Johnson Foundation [RWJF], 2016). In addition, improvement in treatment of chronic comorbidities is extending longevity of patients and increasing the complexity of their care (Institute of Medicine of the National Academies [IOM], 2010). In order to effectively manage and coordinate care for the increased number of patients presenting with complex medical conditions, nurses must receive advanced educational preparation and practice to the fullest extent of their education (IOM, 2010). The increase in demand for nurses with advanced education has contributed to substantial job growth for nurse educators (BLS, 2015a). Nurse faculty are essential in providing the education for advanced degrees in nursing and they are becoming one of the fastest growing occupations in the U.S. (BLS, 2015a). Furthermore, nurse administrators have the education and skill set needed to navigate and provide strong leadership in the increasing complex heathcare industry (IOM, 2010).

Enrollment and retention of MSN students is critical in order to meet current healthcare priorities. There are no standardized admission requirements for MSN programs, and there are several barriers to admission (AACN, 2016; Dracup, 2016). For example, some MSN programs require a certain number of years of experience, yet studies have indicated that there is an inverse relationship between age or number of years of experience and academic progression (Burns, 2011). Graduate nursing program admission requirements should be based on scientific evidence that reveals positive correlation with successful program completion. It is important to identify how factors unrelated to program admission requirements are correlated with academic success. For those factors that are shown to be negatively correlated, strategies to

provide additional support for the students characterized by those factors should be explored and implemented as a means to facilitate academic success.

The Institute of Medicine (2010) has called for an increase in the percentage of baccalaureate-prepared registered nurses (BSN), or higher level of education, to 80% by the year 2020. This hefty goal of 80% of the nursing population to be baccalaureate-prepared or higher will require an additional 700,000 nurses to earn a degree higher than the associate degree by 2020 (Bureau of Labor Statistics [BLS], 2013). This estimate is based on the assumption that the BSN population will remain relatively stable at 55%. It is the increase in the BSN population that will provide the pipeline needed to meet the demand for increased numbers of graduate-prepared nurses. The continuous demand for nurses holding a baccalaureate degree or higher, and the implications for the health of the U.S. population, reinforce the critical importance of nursing student retention and program completion.

The IOM (2010) has called for an increase in the number of graduate-prepared nurses. Graduate nursing education includes MSN programs for nurses seeking to increase their knowledge and function in roles requiring higher education and skill levels. Graduate-prepared nurses have a wide variety of specializations to choose from regarding their area of practice. Nursing education, nursing administration, and nursing informatics are all areas of specialization that are in high demand (AACN, 2017a). The Bureau of Labor Statistics (2018) estimates that advanced practice nurses (APNs) are another area of specialization that is in high demand. This role is listed as the 6th fastest growing occupation, with a predicted increase of 31% in number of new jobs between 2016 and 2026 (BLS, 2017a, 2017b). Likewise, job growth for healthcare

administrators is expected to increase 20% during this same time period and nurse

faculty job growth is predicted to increase by 19% between 2014 and 2024 (BLS,

2015a). Nurse practitioners are one category of MSN-prepared nurses that is

specifically allowed more autonomy in scope of clinical practice than BSN-prepared

nurses (American Association of Nurse Practitioners [AANP], 2015). This allows them

to diagnose, treat, and manage complex health conditions. Advanced practice nurses

possess those skills that are needed to supplement the efforts of physicians to meet the

increasing healthcare needs of the aging population.

 The rising age of the U.S. population, the pervasiveness of chronic conditions,

along with the enactment of the Affordable Care Act, have increased the number of

healthcare recipients and the complexity of care (IOM, 2010). In the past, patients

accessed the healthcare system primarily with acute care needs. More recently, chronic

conditions have become the norm, and acute care needs have become the exception.

The increase in chronic illness requires significantly more healthcare resources.

Specifically, patient education, long-term treatment, and a myriad of other factors result

in a strain on healthcare delivery (IOM, 2010). Primary prevention is crucial, yet that

requires additional time, financial resources, and most importantly, an increase in the

number of healthcare providers with advanced education (Texas Department of State

Health Services [TDSHS], 2015).

 The demand for graduate-prepared nurses is expected to be twice the size of the

supply in the near future (Dracup, 2016). Maximized enrollment and retention efforts

leading to increased program completion rates will be imperative to increase the supply

of APNs, nurse educators, and nurse administrators to sufficiently meet the increasingly

complex healthcare demands of the aging population and the healthcare system in general (AACN, 2017a; Shelton, 2012). Further research is needed to explore factors that impact academic success in MSN programs.

Theoretical Framework

Theory Background and Description

The graduate nursing student body is largely comprised of nontraditional students, in the sense that they are older and have more family and work responsibilities than traditional, right out of high school students. These additional responsibilities may be important factors in determining the academic success or failure of MSN students. It is thus important that a model of academic success geared towards nontraditional students, rather than traditional students, be the framework for this study.

Bean and Metzner's (1985) theory of nontraditional student attrition is grounded in Tinto's (1975) theory of traditional student attrition and was chosen largely because it is more focused on characteristics of nontraditional students, such as those possessed by MSN students. Unlike the typical graduate nursing student, traditional students are usually younger, live on campus, and are therefore more influenced by their classroom peers and institutional campus life. Tinto's (1975) theory of traditional student attrition highly emphasized the impact of institutional social integration on the academic success of traditional students. For example, Tinto (1975) believed that students who associated closely with their informal peer groups, were involved in extracurricular activities, and interacted frequently with faculty and university personnel were more committed to the institution and less likely to drop out of school. They were more likely to persist, which leads to academic success. Institutional social integration, also known as institutional

commitment, is not nearly as influential in nontraditional students because they are more likely to be older, live off campus, and have much less interaction with their academic peers and faculty than traditional students. Due to the fact that they are generally older and tend to have many more family and work responsibilities, much of their time and focus is spent on these other priorities. They are much more likely to be influenced by these factors, which are external to the university. The concept of social integration is not nearly as relevant to the academic success of the nontraditional student group.

Bean and Metzner (1985) studied nontraditional students and identified that they have many different characteristics and needs than traditional students. They believed that these differing characteristics and priorities affect the academic success of this nontraditional student population. Although their focus was on undergraduate students, the characteristics and priorities of traditional versus nontraditional students apply to graduate students as well.

Bean and Metzner (1985) theorized that three categories of variables indirectly and directly affect a student's intent to persist in an educational program (Illustrated in Figure 1). Academic variables, such as the student's current academic standing, which is highly based on past academic performance, may influence the student's academic outcome which then may influence the student's intent to persist. For example, prior study habits have an impact on the student's current academic standing, and if the academic standing is favorable, the student is more likely to persist.
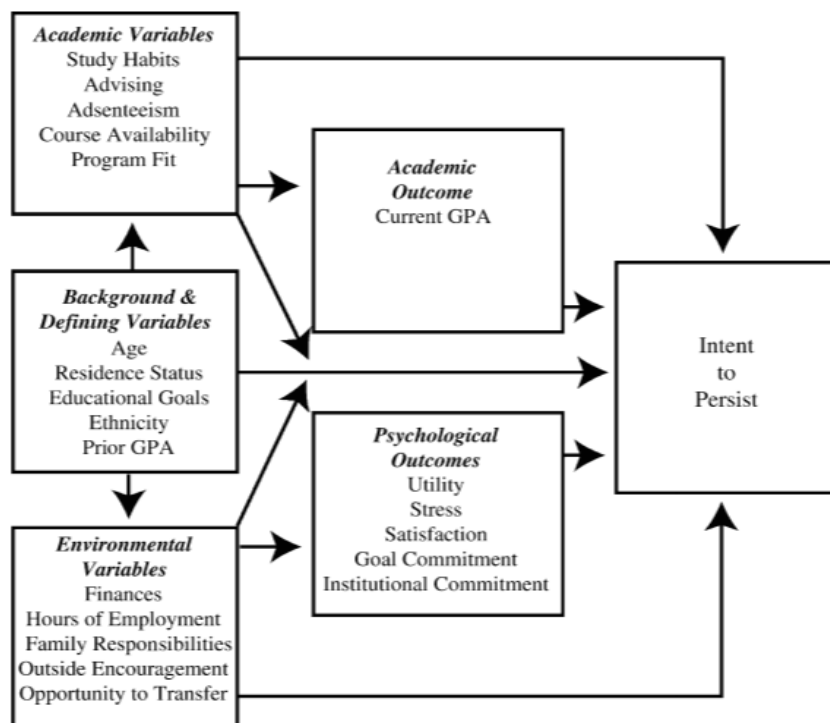
Figure 1 A Conceptual Model of Nontraditional Student Attrition (Bean & Metzner, 1985)

Background and defining variables, such as age and educational goals also have an impact on intent to persist. Like academic variables and background and defining variables, environmental variables, such as hours of employment, outside encouragement, and family responsibilities also influence intent to persist. An environmental variable, such as number of children living at home, may affect the psychological outcome of stress which may then influence intent to persist.

The main proposition of Bean and Metzner's (1985) theoretical framework is that student persistence is influenced by academic variables, background and defining variables, and environmental variables. These three categories of variables determine academic and psychological outcomes, both of which also play a role in the student's intent to persist. Bean and Metzner (1985) believe that all of these factors play a role in

the academic success of nontraditional students, much like the impact of institutional

social integration on the academic success of traditional students.

Application to Current Study

The theoretical framework for the current study includes concepts chosen from

four categories in Bean and Metzner's (1985) conceptual model: one academic factor,

two background factors, three environmental factors, and academic success, defined as

program completion (See Figure 2).

Academic Factor:
- Program site (online versus campus-based)

Background and Defining Factors:
- Years since last formal educational degree
- Program fit (Academic Pathway: BSN versus RN-to-BSN)

Environmental Factors:
- Work responsibilities
- Family responsibilities
- Outside encouragement

Academic Success
- Program completion
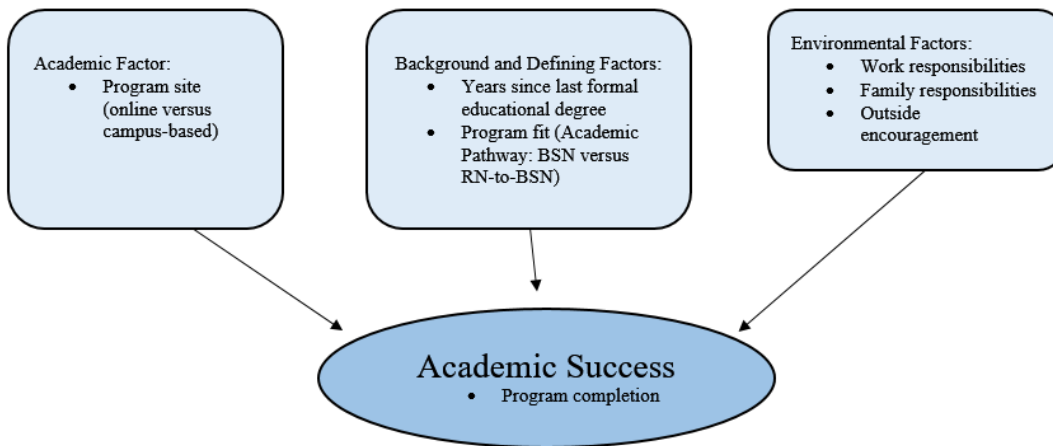
Figure 2 Adaptation of Bean and Metzner's (1985) Conceptual Model of Nontraditional

Student Attrition

The concepts examined in this study will include the academic factor of program

site, the background and defining factors of years since last formal educational degree

and program fit, the environmental factors of work responsibilities, family

responsibilities, and outside encouragement, and the academic success factor,

operationalized as program completion. These concepts were extracted from Bean and

Metzner's (1985) original model because they are believed to play a substantial role in

the academic success or failure of MSN students.

The academic factor of program site is either online or campus-based. For purposes of this study, campus-based students are defined as those attending class on campus during at least part of the program. Online students are defined as those students who are enrolled in programs that are 100% online, with all online courses, and do not attend any portion of their program on campus. Program site will be measured because nontraditional students tend to live off-campus and attend online courses. They are noted to have less institutional integration and obtain more support outside of institutional boundaries. The main premise here is that online students have less interaction with faculty and peers and are therefore less influenced by institutional integration, or institutional commitment, when it comes to academic success. As previously discussed, students enrolled in online programs are much further removed from institutional integration and are probably more influenced by external factors than students in campus-based programs.

Background and defining factors will be operationalized as years since last educational degree obtained and program fit (BSN versus RN-to-BSN). Years since last educational degree obtained is defined as the number of years since the student's previous educational degree was obtained. It can be inferred that the greater the number of years since the previous degree was obtained, the greater the student's age. It can be surmised that a greater number of years since last degree is indicative of a nontraditional student who has different support systems in place than traditional students. Traditional students tend to go from a bachelor's degree to a graduate degree without a large gap in time and are more likely to draw from institutional support systems. This is important to examine because not only is the age of the student an

indication of their outside responsibilities, the number of years since their last degree can be revealing in regard to their comfort level with academia and technology. This can definitely play a role in whether or not the student will academically succeed.

The program fit or academic pathway, RN-to-BSN or traditional BSN program, and its relationship to academic success of MSN students is a phenomenon that has not been widely studied. RN-to-BSN programs are relatively new, and the degree of impact of the student's academic pathway to graduate school on academic success is unknown. Cauble (2015) examined the type of BSN program and persistence in graduate nursing students in an online nursing administration program and an online nursing education program and did not find a significant relationship. Given the increase in the number of graduates from RN-to-BSN programs, this warrants further attention.

Environmental factors include work responsibilities, family responsibilities, and outside encouragement. Work responsibilities is defined as the number of hours working in a paid job per week during the MSN program and is one of the environmental factors theorized to have a major and direct effect on academic success. It is assumed that nontraditional students work more hours per week than traditional students and that this could cause conflict with ability to complete academic responsibilities. Family responsibilities is defined as the student's number of children under the age of 18 living at home during the MSN program. Outside encouragement is defined as the amount of support received from spouse or family members during the MSN program. Outside encouragement is viewed as more important for nontraditional students than traditional students because their support systems are largely external of the institution. As the

model depicts, these environmental factors are theorized to have an effect on academic

success. Academic success is defined as successful program completion, or

graduation.

Understanding the impact of these factors on program completion is important

and can help educators develop strategies to support students in areas that impede

students' successful program completion. Early recognition of risk is imperative so that

early implementation of supportive strategies can take place.

Purpose

The purpose of this research study was to explore the association between 1)

years since last formal educational degree, 2) program site, 3) academic pathway, 4)

work responsibilities, 5) family responsibilities, 6) outside encouragement, and 7)

program completion of MSN students.

Research Question

What is the relationship between years since last formal educational degree,

program site, academic pathway, work responsibilities, family responsibilities, and

outside encouragement and program completion of MSN students?

Assumptions of the Conceptual Model

The adaptation of Bean and Metzner's (1985) conceptual model of nontraditional

student attrition to explain the phenomenon of MSN students' academic success is

based on the following assumptions. The first assumption is that MSN students are

nontraditional students. A second assumption is that nontraditional students are older

and are more heavily influenced by environmental factors than background and defining

factors. Another important assumption is that attrition, or student dropout, is the exact

opposite of academic success, or program completion.

Conclusion

This chapter introduced the background and significance of the research

problem. The theoretical framework for the research study was explained in detail. The

purpose of the study and the research questions were presented. Finally, essential

assumptions of the conceptual model were listed.

CHAPTER 2

LITERATURE REVIEW

There is a great demand for graduate-prepared nurses in today's healthcare environment (AACN, 2017a). The increasing age of the U.S. population is one of the main reasons for this increased demand. Between 2012 and 2050, it is projected that the population aged 65 and over will almost double in size, from 43.1 million to 83.7 million (U.S. Census Bureau, 2014). This will put a tremendous strain on the U.S. healthcare system. Another reason for the increased demand for graduate-prepared nurses is the enactment of the Affordable Care Act in 2010, which resulted in 20 million more people accessing the U.S. healthcare system (RWJF, 2016). In addition, improvement in treatment of chronic comorbidities is extending longevity of patients and increasing the complexity of their care (IOM, 2010). In order to effectively manage and coordinate care for the increased number of patients presenting with complex medical conditions, nurses must receive advanced educational preparation and practice to the fullest extent of their education (IOM, 2010).

Enrollment and retention of MSN students is critical in order to meet current healthcare priorities. There are no standardized admission requirements to MSN programs, and there are several barriers to admission (AACN, 2016; Dracup, 2016). For example, some MSN programs require a certain number of years of experience, yet studies have indicated that there is an inverse relationship between age or number of years of experience and academic progression (Burns, 2011; Cipher et al., 2017). Graduate record examination (GRE) score requirements may also be an unnecessary barrier. Graduate nursing program admission requirements should be based on

scientific evidence that reveals positive correlations of the requirements with successful program completion. It is important to identify how factors unrelated to program admission requirements are correlated with academic success. For those factors that are shown to be negatively correlated, strategies to provide additional support for the students characterized by those factors should be explored and implemented as a means to facilitate academic success.

In this chapter, the current state of the nursing workforce demand will be presented. The significance of successful enrollment and retention in MSN programs will be explained. Key points include the urgency for increased numbers of nurses with an MSN degree, the importance of graduate nursing program accessibility, and the influence of admission criteria on academic success of MSN students. The specific factors that will be examined are admission grade point average (GPA), GRE scores, years of clinical nurse experience, life circumstances and personal issues, full-time versus part-time status, program site (online versus campus-based), academic pathway to graduate school (BSN program versus RN-to-BSN program), sex, age, and ethnicity. The background of the problem and the current knowledge base will lead to identification of a gap in the literature justifying the need for the proposed study.

Nursing Workforce Demand

Nurses comprise the largest segment of healthcare providers in the United States (BLS, 2015b). Nursing is predicted to be one of the top occupations for growth over the next several years. Specifically, the BLS (2015c) lists registered nurses as the 2nd largest occupation in terms of predicted growth from 2014 to 2024.

Nursing Demand

Currently, approximately 55% of the 2.8 million actively working nurses hold a baccalaureate degree or higher (Health Resources and Services Administration [HRSA], 2013). The IOM (2010) has called for an increase in the percentage of baccalaureate-prepared RNs or higher level of education to 80% by the year 2020. This hefty goal of 80% of the nursing population to be baccalaureate-prepared or higher will require an additional 700,000 nurses to earn a degree higher than the associate degree by 2020 (BLS, 2013). This estimate is based on the assumption that the BSN population will remain relatively stable at 55%. It is the increase in the BSN population that will provide the pipeline needed to meet the demand for increased numbers of graduate-prepared nurses. The continuous demand for nurses holding a baccalaureate degree or higher and the implications for the health of the U.S. population reinforce the critical importance of nursing student retention and program completion.

MSN-prepared Nursing Demand

The IOM (2010) has called for an increase in the number of graduate-prepared nurses. Graduate nursing education includes MSN programs for nurses seeking to increase their knowledge and function in roles requiring higher education and skill levels. The supply of APNs is a priority, because they are listed as the 6th fastest growing occupation, with a predicted increase of 31% in number of new jobs between 2016 and 2026 (BLS, 2017a, 2017b). Nurse practitioners are one category of MSN-prepared nurses that is specifically allowed more autonomy in scope of clinical practice (AANP, 2015). This allows them to diagnose, treat, and manage complex health conditions. Advanced practice nurses possess those skills that are needed to

supplement the efforts of physicians to meet the increasing healthcare needs of the aging population.

Nurses with advanced degrees are needed to meet the increasing needs in healthcare. The rising age of the U.S. population and the pervasiveness of chronic conditions, along with the enactment of the Affordable Care Act, have increased the number of healthcare recipients and the complexity of care (IOM, 2010). In the past, patients accessed the healthcare system primarily with acute care needs. More recently, chronic conditions have become the norm, and acute care needs have become the exception. The increase in chronic illness requires significantly more healthcare resources. Specifically, patient education, long-term treatment, and a myriad of other factors result in a strain on healthcare delivery (IOM, 2010). Primary prevention is crucial, yet that requires additional time, financial resources, and most importantly, an increase in the number of healthcare providers with advanced education (TDSHS, 2015).

The demand for graduate-prepared nurses is expected to be twice the size of the supply in the near future (Dracup, 2016). Maximized enrollment and retention efforts leading to increased program completion rates will be imperative to increase the supply of nurses with advanced education to sufficiently meet the increasingly complex healthcare demands of the aging population and the healthcare system in general (Shelton, 2012).

Nursing Student Retention and Completion

Successful academic program completion is often referred to as retention in the literature and is represented by student characteristics that enable them to complete the

program of study and graduate (Jeffreys, 2015). Conversely, there is the issue of attrition, which is the opposite of retention. Attrition is the number of students who do not complete their program of study (Arnold, 1999). Attrition may be voluntary, where students willfully drop courses due to a variety of reasons, or involuntary, due to failing courses or being dismissed for other academic reasons.

High attrition has detrimental effects on the government, students, faculty, and university resources, yet attrition rates are still exceedingly high and require attention in order to minimize their costly consequences (Robertson, Canary, Orr, Herberg, & Rutledge, 2010; Wilson, Gibbons, & Wofford, 2015). Researchers have reported wide variations in attrition rates of both undergraduate and graduate nursing programs, anywhere between 10% to as high as 44% (Cipher et al., 2017; El-Banna et al., 2015; Rosenberg, Perraud, & Willis, 2007; Seldomridge & DiBartolo, 2005). University resources, especially nursing faculty, are already limited, making it even more important that students admitted to MSN programs have a high likelihood of academic success (AACN, 2014). Each student who begins a graduate nursing program but withdraws mid-program is costly to both the university and the government, not to mention the time spent by nursing faculty which would have been better spent on a student with a higher likelihood of success or program completion. These issues provide support for determining accurate predictors of student success in MSN programs. Attempts to minimize attrition by adjustment of admission criteria to positively influence retention is one way MSN programs can maximize academic success.

To meet the demands of the current healthcare delivery system, graduate nursing program administrators and faculty need to evaluate possible determinants of

persistence and completion. There are multiple factors discussed in the literature related to graduate nursing student retention and program completion, including admission GPA, GRE scores, years of work experience prior to graduate school, personal issues, full-time versus part-time status, program site, sex, ethnicity, and age. Each of these factors will be discussed using existing research literature.

Academic Factors as Predictors of Success

Nursing program admission standards are known for being quite stringent, but many students who meet or exceed the minimum requirements still leave the program. Factors that contribute to successful program completion need to be clearly identified by evidence-based research.

Admission GPA

Admission GPA has been studied extensively among various disciplines and is commonly used as a predictor of academic success in nursing programs (Burns, 2011; Timer & Clauson, 2011). There is an abundance of research regarding the importance of GPA as a determinant of successful program completion. Many researchers found admission GPA to be the most consistent significant predictor of academic success in MSN programs (Burns, 2011; Cauble, 2015; Knestrick et al., 2016; Ortega, Burns, Hussey, Schmidt, & Austin, 2013; Wilson et al., 2015). Several of these studies did not use program completion as the outcome variable. For example, in Burns' (2011) study, the student's GPA was measured at different times throughout the academic program. This is an indication of progression within the program but not program completion. A limitation of Burns' (2011) study was that GPAs were calculated at varying points in the program anywhere between the initial grading periods and those nearing the end of the

program. Burns (2011) suggested that the correlation between admission GPA and

program completion should be examined in future studies.

Knestrick et al. (2016) found that each additional 0.1 point on admission GPA

reduced the odds of attrition within the first two terms of the program by 2.5%. Like

Burns (2011), Knestrick et al.'s (2016) research did not measure program completion.

Knestrick et al. (2016) also found that specialty program was a statistically significant

predictor of attrition, with the family nurse practitioner (FNP) program having the most

attrition, even though the core courses taken in the first two terms were the same for

each specialty included in this study (Knestrick et al., 2016).

Admission requirements of some highly competitive, well-respected programs

are more comprehensive and place less emphasis on GPA (Vaida, 2016). Over 90% of

medical and dental schools utilized a more holistic admissions process in 2014, giving

more priority to certain characteristics of applicants, such as leadership skills,

community service involvement, and moral attributes. The U.S. Service Academies

admissions criteria, although very stringent, are similar in nature (Vaida, 2016). This

whole-package approach allows strengths, such as a strong moral compass or

persistence when faced with adversity, to be revealed. These strengths are attributes

that may indicate perseverance and other traits that are characteristic of successful

academic performance and professional achievement. Broader application

requirements have resulted in more diverse student populations, which is a high priority

for higher education institutions (Vaida, 2016).

GRE Score

MSN programs often have GRE score requirements as an application standard. The literature varies widely on whether this is a valid predictor of academic success of MSN students. Burns (2011) calculated a Pearson product moment correlation which revealed a significant relationship between GRE scores and current GPAs of graduate students in a nurse anesthetist program; however, further regression analyses revealed that the strength of correlation between GRE score and academic success was weak and therefore had minimal predictive ability of academic success. Burns (2011) suggested that the weak relationship of GRE score to academic progression renders GRE scores of minimal value in the application process because they do not strongly predict program completion.

In contrast to Burns (2011), Wilson et al. (2015) found that students in a nurse anesthesia program with higher GRE scores had increased odds of successful program completion, with the magnitude of effect being second only to GPA. For this reason, they increased the minimum required score to further increase the odds of enrolled students successfully completing the program.

Non-Academic Predictors of Success

Years of clinical nurse experience

Historically, nurses were encouraged to spend many years gaining clinical practice experience before considering educational advancement. Many, if not most, graduate nursing program admission requirements include a minimum number of years of clinical nursing experience, but this requirement poses a barrier to new baccalaureate-prepared nurses who are motivated to begin an MSN program. Few

researchers have examined the relationship of previous nursing experience to successful graduate nursing program completion.

Yordy (2006) performed an extensive review of publications, surveys, task force studies, and interviews focused on the shortage of nursing faculty. The clinical nursing experience requirement for entry into nursing education programs was noted to be one of the major contributors to the nursing faculty shortage (Yordy, 2006). Despite the suggestion of finding innovative ways to gain experience while advancing education, instead of requiring experience before furthering education, this issue still exists and is a major contributing factor in the delay of nurses entering MSN programs. In addition to contributing to the nursing faculty shortage, it is also a barrier to nurses eager to become advanced practice nurses because many MSN programs continue to list clinical nursing experience as a requirement for admission. Nursing, unlike other professions, has historically always encouraged gaining clinical experience before furthering education. There are strong opinions throughout nursing academia, administration, and clinical arenas that support this notion and the belief that nurses cannot be high-quality practitioners without years of clinical experience before advancing their education. Evidence supporting the requirement of clinical experience prior to advanced education, or that clinical experience is associated with academic success or more competent practitioners, is needed. In fact, some researchers have reported a negative correlation between years of experience, age, or time since previous formal educational experience and academic success of MSN students (Burns, 2011; El-Banna et al., 2015; Knestrick et al., 2016; Ortega et al., 2013; Wilson et al., 2015).

Burns (2011) and Locke (2014) examined the relationship between years of nursing experience and GPA of students in MSN programs. Both studies revealed a statistically significant inverse relationship between years of nursing experience and MSN students' GPA. Locke (2014) studied students in an MSN program but did not specify any specialty programs. Burns (2011) specifically looked at the relationship between years of critical care nursing experience and current GPA of MSN students in a nurse anesthetist program. Years of critical care nursing experience was found to be significantly negatively correlated with current GPA of student registered nurse anesthetists. This is most likely due to the increased age of students who have more years of nursing experience. It is feasible that it is also a result of the increased length of time since the last formal educational experience. The inverse relationship between years of experience and academic progression warrants further study. Non-cognitive variables, such as time since the last academic experience and computer adeptness, may be stronger determinants of academic progression than actual years of experience. If this is the case, consideration should be given to design of programs to specifically support the role transition of nurses reentering academia after an extended period away from school (Burns, 2011). Extensive nursing experience is valuable for students in MSN programs, and it would be wasteful to not accommodate the unique needs of this student population. Conversely, Wilson et al. (2015) did not find any significant difference between successful nurse anesthesia program completers and program non-completers based on the number of years of nursing experience in an acute care setting.

Life Circumstances/Personal Issues

A variety of personal factors can be strong influences on successful program completion. Factors such as financial difficulties, personal or family illness, family support, number of children in household, job responsibilities, and loss of motivation are more difficult to track but are well-documented in the literature as reasons for student attrition (Megginson, 2008; Wilson et al., 2015). Wilson et al. (2015) studied reasons for student attrition in a graduate nursing program. They unexpectedly found that personal and family issues, or life circumstances, significantly accounted for student attrition. This came as a surprise because faculty have long believed that academic factors were more indicative of student attrition (Wilson et al., 2015). These personal issues need to be measured and correlated with student success. For example, number of children living in the home, number of hours of paid work per week, and number of illness episodes are measurable and may predict student attrition.

Full Time versus Part Time Status

Attrition rates for part-time students are considerably higher than for full-time students, 47.2% versus 28.9% respectively (Texas Higher Education Coordinating Board [THECB], 2015). Graduation rates for the 2008 fall cohort of first-time enrolled undergraduate students in public Texas institutions of higher education was 60.4% for full-time students but only 37.2% for part-time students (THECB, 2015). Similar to the Texas data, Knestrick et al. (2016) studied 847 students in an online graduate nursing program and found that full-time students left the program less often than part-time students. Specifically, each additional credit hour reduced attrition by two-thirds (66%).

These data support the idea that full time versus part time status does play a role in program completion.

Program Site: Campus-based versus Online

Limited evidence exists to support the belief that online versus campus-based nursing program outcomes are equivalent (McEwen, Pullis, White, & Krawtz, 2013). In addition, retention rates are not clearly delineated for online versus campus-based education, making it difficult to understand where efforts should be maximized (Knestrick et al., 2016).

Research comparing retention rates of online programs versus campus-based programs is scant and contradictory. Mancini, Ashwill, and Cipher (2015) compared the graduation rates of students in an online RN-to-BSN program to students in a campus-based RN-to-BSN program. They found the graduation rates to be similar. The online program graduation rate was 93%, and the campus-based program graduation rate was 94%. Conversely, Knestrick et al. (2016) found attrition within the first two terms of an online graduate nursing program to be 20%. These study results cannot legitimately be compared to one another because the end measurement points are not similar, graduation versus first two terms of the program. More research is needed in which the attrition rates of online programs to campus-based programs are compared using similar end points in order to generalize the results.

Academic Pathway

The recent increase in the number of RN-to-BSN graduates will continue for many years, far outnumbering the number of traditional, pre-licensure BSN graduates (AACN, 2015). There have been a limited number of studies in which the relationship

between academic pathway to BSN and successful graduate nursing program completion was examined. Cauble (2015) found that the academic pathway to BSN, traditional BSN versus RN-to-BSN, did not predict successful completion of students in online graduate nursing education and administration programs. Burns (2011) and Knestrick et al. (2016) suggested that the influence of academic pathway to BSN be examined in future studies to determine its relationship to academic progression.

Sex

Wilson et al. (2015) examined the relationship between sex and successful completion by graduate students in a nurse anesthetist program. The proportion of females successfully completing the program was statistically significant, with 3.32 times greater odds of success than males. Cauble (2015) studied persistence of students in online graduate nursing education and administration programs. There was no significant relationship between student's sex and successful completion of online MSN programs. Because the vast majority of nursing students are still female, this comparison may not be valuable or necessary at this time.

Age

Wilson et al. (2015) found that students who successfully completed the graduate nurse anesthetist program were significantly younger than those who withdrew or were dismissed. In fact, each additional year of age resulted in a 13% decrease in the odds of successfully completing the program of study (Wilson et al., 2015). Consistent with Wilson et al. (2015), Knestrick et al. (2016) also found that age was a statistically significant predictor of attrition. Students over age 40 were almost twice as likely to leave the program within the first two terms. Contrary to these findings, Cauble (2015)

did not find age to be a statistically significant predictor of successful online graduate nursing program completion.

Ethnicity

McEwen et al. (2013) reported greater ethnic diversity among the nursing student population in recent years. Cauble (2015) studied online MSN students and did not find any significant relationship between race/ethnicity and graduation status. Wilson et al. (2015), studying the attrition of students in a nurse anesthetist program, did not find any significant relationship between race and attrition or successful completion of the program.

There are limited data on nursing student characteristics as predictors of graduate nursing program academic success (Burns, 2011; El-Banna et al., 2015; Locke, 2014). Evidence that does exist should be viewed cautiously because much of the research in this area is dated and has many limiting factors, such as low sample sizes. The majority of the research on student characteristics as predictors of academic success in MSN programs has been done on students in nurse anesthetist programs.

<center>**Measures of Success or Program Outcomes**</center>

Graduation Rates

Graduation rates are an important measure of program effectiveness and are closely monitored by state and national departments of education (U.S. Department of Education [USDE], 2014). Interestingly, there are no national benchmarks set as acceptable graduation rates, but institutions of higher education are particularly focused on graduation rates because they are used to determine the amount of institutional funding received (USDE, 2014). The Commission on Collegiate Nursing Education

(CCNE, 2013) and the Accreditation Commission for Education in Nursing (ACEN, 2013a and 2013b), the professional accrediting organizations for nursing programs, view graduation rates as critical indicators of program success. Both organizations require reporting of graduation rates because they are one of the important determinants influencing accreditation decisions. Although the CCNE (2013) requires a 70% program completion rate, accreditation is not withheld if this minimum is not met. The ACEN (2013a; 2013b) does not have a minimum standard requirement documented. The ACEN (2013a; 2013b) allows nursing program faculty to determine their own levels of acceptability for both undergraduate and graduate programs. The ACEN (2013a; 2013b) manuals direct faculty to take student and program characteristics into consideration when determining standards for their programs.

The national standard for calculating graduation rate is the total number of students completing their program within 150% of the normal time to completion (USDE, 2014). The ACEN (2013a; 2013b) allows for consideration of nursing student population nuances and directs the faculty to take these factors into consideration when determining acceptable program completion rates, or graduation rates, for their nursing programs. Consideration of the graduate nursing student population's varying and unique characteristics is critical when determining acceptable graduation rates because they are not representative of the traditional college student population. Inconsistent graduation rate calculations across nursing programs make it impossible to draw accurate and reliable inferences. Further complicating matters, nursing program data rarely delineate between traditional BSN, RN-to-BSN, and accelerated BSN programs, and method of delivery (online or campus-based) is rarely specified. These

inconsistencies in data reporting make it very difficult to establish graduation rates of these individually defined programs, therefore making it even more difficult to evaluate factors influencing academic program success across programs.

Certification Rates

Graduate students becoming certified in their area of specialization, such as a certified nurse practitioner or a certified nurse educator, could potentially be used as an indicator of success of graduate education. Currently, certification results are not tied to specific students, so no correlations can be done to determine what factors predict certification. Graduates would have to be tracked for months after they graduated to see if they took the certification examination and passed it.

Gaps in Knowledge and Next Steps

Admission GPA and full time status are two factors that have been studied enough to show consistent positive correlations with graduate nursing program success. GRE scores, years of clinical experience, age, sex, and ethnicity have not consistently been correlated with academic success, and there is no theoretical explanation for why they would predict success. Further research is needed to examine additional factors that may be associated with academic success in MSN programs.

From this review of the literature, the factors that still need to be investigated include years since last formal educational degree, program site (online versus campus-based), academic pathway to graduate school (BSN versus RN-BSN), obligations outside of school (care of family and paid work), and spouse/family member's support. The longer the time period between the last formal educational experience, such as BSN program, to graduate school may be negatively associated with success because

students may have forgotten their study skills or may be older and take longer to learn

new information. It is unknown whether the program site, online versus campus-based,

has an impact on academic success. Likewise, we do not know if it makes a difference

for a student to have graduated from a traditional BSN program versus an RN-to-BSN

program. The more family members that graduate students must care for at home,

such as children under the age of 18 years, and the more hours they work in paid jobs,

the less likely they are to be successful in graduate school. The theoretical explanation

for this is simply the amount of time available in a week to accomplish all tasks or goals,

both personal and educational. The more supportive that a spouse and/or other family

members are of the graduate student, the more likely the student will be successful.

For example, family members may care for other children in the home, help with

household chores, or provide computers and other educational supplies when needed.

This purpose of this research study was to further explore the association

between 1) years since last formal educational degree, 2) program site (online versus

campus-based), 3) academic pathway (BSN versus RN-to-BSN), 4) work and family

responsibilities (number of hours working in a paid job and number of children under the

age of 18 living at home), and 5) spouse/family members' level of support for students'

educational endeavors with academic success of MSN students. By studying these

variables, nurse educators may be better informed about how to provide a successful

educational experience for MSN students.

CHAPTER 3

METHODS AND PROCEDURES

A descriptive, correlational research design using secondary analysis was used to examine six variables that may predict graduation of MSN students. The six variables examined for relationships with graduation included years since last formal educational degree (nursing or other), graduate nursing program site (online versus campus-based), academic pathway to graduate school (BSN versus RN-to-BSN), outside commitments (number of hours per week working in a paid job and number of children under 18 years of age living at home), and spouse/family members' level of support for students' educational endeavors. Conceptual and operational definitions of the study variables are included in this chapter. Statistical tests for data analysis are identified. Ethical considerations and delimitations of the study are also presented.

Research Design

A descriptive, correlational research design was used to examine the relationships between six specific variables and academic success of MSN students. The study was done using secondary analysis of existing data for students enrolled in one of the nine accelerated online or campus-based MSN programs between the spring semester of 2014 through the fall semester of 2017. A descriptive, correlational research design was selected because there has been limited research conducted on this topic and there is no intervention being applied. The purposes of descriptive, correlational research designs are to refine the descriptions of concepts and variables and to analyze data to identify possible associations among them (Grove, Gray, & Burns, 2015; Waltz, Strickland, & Lenz, 2010).

Information gained from this study can lead to further studies that may continue to refine and predict how specific variables influence academic success for MSN students. Future studies may include testing interventions to determine their effect on academic success. For example, if being out of an academic program for many years is found to be correlated with less likelihood of graduation from an MSN program, then resources such as support groups or peer mentoring could be implemented to help those students with the transition back into the academic setting. The group or mentor could provide informal psychological support and study tips, organizational skills, or basic computer skills that may facilitate academic success for the student.

Sample

There were nine MSN degrees offered as accelerated online or campus-based programs at this public university. The nine MSN programs were nursing administration, nursing education, family nurse practitioner, pediatric primary care nurse practitioner, pediatric acute care nurse practitioner, adult gerontology primary care nurse practitioner, adult gerontology acute care nurse practitioner, psychiatric nurse practitioner, and neonatal nurse practitioner. The sample included MSN students admitted and enrolled in one of the nine MSN accelerated online or campus-based programs between the spring semester of 2014 and the fall semester of 2017 (a 4-year period). The reason for this time limitation was because the students had time to either graduate, which was the desired outcome, or be identified as inactive. Subjects were excluded if they withdrew from the MSN program prior to their start date or if they were currently progressing (classified as "active" students). A minimum sample size of 285 subjects was desired to support validity of findings. The sample size was calculated

using G*Power Version 3.1.9.2 with an effect size of .20, statistical power of .80, and

level of significance of .05 (Grove & Cipher, 2017). A small effect size was used for the

power analysis because weaker relationships between the research variables could be

detected. A larger effect size could be used if there were strong relationships between

the research variables documented in previous studies.

Setting

The public university for this study had the highest total nursing student

enrollment (over 19,000 students) of all public nursing programs in the state of Texas,

and had the 3rd largest nursing student enrollment in the nation at the time of the study

(The University of Texas at Arlington [UTA], 2017). Total university enrollment was over

58,000 students in 2017 (UTA, 2018). In the spring of 2017, the total number of nursing

students was 17,516, and the number of MSN students was 3,850. In 2017, this

university graduated 900 MSN students (C. Calhoun-Butts, personal communication,

September 17, 2018).

Measurement Methods

Demographic Data

The demographic variables measured were age, sex, ethnicity, and MSN

program (Nursing Administration, Nursing Education, Nurse Practitioner). These were

obtained from MyMav, an existing university database which houses demographic and

financial records.

Survey Data

The study variables and their conceptual and operational definitions were created

by the researcher based on Bean and Metzner's (1985) conceptual model and on a

review of the existing literature regarding academic success of MSN students (See

Table 1). Program site, number of years since previous degree, and program

completion status were obtained from MyMav. Academic pathway, number of hours

worked per week, number of children under the age of 18 living at home, and level of

support were self-reported on items 2, 3, 4, and 5 of a survey (see Appendix A).

Table 1 Study Variables

Variable	Conceptual definition	Operational definition	Level of Measurement
Program completion	Academic Success	Graduated	Nominal
Graduate nursing program site	Background and Defining Factor	Program track specified as ending in-seat or ending online	Nominal
Academic pathway to graduate program	Background and Defining Factor	BSN program or RN-to-BSN program	Nominal
Spouse/family members' level of support for students' educational endeavors	Environmental Factor	1=not at all supportive 2=somewhat supportive 3=moderately supportive 4=very supportive 5=completely supportive	Ordinal
Number of hours per week working in a paid job	Environmental Factor	Number of hours working per week in a paid job	Ratio
Number of children under 18 years of age living at home	Environmental Factor	Number of children under 18 years of age living at home	Ratio

Calculated Variable

The time since last formal educational degree was calculated by subtracting the year of the last formal educational degree conferral from the year in which the student was initially enrolled into the MSN program (See Table 2).

Table 2 Calculated Variable

Variable	Conceptual definition	Operational definition	Level of Measurement
Time since last formal educational degree	Background and Defining Factor	Calculated answer of year of enrollment minus the year of the last formal educational degree conferral	Ratio

Procedures

Institutional Review Board approval was not required for this research because the data were obtained from an existing dataset that was de-identified before it was received by the researcher.

Data Collection

A principal investigator, studying factors associated with enrollment and academic success of nursing students at the same university, created and sent a Qualtrics survey to all students enrolled in one of the nine MSN programs between January 1, 2014 and December 31, 2017. The principal investigator obtained IRB approval for the original study. The possible benefits and risks to participating in the study were explained in the email containing the survey. The principal investigator's contact information was provided, as well as how confidentiality of data would be maintained. Informed consent was determined by the student selecting "Accept", as

opposed to "Decline", and then proceeding to the survey. The study posed minimal risk to the subjects. The possibility of loss of confidentiality was addressed, but no names, addresses, or other identifying information were recorded in the data collection (other than student ID and email address). Items on the survey included: Academic pathway, number of hours per week working in a paid job, number of children under 18 living at home, and spouse/family members' level of support for the students' educational endeavors (See Appendix).

The Qualtrics survey, an informed consent document, and a request to participate in the study were sent to a total of 2,481 students meeting inclusion criteria. Of those, approximately 10% of the emails were returned to the sender due to a non-functioning email address. The survey remained open for three weeks. The final sample included data from a total of 125 fully-consented survey respondents. The final response rate was 5.6%.

The principal investigator received the survey responses and merged them with existing demographic data in MyMav. MyMav data were accessed only for MSN students who had completed the Qualtrics survey. Demographic variables obtained from MyMav included sex, age, ethnicity, program site, year of previous degree completion, and matriculation status. The principal investigator used personal email addresses to merge survey data with MyMav data. After the data were merged, the email address field was deleted. After the data were de-identified, the dataset was sent to the student researcher. The student did not need additional IRB approval because only de-identified data was received and there was never any access to the subjects' personal information.

Data Analysis

Descriptive Statistics

Data were analyzed using the statistical software program, SPSS 25.0.

Descriptive statistics were utilized to provide a clear and thorough overview of the

sample. The sample description is important when considering generalizability of the

study findings to other populations (Grove et al., 2015). The descriptive statistics

frequency (n) and percentage (%) were calculated to describe the sample variables

measured at the nominal level. The variables measured at the nominal level were MSN

program, sex, ethnicity, academic pathway to graduate program, program site, and

program completion.

The descriptive statistics; frequency (n), percentage (%), range, mean (M), and

standard deviation (SD); were calculated to describe the sample variables measured at

the interval/ratio level. The variables measured at the interval/ratio level were age, years

since last formal educational degree, number of hours per week working in a paid job,

number of children under 18 years of age living at home during while student was

enrolled in an MSN program, and spouse/family members' level of support for

educational endeavors (See Table 3).

Table 3 Data Analysis of Study Variables

Variable	Level of Measurement	Statistical Test
Years since last formal educational degree	Ratio	Shapiro-Wilk's W Variance inflation factor Spearman correlation coefficient Multiple logistic regression
Graduate nursing program site (online versus campus-based)	Nominal	Shapiro-Wilk's W Variance inflation factor Spearman correlation coefficient Multiple logistic regression

Academic pathway (BSN versus RN-to-BSN)	Nominal	Shapiro-Wilk's W Variance inflation factor Spearman correlation coefficient Multiple logistic regression
Number of hours working in a paid job	Ratio	Shapiro-Wilk's W Variance inflation factor Spearman correlation coefficient Multiple logistic regression
Number of children under 18 years of age living at home	Ratio	Shapiro-Wilk's W Variance inflation factor Spearman correlation coefficient Multiple logistic regression
Spouse/family members level of support for student's educational endeavors	Ordinal	Shapiro-Wilk's W Variance inflation factor Spearman correlation coefficient Multiple logistic regression
Program completion/Graduation	Nominal	Shapiro-Wilk's W Multiple logistic regression

Predictive Model

The Shapiro-Wilk test was used to determine the normality of data distribution. Multiple logistic regression analyses were performed to determine predictive associations between each of the six predictors and academic success. A p value < .05 indicated significant results. Odds ratios and confidence intervals were also computed. Odds ratios indicate the likelihood of the predictor to be in one group or the other for a dichotomous outcome variable. For continuous variables, the odds ratio estimates the difference in the odds of the outcome variable for every one-unit change in the predictor (Grove et al., 2015). Confidence intervals reveal the probability (usually 95%) of the population value being within that interval, an upper and lower limit. Variance inflation factors (VIF) and Spearman correlation coefficients were computed to test for

multicollinearity between the predictors. Finally, correlation statistics were calculated to determine the extent and direction of association between the predictors.

Ethical Considerations

For this secondary analysis, confidentiality was not an issue because the data were de-identified before the student researcher received the dataset. The principal investigator stores the data in a locked university office, and all data will be destroyed three years after completion of the study. The benefits of the study include increased knowledge of factors that predict academic success in MSN students. This information will be valuable to nurse educators because it will inform them of the possible need to create, review, and/or revise student support resources to better meet the needs of the MSN student population, therefore facilitating academic success.

Delimitations

Limitations of this study include the single-site sample and the retrospective design. Secondary analysis of data is limiting in that it allows for minimal control over the data collected, although the variables included in the dataset for this study included the variables of interest (Hulley, Cummings, Browner, Grady, & Newman, 2013). Another limitation of this study was the application of a strictly quantitative research approach. Qualitative methods were not utilized to explore additional factors contributing to academic success.

Summary

Attrition of nursing students creates a challenge in meeting workforce demands and healthcare needs of the population. Researchers have reported numerous factors contributing to nursing program attrition, including erroneous admission criteria and

method of delivery of course content, family and work responsibilities, and financial

issues (Megginson, 2008; Rosenberg et al., 2007). It is not clear if MSN program

admission criteria, program delivery methods, and student support resources have been

updated to reflect the needs of today's students. The increased demand for graduate-

prepared nurses makes it imperative that MSN programs maximize enrollment and

academic success. This study assisted in identifying factors associated with academic

success and those that impede academic success. Knowledge of the factors

associated with academic success or failure will allow more informed decisions when

developing and implementing student support strategies for MSN students.

CHAPTER 4

FINDINGS

The results of this descriptive correlational study will be described in this chapter. Descriptive findings for the sample and variables will be presented. Multicollinearity diagnostics and correlations of the predictors will be included. Multiple logistic regression results will be reported for each predictor of program completion, controlling for demographic variables of age, ethnicity, and sex.

Results

Sample Description

The sample included 125 former MSN students, previously enrolled in one of the nine accelerated online or campus-based MSN programs at a large public university in Texas from the spring semester of 2014 to the fall semester of 2017. The former students were enrolled in either a nursing administration program, a nursing education program, or one of seven nurse practitioner programs. The demographic characteristics of the sample are displayed in Tables 4 and 5. The program the students were enrolled in during their last term of enrollment was the program they were identified with for data analysis purposes. The majority of the sample had been enrolled in a nurse practitioner program (57.6%, n = 72). Nursing administration students comprised 25.6% of the sample (n = 32), and 16.8% of the sample were enrolled in the nursing education program (n = 21).

The former MSN students in the sample were primarily White (60.8%, n = 76) females (92%, n = 116) and ranged in age from 23 to 63 years (M = 38.59, SD = 9.86). There were too many missing values for marital status to be included in the data

analysis. For program site, online versus campus-based was determined by the

student's site during the last term of enrollment. Three switched from campus to online,

and seven switched from online to campus programs. The number of years since the

students' previous academic degree ranged from 1 to 35 years (M = 9.11, SD = 6.48).

Table 4 Demographic characteristics of MSN students

Variable	n	%	
Program			
Administration	32	25.6%	
Education	21	16.8%	
Nurse Practitioner	72	57.6%	
Gender			
Female	116	92.8%	
Male	9	7.2%	
Ethnicity			
White	76	60.8%	
Black/African American	23	18.4%	
Hispanic/Latino	19	15.2%	
Multiple ethnicities	3	2.4%	
Asian	2	1.6%	
Not specified	2	1.6%	
Marital status			
Married	43	34.4%	
Single	17	13.6%	
Divorced	11	8.8%	
Separated	2	1.6%	
Unknown	52	41.6%	
Academic pathway			
RN-to-BSN program	63	50.4%	
BSN program	62	49.6%	
Program site			
Online	92	73.6%	
Campus-based	33	26.4%	
Program completion			
Graduated	75	60%	
Not graduated	50	40%	

Table 5 Demographic characteristics of MSN students

Variable	Range	M	SD	n	%
Spouse/family member level of support	1-5	4.17	1.05		
5 = Completely supportive				60	48%
4 = Very supportive				41	32.8%
3 = Moderately supportive				13	10.4%
2 = Somewhat supportive				7	5.6%
1 = Not at all supportive				4	3.2%
Age	23-63	38.59	9.86		
23-33				42	33.6%
34-43				45	36%
44-53				28	22.4%
54-63				10	8%
Years since previous degree	1-35	9.11	6.47		
1-10				91	72.8%
11-20				26	20.8%
21-30				6	4.8%
31-40				2	1.6%
Hours worked per week	0-61	34.62	12.12		
0-19				13	10.4%
20-39				46	36.8%
40+				66	52.8%
Number of children under 18 living at home	0-6	1.41	1.25		
0				38	30.4%
1				30	24%
2				35	28%
3				14	11.2%
4				7	5.6%
5				0	0%
6				1	0.8%

In this sample of former students who responded to the survey, 60% had

graduated, but this does not reflect the overall graduation rate of this College of

Nursing. Some of the 40% who had not yet graduated may have stepped away from

the program with the intent to return at a later date. At the time of the survey, they had

stopped enrollment in course work. Particularly in online programs, such as Family

Nurse Practitioner, students take breaks from course work and return later.

Assumptions Testing

The Shapiro-Wilk tests of normality were performed on the continuous predictors

(hours worked per week, number of children living at home, years since prior degree,

and level of support). The distributions did not meet the assumptions of normality.

Logistic regression is considered a generalized linear model. Normality is not an

assumption of logistic regression, but linearity is an assumption; therefore, log

transformations were performed on the predictors to normalize their distributions, which

helped clarify the association between the predictors and the outcome (Kim & Mallory,

2017).

After transformation of the continuous variables, multiple logistic regression was

performed using the original predictors first and then repeated with the transformed

predictors. The Hosmer-Lemeshow goodness of fit test was computed to determine

which predictor, the original or the transformed, best fit the model. Based on the

Hosmer-Lemeshow goodness of fit test results, the transformed years since previous

degree variable and the transformed level of support variable were a better fit than the

original variables. All of the other variables were determined to be a better fit in their

original state.

Variance inflation factors (VIF) and Spearman correlation coefficients were

computed to test for multicollinearity. There were no issues of multicollinearity, meaning

that the predictors were not too highly correlated with one another, which met the

assumption for linear regression (Grove & Cipher, 2017).

Correlation Statistics

Correlation statistics were computed on the six primary predictors to determine

the direction and extent of the association between the variables (See Table 6). The

Spearman correlation between a continuous and a binary variable is called a "rank-

biserial" correlation (Glass, 1966). Phi coefficients were computed between pairs of

binary variables.

There was a statistically significant negative correlation between level of support

and hours worked per week for MSN students, r_s (123) = -.273, p = .002. More support

received by MSN students was associated with fewer hours worked per week. There

was a statistically significant negative correlation between years since previous degree

and academic pathway of RN-to-BSN program of MSN students, r_s (123) = -.558, $p <$

.001. More years since the previous degree was obtained was associated with less

likelihood the MSN students had achieved their BSN through an RN-to-BSN program.

There was a statistically significant negative correlation between hours worked per

week and campus-based program site of MSN students, r_s (123) = -.417, $p < $.001.

More hours worked per week was associated with less likelihood the student attended a

campus-based program. There was no significant correlation between academic

pathway (RN-to-BSN versus BSN program) and type of program (campus-based versus

online program, r_s (123) = -.168, p = .061). Though not a statistically significant

correlation at alpha = .05, students who had obtained their BSN through an RN-to-BSN

program were less likely to attend a campus-based MSN program. Replication of this

study using a larger sample size would be more likely to yield a significant finding.

Table 6 Descriptive statistics of primary variables and associations among them (N = 125)

	Mean (SD)	Frequency (%)	1	2	3	4	5
1.Support from spouse/family	1.39 (0.65)		1.00				
2.Years since previous degree	9.11 (6.48)		0.10	1.00			
3.Number of children living at home	1.41 (1.26)		0.07	-0.04	1.00		
4. Hours worked per week	34.62 (12.12)		-0.27**	0.02	-0.06	1.00	
5. Program site (Campus-based vs. online)		33 (26.4)	0.00	0.01	0.08	-0.42**	1.00
6. Academic pathway (RN-to-BSN vs. BSN)		63 (50.4)	0.01	-0.56**	0.07	0.04	-0.17

Values are Spearman correlation coefficients except for the correlations between two binary variables (phi coefficients).

** $p < 0.01$

Multiple Logistic Regression

The predictive model of program completion is displayed in Table 7.

Table 7 Predictive model of program completion

Predictor	Adjusted OR	*p*	95% CI
Years since last degree	1.99	.027	[1.08, 3.66]
Level of support	1.63	.096	[0.92, 2.91]
Program site (Campus-based)	1.12	.786	[0.48, 2.62]
Academic pathway (RN-to-BSN)	0.82	.600	[0.39, 1.71]
Number of hours worked per week	0.98	.287	[0.95, 1.02]
Number of children living at home	1.10	.540	[0.81, 1.50]

Note. OR = odds ratio; CI = confidence interval

Research questions:

1. What is the association between years since last formal educational degree and program completion of MSN students?

Multiple logistic regression analyses were performed with graduation as the outcome variable and years since last formal educational degree as the predictor, with age, sex, and ethnicity as covariates. More time elapsed since students' last degree was significantly associated with a higher likelihood of graduation, even after adjusting for demographics (adjusted OR = 1.99, *p* = .027).

2. What is the association between program site (online versus campus-based) and program completion of MSN students?

Multiple logistic regression analyses were performed with graduation as the outcome variable and program site (online versus campus-based) as the predictor, with

age, sex, and ethnicity as covariates. There was no significant association between program site and graduation of MSN students (adjusted OR = 1.12, *p* = .786).

3. What is the association between academic pathway (BSN program versus RN-to-BSN program) and program completion of MSN students?

Multiple logistic regression analyses were performed with graduation as the outcome variable and academic pathway (BSN program versus RN-to-BSN program) as the predictor, with age, sex, and ethnicity as covariates. There was no significant association between academic pathway and graduation of MSN students (adjusted OR = .82, *p* = .600).

4. What is the association between number of hours worked per week in a paid job and program completion of MSN students?

Multiple logistic regression analyses were performed with graduation as the outcome variable and number of hours per week working in a paid job as the predictor, with age, sex, and ethnicity as covariates. There was no significant association between number of hours per week working in a paid job and graduation of MSN students (adjusted OR = .98, *p* = .287).

5. What is the association between number of children under the age of 18 living at home and program completion of MSN students?

Multiple logistic regression analyses were performed with graduation as the outcome variable and number of children under the age of 18 living at home as the predictor, with age, sex, and ethnicity as covariates. There was no significant association between number of children under the age of 18 living at home and graduation of MSN students (adjusted OR = 1.10, *p* = .540).

6. What is the association between spouse/family members' level of support for

students' educational endeavors and program completion of MSN students?

Multiple logistic regression analyses were performed with graduation as the outcome

variable and spouse/family members' level of support for students' educational

endeavors as the predictor, with age, sex, and ethnicity as covariates. The association

between spouse/family members' level of support for students' educational endeavors

and graduation of MSN students was not statistically significant (adjusted OR = 1.63, p

= .096), even after adjusting for demographics. The data trended upward, indicating the

more support reported, the higher the likelihood of graduating (See Figure 3).
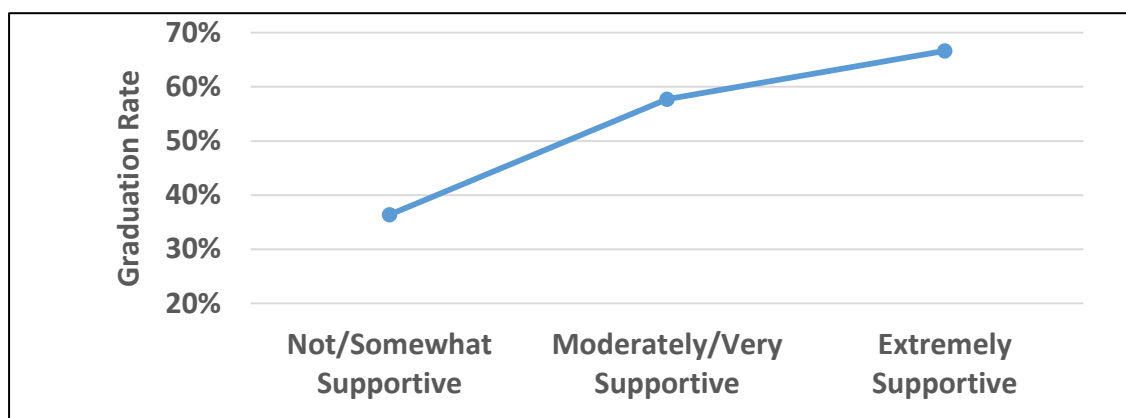
Figure 3 Support Graph

Summary

This chapter included a description of the sample and results of statistical tests

performed. These included the Shapiro-Wilk's test of normality, multicollinearity

diagnostics, Spearman correlations, and multiple logistic regression. Correlation

statistic results indicated several statistically significant correlations. Multiple logistic

regression revealed that number of years since the students' last degree was

significantly associated with higher likelihood of graduation.

CHAPTER 5

DISCUSSION

Interpretation of Findings

Program Completion

Program completion was used as the outcome variable because the end goal of

MSN programs is to graduate students, therefore contributing to the overall goal of

increasing the number of nurses with advanced degrees (IOM, 2010). Many other

researchers have used grade point average as the outcome, but that is very limiting

because it does not indicate who actually graduated (Ortega et al., 2013; Patzer et al.,

2017). In other words, researchers have included only graduates, which does not give

any insight to the characteristics of program completers versus non-completers.

Rather, those researchers focused on identifying characteristics associated with

graduates who had the highest GPAs.

Years Since Last Formal Educational Degree

Results of this study indicated that the more time that had elapsed since the

students' previous degree, the higher likelihood of academic success in an MSN

program. This was contrary to the correlation hypothesized that younger students

would actually do better in graduate school, having been students more recently when

compared to older students. This finding may be due to the fact that older students

(longer since previous degree) have a higher sense of goal commitment and more

general life experience compared to younger students. Tinto (1975) included goal

commitment as being an influential factor in the decision to either persist or drop out of

an academic program. Perhaps, students who have a greater length of time since their

previous academic degree are older, have more professional experience, have better coping skills, and have greater investment in what they want to achieve academically. These students, being more mature, have probably also had more life experiences than their younger counterparts. This could result in them being more resourceful when it comes to challenges they experience during their MSN program.

Although time since previous degree has not been studied before, the association between age and MSN program success has been studied, and results have been conflicting. Age could be an indication of length of time away from an academic setting, which has been hypothesized to be negative. Similar to the current findings, Dante, Fabris, and Palese (2015) found that older students had an increased likelihood of academic success. In contrast to the current study results, Burns (2011), Cipher et al. (2017), Hart (2014), Knestrick et al. (2016), Locke (2014), and Wilson et al. (2015) all reported that the risk of non-completion was higher in older adults than in younger students. There is speculation that this is due to older adults having more life responsibilities, including children and work responsibilities, which may present significant challenges, but this theory was not supported in this study (See section on Outside Responsibilities). Other researchers have reported no difference in program completion between older and younger students (Creech, Cooper, Aplin-Kalisz, Maynard, & Baker, 2018; El-Banna et al., 2015). This variable needs further investigation.

Level of Support

There was no significant correlation between perceived level of support and academic success of nursing students; however, there was an upward trend showing

that more perceived support correlated with a higher rate of program completion ($p <$ .10). It is possible that there was no significant correlation because this study did not reach the desired power for sample size. Many researchers who have analyzed this relationship have found that level of perceived support significantly improved retention (Kukkonen, Suhonen, & Salminen, 2016; Moore, 2008; Robertson et al., 2010; Rudel, 2006). Kukkonen et al. (2016) and Rudel (2006) conducted qualitative studies in which level of support was cited by students as being a reason for continuing or leaving a nursing program. Moore (2008) found that increased support was associated with increased academic performance as indicated by GPA, and Robertson et al. (2010) reported increased levels of support was a predictor of academic success. Because results among studies reviewed are consistent regarding perceived support being an important factor of academic success, this is something that should be studied again using a larger sample size. Family support is not something that is easily modifiable, but support received from friends/peers could be facilitated by programs put in place to augment this. For example, peer mentoring programs could be developed and required for students at risk due to lower levels of support being received.

Program Site

There was no significant association between program site (campus-based or online) and program completion of MSN students. Although some researchers have reported that online education is equally as effective as campus-based education (USDE, 2010), other researchers have found that nursing student retention in online programs was problematic (Allen & Seaman, 2013; Wilson, 2008). Because the institution at which the data for this study were collected is a leader in online nursing

education, perhaps its focus on and multi-faceted approach to student retention is more effective than other institutions' strategies. For example, this College of Nursing has full-time academic advisors instead of using faculty for this purpose. This approach lends a more focused and concentrated effort toward retention. This College of Nursing also has two faculty members, one who functions as a Writing Coach and one who functions as a Study Skills Coach, for MSN students as part of their workload. Faculty and peer mentoring programs are another integral part of the student success initiatives.

Outside Responsibilities

It has been well documented that children and family responsibilities compete with academic responsibilities of MSN students, adding to study time constraints (Knestrick et al., 2016; Kukkonen et al., 2016; McEwen et al., 2013; Rice, Rojjanasrirat, &Trachsel, 2013). Despite the numerous reports of these challenges, the current study did not find a significant association between the number of children living at home during the students' MSN program and program completion. This suggests that MSN students find ways to balance their personal responsibilities with their academic work.

Students who work more hours per week may not have time to study. Number of hours worked has been found to impede academic success of nursing students (Kukkonen et al., 2016; Lee & Choi, 2011; Robertson et al., 2010). Conversely, Moore (2008) did not find an association between hours worked and academic performance of nursing students. Similarly, a significant relationship was not found in the current study. As with having children in the home, MSN students are finding ways to manage their multiple other obligations, such as employment, and still study.

Academic Pathway

There were no previous studies found in which researchers examined the relationship of academic pathway (BSN versus RN-to-BSN) to graduate school and MSN program completion, although Knestrick et al. (2016) did recommend that it be included in future studies. In the current study, no significant relationship was found, indicating that students can be equally successful regardless of their BSN academic pathway.

Limitations

There were several limitations of this study, the biggest of which was the limited sample size available for this secondary analysis. The survey was emailed to a total of 2,481 former students who met inclusion criteria and the final sample included data from a total of 125 fully-consented survey respondents. The survey was open for three weeks and there were no email reminders sent during that time period. The response rate could be increased if the survey window of time was longer. Periodic email reminders prompting recipients who had not yet responded to complete the survey is another strategy that could be utilized to increase the response rate. Additionally, offering an incentive to complete the survey would likely increase the response rate. Improving response rates for online surveys is an ongoing challenge (Waltz et al., 2010).

The study was limited to MSN programs at one university. Different universities have student bodies with different characteristics, so a single-site study restricts generalizability. The retrospective approach utilizing secondary analysis was an

additional limiting factor. Findings of this study should be cautiously interpreted due to the above stated limitations.

Implications for MSN Programs

In order to retain MSN students, nursing programs need to be able to identify and address those risk factors which are causing students to drop out (Rovai & Downey, 2010). After those risk factors are identified, support systems and programs can be implemented to provide additional support to this group of students.

Orientation courses have been shown to improve retention in graduate students (Cameron, 2013; Carruth, Broussard, Waldmeier, Gauthier, & Mixon, 2010; Park, Perry, & Edwards, 2011). Resources focused on assimilation of new students to graduate nursing education would be beneficial for academic success. Other support systems could include online/virtual support groups for students experiencing severe illness or even death within their families while they are in their program of study. Peer and faculty mentoring programs have also been reported as being effective ways to improve retention by providing encouragement and social connectedness to MSN students (Harris, Rosenberg, & O'Rourke, 2014; Robertson et al., 2010).

Implications for the Theory

The theory used for this research study was a modified version of Bean and Metzner's (1985) conceptual model of nontraditional undergraduate student attrition. After reviewing results of this study, revisions to the current theory would include adding goal attainment as a factor related to academic success of MSN students. Program site, academic pathway, work and family responsibilities, and perceived level of support warrant further study with a larger sample size.

Recommendations for Research

Future studies should include qualitative research aimed at identification of specific categories of stressors experienced during MSN education. This would help narrow the types of individual support programs needed to facilitate academic success. Qualitative studies in which researchers explore what students think would help them the most, as far as resources to facilitate their success, would also be beneficial. Student success systems or programs should not be created without first surveying the students who will be utilizing them. This practice may prevent inappropriate allocation of resources.

Future quantitative studies should be conducted in which researchers measure students' level of commitment to their goals, because this could be a possible reason that students who have been out of school longer have increased academic success. Perhaps their work experience, as well as other life experiences, have brought clarity to their long-term goal. Because number of children was not correlated with academic success, perhaps the variable measured should be children or no children. Several researchers reported that having children presents challenges to academic success (Knestrick et al., 2016; Kukkonen et al., 2016; McEwen et al., 2013; Rice et al., 2013).

Conclusion

In order to effectively manage and coordinate care for the increased number of patients presenting with complex medical conditions, it is imperative that nurses receive advanced educational preparation and practice to the fullest extent of their education (IOM, 2010). Enrollment and retention of nurses in MSN programs is critical to meet current healthcare priorities. The purpose of this study was to explore the association

between 1) years since last formal educational degree, 2) program site, 3) academic

pathway, 4) work responsibilities, 5) family responsibilities, 6) outside encouragement,

and 7) program completion of MSN students.

The study was a secondary analysis of existing data. The researcher analyzed

responses from a survey sent to former MSN students, along with data from the

university-wide database, MyMav, to ascertain associations between the variables of

interest and program completion. Descriptive statistics, correlations, and multiple

logistic regression results were reported in Chapter 4.

Of the 125 MSN students comprising the sample, 60% had completed their MSN

program and 40% had not and were classified as inactive students in MyMav. If we can

determine why students do not complete their MSN programs, strategies can be

implemented to effectively target these areas. Accordingly, if factors identified with

program completion can be identified, communication of these factors to potential MSN

students may make them aware of resources that may assist them with being

successful in their programs.

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APPENDIX A

STUDENT SURVEY

Please enter the email address from which you received this survey. Enter only the part

of the address BEFORE the "@" sign. For example, if your email address is

ilovenursing@gmail.com, you would enter: ilovenursing

_____

1. Did you complete your graduate program? Yes/No

2. How did you obtain your BSN?

   a. RN-to-BSN program

   b. BSN program

3. How many hours per week did you work in a paid job during your MSN program

   (on average)?   Average number of hours per week: _____

4. How many children under the age of 18 did you have living at home during your

   MSN program?   _____

5. Support from spouse and family is defined as encouragement, hope, motivation,

   and/or inspiration received from spouse and family. How supportive was your

   spouse/family during your MSN program?

   a. Extremely supportive

   b. Very supportive

   c. Supportive

   d. Unsupportive

   e. Extremely unsupportive

Thank you so much for participating in this survey!